



# **Atmospheric Pollution & Climate Change (APCC)**

## **Environmental Information System Centre (ENVIS)**

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### **Articles in Media**

#### **India & Global**



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Environmental Information System's (ENVIS) centre on Atmospheric Pollution & Climate Change (APCC) at Indian Institute of Tropical Meteorology (IITM, Pune) is compiling the news articles in media for air pollution and climate change categories, for the year 2017. This book has articles which were published in media showcasing important episodes happened, its impact on the environment and human health.

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## January 2017

### **How bad will the air pollution get? Don't ask China's supercomputers**

*Date: 01-Jan-2017 Source: South China Morning Post*

China's supercomputers have been "useless" in determining smog forecasts, several researchers say.

Most calculations were done using an IBM high-performance computer operated by China Meteorological Administration, the scientists said. The three-year-old machine, IBM Flex System p460, played a key role in arriving at forecasts for smog levels for Beijing and other parts of the northern mainland last month, according to the researchers.

The Tianhe-1, a much more powerful computer than the IBM and located in Tianjin near the capital, made a negligible contribution to the analysis, they said. It currently provides smog forecasts for Baoding, a medium-sized city in Hebei province, according to information on the website of the National Supercomputer Centre in Tianjin. When it was launched, the Tianhe-1 was expected to provide forecasts for the entire mainland, according to state media reports. The centre declined to comment.

The mainland has risen to the top of the supercomputer leagues in recent years, producing the two current speed kings – Sunway TaihuLight and Tianhe-2 – according to top500.org, which tracks developments in the industry. But while the nation may enjoy bragging rights in terms of brute strength, critics have said software incompatibility could prove the Achilles heel of Chinese supercomputers.

To make predictions for smog levels, the meteorological administration uses a numerical model, known as CAUCE/Haze-fog. Running the program on an IBM machine was "much more natural" than on Tianhe, according to a researcher, who asked not to be named.

Another issue was the distance between Beijing and Tianjin, which made the transfer of massive amounts of data slow and costly. The computer splits its calculation resources among more than 1,400 clients, some of which are production houses that create cartoons or special effects for movies. Ensuring weather and air pollution simulations were the priority was difficult.

On the mainland, smog alerts also carry implications for the leadership, and given what was at stake, the meteorological authorities valued the reliability of the IBM machine, researchers said.

Weather authorities in Shanghai also used an IBM machine instead of a home-made supercomputer for weather and pollution forecasts, according to mainland media reports.

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### **In anti-pollution drive, this man's job is to guard 3 air purifiers**

*Date: 01-Jan-2017 Source: The Indian Express*

The three air purifiers are attached to the metal bench using a chain and lock. Two men guard the machines in 12-hour shifts.



The plastic curtains covering the “air pollution-free” bus stand at Delhi’s traffic artery on Vikas Marg, ITO flutter every time a vehicle passes by. For Bijoy Kumar Farida, 65, the curtains also keep the cold wind out through the night as he sits and “guards” three air purifier machines set up by a private firm as a CSR initiative to provide a “pollution-free” corner in the city. When commuters are long gone after 11 pm, he switches

off the machines and huddles up under a blanket; a thick sheet on the metal bench his bed for the night.

“The machines give out very cold air. The temperature has dropped. It will get icy if they keep running,” Kumar says. He will switch the machines on if someone walks into the bus stand, but in the six days since he has been posted as a guard, he hasn’t seen anyone come between 11.30 pm to 5 am.

“Schoolchildren and others will come around 5.30-6 am. Then I will switch it on. Why let it stay on all night?” he says. “Two-three days ago, a man came and gave me this blanket. He said, ‘Baba, you’re sitting in the cold, take this’. I told him I am a guard, not a beggar. But he said I should take it anyway because it’s cold.”

A milkman in Odisha in his younger days, Kumar came to Delhi last year when his son (30) suggested he take up a job here instead of “being lazy at home”. Two of his children work here and the son, who got him this “easy job”, is also a guard.

“I’m old so I don’t sleep much anyway. So, it’s a good job,” says Kumar. “Once, this man came in and thought the machine was a heater. He was upset why it was off. I told him it’s a pollution machine and I don’t know how to turn it on.”

The three air purifiers are attached to the metal bench using a chain and lock. Two men guard the machines in 12-hour shifts. “I sit right next to the machines. Even if I start to snooze, I wake up if someone comes close to the machines. They are expensive so I am always afraid of someone taking them away or damaging them,” says Kumar.

The LED display on the stand shows the PM 2.5 levels inside and outside the bus stop. When they are off, the levels outside are as 345, and 132 behind the curtains. The figures change to 395 and 120, minutes after Kumar turns on the machine.

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## On January 1, air quality hits ‘very poor’ mark

*Date: 02-Jan-2017 Source: The Times of India*

MUMBAI: On the first day of the New Year, the city woke up to its worst pollution levels since the Deonar dumping ground fire in early 2016. An air quality index (AQI) of 323 was recorded by System of Air Quality Weather Forecasting and Research (Safar) on Sunday.

The recorded AQI level was higher than the forecast of 302. An AQI between 301 and 400 is considered 'very poor'.

On days following the Deonar fire, the city had recorded an AQI of 341 and 333 on January 29 and January 31. Among the other polluted days in the year was the day after Diwali (315) and Christmas (311).

Researchers said the AQI levels were higher than the forecast due to the additional source of pollutants caused by the use of firecrackers. "During winter, the low temperature and stagnant winds make it difficult for pollutants to disperse faster, causing smog and very poor AQI levels. Visibility was low too," said Gufran Beig, project director, SAFAR.

The city's minimum temperature on Saturday stood at 16.5 and 21.2 degrees Celsius at Santacruz and Colaba bureaux respectively.

The AQI is expected to be better on Monday. Safar has pegged it at 309--still in the 'very poor' category.

Meanwhile, anti-noise crusaders said that decibels levels at public places were lower than expected but private parties were noisy. "When we went out to record noise levels, it was great to see that there was hardly anything at the usual places," said Sumaira Abdulali, convener, Awaaz Foundation, an NGO.

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## **Air pollution level in Kolkata among country's highest**

*Date: 03-Jan-2017 Source: The Times of India*

KOLKATA: New Delhi may be reeling under severe air pollution, but Kolkata has not only touched the country's capital city but have also surpassed the city quite a few days in terms of air pollution.

A joint study by the British Deputy High Commission, UKAID and Kolkata Municipal Corporation that was released last year had found that the city was already the fifth highest among major cities in the country emitting 14.8 million tons of Green House Gas (GHG) and also the second highest contributor in terms of per capita CO2 emission, producing 3.29 tonnes of CO2 per capita.

The major sources of air pollution include automobile exhausts which is about 50%, industrial emissions that is almost 48% and the rest 2% from cooking. The findings have been mentioned in details in the book 'Roadmap For Low Carbon And Climate Resilient Kolkata'. It was during the visit of the former UK Prime Minister David Cameron in the city on November 14, 2013 that the UK government had signed a MOU with KMC on low carbon and climate resilient Kolkata.

The study also finds that around 70% of the city's 15 million inhabitants suffer from some form of respiratory problems caused by air pollution. The study specially mentioned that vector borne diseases like malaria and dengue as well as respiratory diseases will rise in the city due to the increasing pollution level. This proved to be true this year, with more than 50 persons have died from dengue and several thousand others affected.

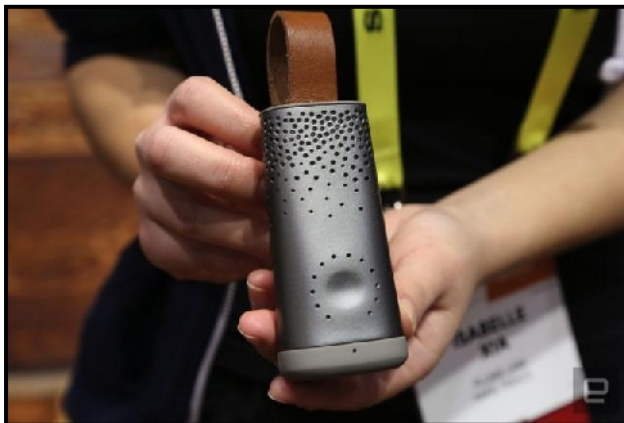
The study had come up with proposals as to how to combat and control the increasing air pollution in the city. It had suggested that KMC authorities should work together with the relevant state government departments to establish and enforce auto fuel quality guidelines and emission standards to lower pollution. According to former chief environment law officer Biswajit Mukherjee, a plan should be chalked out to control air pollution. "There was a plan discussed way back in 2011 to do something to prevent air pollution caused by firecrackers but it did not materialise. The issue should be looked into seriously now," he said.

State government officials said that the government has taken up a Green Cities mission stressing on developing low carbon urban township areas with special focus on environment. The plan is to stress on using pollution free solar power, battery and electric run vehicles and LED lights to have a low carbon output. State urban development and municipal affairs minister Firhad Hakim recently held a meeting with all municipal bodies of the state by the end of this month to discuss on coming up with measures to control air pollution.

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## Flow is a wearable that helps you avoid nasty air pollution

*Date: 04-Jan-2017 Source: Engadget*



If you care about the environment, I can see the appeal. At CES, the team showed me the various LED combinations that you can trigger with a small, dimpled button on the front. Different colors clearly indicate the quality of the air around you; a second button press gives you an overview of the day, with each tiny light representing a one- or two-hour block.

Flow works best when lots of people are using their devices simultaneously. Plume Labs will be collecting and comparing user data to create accurate, real-time pollution maps. The result will be an ever-evolving heat map with clearly defined routes to avoid and clean, picturesque spots to enjoy. Swiping through the Flow's companion app, I was able to tap on starred parks that had been logged as pollution-free zones. The challenge will be persuading users to take potentially longer routes around their city or hometown. If you're running late for work, for instance, would you still accept a detour to avoid a patch of smog?

I care about my health, but I'm not sure I care that much. Unfortunately for Plume Labs, I suspect many people feel the same way. That's a problem, because scale will be critical in order to realize its crowdsourced air-mapping dream. Still, it's a noble goal, and one that I can't help but admire. Flow's success will ultimately depend on its pricing -- if the sensor is cheap, curious souls might be willing to give it a try. If it's expensive, however, only the most green-thumbed individuals will take the plunge.

## How do we fix air pollution? It's simple but it needs political will

*Date: 06-Jan-2017 Source: The Guardian*



Cutting toxic levels of city air pollution to safer levels is simple, but not easy – it requires resolve. Yet, despite the key culprit in the UK being well known – diesel vehicles – the government has been asleep at the wheel for years.

Levels of nitrogen dioxide have been illegally high across much of the UK since 2010. In 2015 86% of major urban areas broke annual limits. Cutting this pollution means choking off diesel

emissions and there is a wide range of effective measures available.

Creating zones in city centres where polluting cars are either banned or charged is important, while making cities safe for cycling and walking cuts traffic too.

Cleaner buses and taxis have an important role to play and change to the perverse taxes that encourage people to buy diesel over cleaner cars is needed. There is also some support for a revival of a scrappage scheme which saw dirty old bangers taken off the road.

The environment and transport departments were well aware of all this and proposed many of these measures internally, only for the Treasury to reject most of them, arguing they “would be politically very difficult, especially given the impacts on motorists”.

Motorists happen to be particularly badly exposed to air pollution, but the real political difficulty for the government is two humiliating legal defeats in two years where judges ruled its air pollution plans were so bad they were illegal.

Ministers have now been forced to come up with a third plan, but clean air zones and car tax changes take time to clean up the air. Yet the UK government is also in the slow lane when it comes to emergency measures.

When foul air descended on Paris in December, officials there swung into action. Public transport was made free and the number of cars allowed on roads was restricted, alternately barring those with odd and even licence plates. In the UK, during the same December smog, the government sent a few tweets.

At the root of the problem are diesel cars, which successive governments across Europe have utterly failed to ensure meet legal emissions limits when driving in real-world conditions on the road. The gaming of regulatory tests by carmakers was blown open by the Volkswagen scandal. The scandal of governments prioritising supposed driver freedom over the lungs and health of their citizens is only now playing out.



## China promises stronger air pollution response after thick smog

*Date: 07-Jan-2017 Source: UPI*



The mid-afternoon sun in Beijing is barely visible through thick smog that blanketed the city in 2016. In response to a spate of heavy pollution over the last week, the government promised stricter policies to reduce pollution.

BEIJING, Jan. 7 (UPI) -- Chinese officials said they are working to improve municipal responses to severe air pollution in the wake of several days of choking smog hanging over Beijing.

The Chinese government has thus far declined to declare a red alert, the highest level of environmental alerts under the nation's four-tiered system. Doing so would empower government officials to implement an even-odd system for vehicle use, as well as shutter pollution-producing factories until air quality improved.

Instead, an orange alert has remained in place in Beijing and surrounding areas, which only warns citizens who could be affected to limit exposure to the outdoors.

Responding to the controversy, officials said they are undertaking a review of the environmental pollution measurement and response plans in 20 of China's largest cities. The government promised it would ensure proper testing is taking place, and that steps are created to respond when air quality becomes especially problematic.

The recent surge in smog is partially attributed to increased industrial production in the weeks leading up to the Chinese New Year, when factories must close so workers can return to rural villages to be with their families. Increased reliance on coal as a heating fuel in winter is also contributing to the problem.

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## AirVisual Creates Stunning 3D Air Pollution Map - Allows Developers Access To The World's Most Comprehensive Air Quality Data Set

*Date: 09-Jan-2017 Source: Pollution Online*

Hong Kong /PRNewswire/ - AirVisual, a social enterprise providing air pollution monitoring solutions, has recently launched a groundbreaking new way to visualize the Earth's health, in real-time.

AirVisual Earth is the first 3D air pollution map (<https://airvisual.com/earth>) to show the interaction of ambient particulate matters (PM2.5) levels and weather patterns. The mesmerizing interface allows viewers to spin the globe, zoom in and out, and toggle between combined PM2.5 and weather data, or just wind patterns alone; and track AQI (Air Quality Index) levels across the planet via vivid color-coded heat mapping.

"AirVisual Earth was developed to allow people to meaningfully relate to the air pollution problem" says Kelsey Duska, AirVisual Project Lead. "In visualizing pollution concentrations, we aim to clearly show the effect that our everyday emissions are having on the planet's health, as well as our own."

The mesmerizing map is generated from satellite imagery and data reported by over 10,000 monitoring stations, including government stations and crowdsourced data from AirVisual's own PM2.5 air quality monitors. By incorporating their own network of monitoring stations, AirVisual has become the first and only platform to provide valuable air quality data for Pakistan, Saudi Arabia, Italy, Cambodia and the Philippines.

In response to the immediacy of the air pollution problem, AirVisual has made all of this data, spanning 8,000 key cities in more than 60 different countries, accessible to program developers via AirVisual's newly launched API (Application Program Interface). The AirVisual air quality and pollution API is the first to provide historical and forecast data, alongside real-time data.

"By providing developers access to AirVisual's extensive database, we're planting the seed for innovations to come," explains Duska. Companies will be able to integrate the API to develop new software and product features based on current and forecast air quality and weather information.

The future in which buildings optimize air purification systems; where maps recommend the least polluted path; and cities adjust emissions based on air quality forecasts - is here.

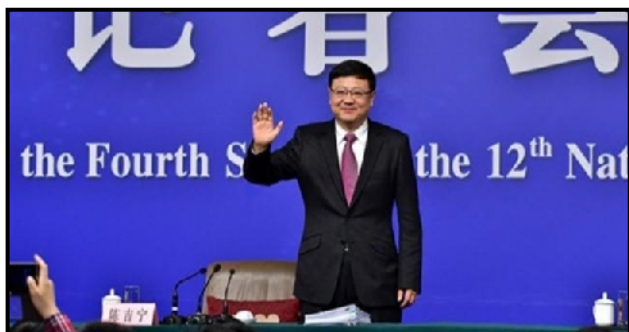
#### About AirVisual

AirVisual provides the tools and information people need to thrive in polluted environments. By employing big data, artificial intelligence and Internet of Things technologies, AirVisual delivers user-friendly, simple solutions to optimize health and well-being, both indoors and out. To learn more about air quality, its impacts on health and AirVisual's family of monitoring solutions, please visit [airvisual.com](http://airvisual.com).

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## Minister 'feels guilty' over air pollution

*Date: 09-Jan-2017 Source: Shanghai Daily*



CHINA'S environment minister says he "felt guilty" and "wanted to reproach himself" over the widespread air pollution that is affecting people's lives.

Chen Jining, minister of environmental protection, made the comments during a press conference in Beijing on China's efforts to prevent air pollution.

Since the beginning of winter, days of heavy air pollution have been repeated occurrences in many places across the country, covering large areas and staying for long periods.

This had disrupted production activities and adversely affected people's everyday lives, Chen said.

The public felt anxious about the smog problem, he added.

Detailed analysis showed that emissions from cars had become the primary source of fine particulate matter in major cities, accounting for 31.3 percent of the problem in Beijing, 29.2 percent in Shanghai and 28 percent in Hangzhou, Chen said.

Fine particulate matter is defined by the US Environmental Protection Agency as compounds that have a diameter of less than or equal to 2.5 micrometers. Substances that may form these particles come from power plants, industrial facilities, agricultural practices and motor vehicles, among others.

Chen said the ministry was evaluating emergency plans in 20 cities to deal with serious air pollution, hoping to improve their ability to respond to the problem.

The cities include Beijing, Tianjin and 18 other cities in Hebei and surrounding provinces.

Inspections had found some cities failing to take effective measures following alerts, or that their measures were impracticable, Chen said.

More stringent measures

The ministry will enhance supervision on whether local governments have put their precautionary plans into practice, he said.

Chen vowed to take concrete steps and employ more stringent and effective measures to deal with outstanding environmental problems and improve environmental quality.

China has been cleaning its environment and will continue to improve the response of local governments to pollution, Chen said.

The country has made improvements to the environment despite strong headwinds, such as an economic structure burdened by heavy industry, an energy mix reliant on fossil fuels, and environmentally unfriendly lifestyles, he said.

Last Tuesday, China's national observatory issued a red alert for fog in a number of northern and eastern regions, the first national red alert for fog. Meanwhile, north China has been under high-level smog alerts since late December.

The Beijing-Tianjin-Hebei region and neighboring provinces, the areas hit hardest by smog, are major coal consumers and home to a large share of China's steel, coke and cement production facilities as well as vehicles.

"The root cause of the region's smog problems, from a long-term perspective, is the unclean industrial and energy mix, which requires big changes," Chen said.

Monitoring results in the Beijing-Tianjin-Hebei region show that the government's efforts have paid off in the past few years as the average concentration of PM2.5 fell by about 30 percent in 2016 compared to 2013, he said. However, there seems to be little improvement in winter air quality.

Unfavorable weather conditions and inefficient heating systems had also contributed to the lingering smog, Chen said.

To address the problems in winter, China will phase out unclean and inefficient coal-fired boilers, encourage off-peak industrial production and enhance scrutiny and punishment for violations of the rules, he said.

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## Beijing launches environmental police force to tackle air pollution

*Date: 09-Jan-2017 Source: The Indian Express*



The smog-hit Chinese capital of Beijing will establish a police force to deal specifically with environmental offences as part of its efforts to clean up its air and crack down on persistent polluters. The smog police will crack down on open-air barbecues, garbage incineration, biomass burning and dust from roads, Beijing's acting mayor Cai Qi said on Saturday, according to the official Xinhua news agency.

"These acts of non-compliance with regulations are actually the result of lax supervision and weak law enforcement," Cai told a government meeting.

Nearly three years into a "war on pollution", large swathes of northern China were engulfed in smog over the New Year, with dangerous air quality readings in major cities like Beijing, Tianjin and Xian forcing many people to stay in doors.

The smog which blanketed cities, disrupting flights, port operations and schools, was caused by increased coal use for winter heating and unfavourable weather conditions.

The central government has promised to make greater use of police and law courts to prosecute companies and local officials responsible for exceeding emissions limits.

But while China's environmental legislation has been beefed up in recent years, authorities have long struggled to build up the staff required to enforce laws.

China's continuing reliance on fossil fuels, especially in the north, made the fight against pollution difficult, China's environment minister Chen Jining said on Friday.

He said the six provinces and regions hit hardest by smog over the last month, including Beijing, consume a third of the country's total coal and emit around 30-40 percent of China's major atmospheric pollutants, despite accounting for just 7.2 percent of China's total area.

But he said China would still be able to solve its pollution problems faster than western countries, including Germany.

“They needed 20-40 years to solve it. I believe we will do it faster than they did,” Chen said, according to a transcript posted on the State Council’s website. “We shouldn’t lose confidence because of a few days of heavy pollution,” he added.

China last week announced it would plough 2.5 trillion yuan (\$361 billion) into renewable power generation by 2020.

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## **Progress on acid rain is helping fish survive**

*Date: 10-Jan-2017 Source: The Leader-Herald*

ELIZABETHTOWN –Progress against acid rain has led to healthier lakes in the Adirondack Park, which in turn is helping to protect fish from climate change, according to a study published in the journal *Global Change Biology*.

“This is a perfect example of why we can’t go backwards on acid rain and air pollution,” said William C. Janeway, Executive Director of the Adirondack Council, a national leader in the battle against acid rain. “If acid rain makes a comeback during the Trump administration, we will lose this newfound protection and everything will start getting worse again. That would be tragic. The recovery of Adirondack waters and the associated economic benefits have been real. But the recovery isn’t complete.”

President-elect Donald Trump has said he wants to eliminate federal environmental regulations and reduce the size and scope of the U.S. Environmental Protection Agency (EPA). Federal regulations administered by the EPA have resulted in significant reductions in the air pollution that causes acid rain.

Over the past 25 years, most Adirondack lakes have improved. Some that were once considered dead are now producing healthy brook trout again. Others need further reductions in upwind emissions, and time, to regain their vitality.

Through this study, scientists have learned that protection from acid rain provides fish and other aquatic life with greater protection against global warming. It all has to do with how much sunlight reaches the lake bottom.

“A lake that is severely damaged by acid rain looks clear as gin,” Janeway explained. “Almost everything in it is dead. This research team found that lakes with clear water heat up faster than healthy lakes.

“Healthy lakes have lots of green organisms and lots of dissolved organic carbon in them,” he said. “The suspended carbon blocks sunlight from reaching the bottom of deeper waters. That helps keep intact a layer of cooler water that fish need to survive.”

Brook trout, for example, decline rapidly in waters that warm to 68 degrees Fahrenheit and above.

“This added layer of protection will be critical in the years ahead, as warming summer temperatures threaten the survival of cold-water species such as brook trout,” said Janeway. “We will be able to keep

them healthy longer in the face of rising global temperatures, if we keep acid rain from making a comeback.”

The air pollutants that cause acid rain — sulfur dioxide and nitrogen oxides — have declined sharply since 1990. These declines were the result of the federal Acid Rain Program and the Cross-State Pollution Rule. Both discourage one state from polluting the air in another state. The Clean Power Plan is aimed at cutting greenhouse gas emissions, but would have the side-benefit of further reducing the emissions that cause acid rain and accelerate the recovery of more Adirondack lakes.

More than 80 percent of the acid rain that falls on the Adirondack Park is generated outside of New York State, mainly by coal-fired power plants and fossil-fueled automobiles. Because New York cannot halt Adirondack acid rain on its own, federal rules are needed to protect the park from continued harm.

Acid rain also harms the forests of the Appalachian Mountains, and destroys public buildings, monuments and cemetery markers throughout the eastern United States.

The report was completed by acid rain scientists working in the southwestern Adirondack Park, including Dana Warren, Clifford Kraft, Daniel Josephson and Charles Driscoll, who presented a summary of their finding to colleagues in the Adirondacks earlier in 2016.

The report’s abstract noted:

As lake ecosystems across the eastern United States recover from acid deposition, the stress to the most susceptible populations of native [cold-water] fish appears to be shifting from acidification effects to thermal impacts associated with changing climate.

Based on data from northeastern North America, [they] argue that recovery from acid deposition has the potential to improve the resilience of [cold-water] fish populations in some lakes to impacts of climate change.

This analysis highlights the importance of considering the legacy of past ecosystem impacts and how recovery or persistence of those effects may interact with climate change impacts on biota in the coming decades.

The Adirondack Park is the hardest-hit area of the United States in terms of acid rain. More than 700 lakes and ponds were once considered too acidic to support their native life. The park’s high-elevation spruce and fir forests suffered die-backs as severe as 80 percent on the slopes of some of the park’s tallest mountains.

Acid rain also worsens mercury contamination of the park’s food web. Acid breaks down chemical compounds, turning harmless inorganic mercury (common in most forest soils) into the toxic organic form. Acid rain also harms the growth of hardwood forests, including sugar maples that are prized for furniture, sporting goods, syrup and brilliant autumn foliage.

In addition, acid rain has harmed the Adirondack economy by degrading the health and productivity of commercial forests and native fisheries, while discouraging tourism and outdoor recreation.

The Adirondack Council is an independent, privately funded, not-for-profit organization. The Council's mission is to ensure the ecological integrity and wild character of the Adirondack Park. The Council envisions an Adirondack Park comprised of large, core Wilderness areas, surrounded by working forests and farms and vibrant local communities.

The Adirondack Council carries out its mission through research, education, advocacy and legal action. Adirondack Council members live in all 50 United States.

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## **Air pollution causes 1.2 million deaths in India annually; Delhi most polluted: Greenpeace report**

*Date: 11-Jan-2017 Source: The Times of India*

NEW DELHI: As many as 1.2 million deaths take place every year due to air pollution in India, a Greenpeace India report published today says.

Greenpeace's report, titled 'Airpocalypse,' says Delhi is India's most polluted city.

The report is based on information obtained through online reports and Right to Information applications from State Pollution Control Boards across India, and assessments of air quality performed in 168 cities across 24 states and Union Territories. It claims that none of the 168 cities assessed complies with air quality standards prescribed by the World Health Organization (WHO).

It says the number of deaths in India caused by air pollution is only a "fraction less" than the number of deaths caused by tobacco usage, and adds that three per cent of the GDP is lost due to air pollution.

"We are facing an apocalypse right now due to unbreathable air, deaths due to air pollution are only a fraction less than those due to use of tobacco yet authorities are laying a deaf ear to the numerous scientific reports that have set alarm bells ringing," said Sunil Dahiya, campaigner, Greenpeace India.

Greenpeace's report says only a "few" cities in southern India comply with air quality standards prescribed by the Central Pollution Control Board (CPCB), and pinpoints fossil fuels as one of the "main culprits" for the deteriorating air quality across the country.

"The top 20 most polluted cities have PM 10 levels between 268 g/m<sup>3</sup> and 168 g/m<sup>3</sup> for the year 2015. While, Delhi tops the list with 268 g/m<sup>3</sup>, it is followed closely by Ghaziabad, Allahabad, and Bareilly in Uttar Pradesh; Faridabad in Haryana; Jharia in Jharkhand; Alwar in Rajasthan; Ranchi, Kusunda and Bastacola in Jharkhand; Kanpur in Uttar Pradesh; and Patna in Bihar with PM10 levels ranging from 258 g/m<sup>3</sup> to 200 g/m<sup>3</sup>," the report explains

The assessment of air pollution levels for Delhi highlighted that PM10 concentrations are 268 g/m<sup>3</sup> for the year 2015, which are 4.5 times higher than the National Ambient Air Quality Standards (NAAQS) annual limit set by CPCB, and about 13 times the annual limit set by WHO for PM10.

Detailed observation of the data suggests that PM10 levels have been very high throughout 2015 for Delhi, with October to February being the severely polluted months when the PM10 concentrations touched 500 g/m<sup>3</sup>.

Public health and economic crisis

Greenpeace's report holds that India's air pollution has become a "public health and economic crisis."

"India's pollution trends have been steadily increasing, with India overtaking China in number of deaths due to outdoor air pollution in 2015. India's deteriorating air quality demands an urgent robust monitoring system," the report says.

Greenpeace explains that the country's pollution reduction strategies need to be much more "ambitious, systematic and with focused targets with clear timelines".

It has called for accountability and a compliance mechanism, and says fossil fuel-dependant sectors such as power and transport should be shown no leniency.

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## **Punjab to Stop Paddy Straw Burning From This Year: HC on Air Pollution**

*Date: 12-Jan-2017 Source: NEWS 18*



New Delhi: Air quality of Delhi and nearby states is deteriorating day by day and has attained alarming proportions, the Delhi High Court on Thursday said while asking the Centre and the Punjab government to work out a plan to stop from this year paddy straw burning in the state, a major contributor to air pollution.

"State of Punjab has stated in its affidavit filed in the court that by year 2019-2020 there would be a complete ban on the burning of the paddy residues."

"It means that the stubble burning would continue in year 2017, 2018 and 2019 as well, which is a major contributor of air pollution in Delhi and nearby states," a bench of Justices Badar Durrez Ahmed and Ashutosh Kumar observed.

"We are of the view that the air quality of Delhi and nearby states is already deteriorating day by day and has attained alarming proportions," the bench said and directed that the Punjab and the central governments should work out a plan to ensure there is no burning of paddy residues from the year 2017 itself.



"Air pollution is troublesome issue. It is matter of life and death. It is a health-related issue. How can we ignore it," the bench said, adding that "when we can stop certain currency from use, why can't stubble burning be stopped".

The court's direction came after perusing the affidavit filed on behalf of the state of Punjab, which stated that approximately 14 million tonnes of paddy straw is burnt each year, particularly in October-November.

"This would mean that there would be approximately about 9,000 tonnes of PM 2.5 which is emitted because of the paddy straw burning.

"Similarly, the figure for PM 10 (which includes PM 2.5) would be 10,000 tonnes. These are alarming statistics, and particularly so, as they are the major contributors to air pollution in Delhi," the court said in its order.

The Punjab government's response came on a PIL initiated by the high court on its own on the issue of alarming levels of air pollution in the national capital.

The bench was also told that levels of harmful pollutants that people are exposed to in east Delhi's Anand Vihar were recently found to be two to four times higher than the air pollution levels in other part of Delhi, which are several times more than the standard.

On being asked the reason for high air pollution at Anand Vihar, the bench was told that the main cause was a chaotic traffic situation in the area, idling emission from vehicles and encroachments on the road.

Taking note of this, the bench directed the authorities concerned of Delhi and Uttar Pradesh to immediately take up the matter of air pollution on a war footing to ensure that the traffic at Anand Vihar is smooth and all the encroachers from the road be removed forthwith".

The court asked the authorities to comply with its order and file a status report by February 2, the next date of hearing.

It directed the Delhi Development Authority (DDA) to immediately act against felling of trees in Aravalli Biodiversity Park here, on a plea claiming such activities would adversely impact the environment and increase air pollution in the city.

The amicus curiae, who was appointed by the court to assist it in the matter, has said that "if illegal felling of timber in Aravalli Biodiversity Park is not stopped and encroachments prohibited, the park will be destroyed and the ecosystem and environment damage will be beyond repair".

The Aravalli Biodiversity Park is an area spread over 692 acres (2.8 sq km) in the South Central Delhi Ridge within the Aravalli Range. The area is close to JNU, Mehrauli- Mahipalpur road, NH-8, Vasant Kunj, Masoodpur, Palam road and southern Vasant Vihar. DDA and the University of Delhi, under the joint Biodiversity Parks Programme, maintain the area.

## **“92% the world’s urban population now breathe toxic air”: so what can we do about it?**

*Date: 13-Jan-2017 Source: City Metric*



Beijing, London, Mexico City, New Delhi and Paris are among the cities that have drawn attention for their dangerously high air pollution levels in 2016 – but they’re not alone. The World Health Organisation (WHO) has confirmed that 92 per cent of the world’s urban population now live in cities where the air is toxic.

In India, a study found that 41 Indian cities of more than a million people faced bad air quality on nearly 60 per cent of the total days monitored. Three cities – Gwalior, Varanasi and Allahabad –

didn’t even manage one good air quality day.

Over on the African continent, dirty air was identified as the cause of 712,000 premature deaths – that’s more than unsafe water (542,000), childhood malnutrition (275,000) or unsafe sanitation (391,000).

In Europe, it was found that around 85 per cent of the urban population are exposed to harmful fine particulate matter (PM2.5) which was responsible for an estimated 467,000 premature deaths in 41 European countries.

It’s not all bad news though: 74 major Chinese cities have seen the annual average concentrations of particulate matter, sulphur dioxide and nitrogen dioxide, decrease since 2014 although the Chinese government’s “war on air pollution” has received criticism.

### *Health risk*

The health impacts of air pollution are well documented; but now, new evidence suggests a link between air pollution and dementia and Alzheimer’s disease, with exposure to poor air quality equivalent to passively smoking six cigarettes a day. Not only that, toxic air has been blamed for more road traffic crashes from pollutants distracting drivers, causing watery eyes and itchy noses.

It is often poor, young, old and disadvantaged people who are worst affected by poor air quality. Air pollution is responsible for the deaths of 600,000 children under the age of five every year. Ethnic minorities are more likely to be exposed to high pollution levels than other groups. In London, black, African and Caribbean people were exposed to higher illegal nitrogen dioxide levels (15.3 per cent) because of where they lived, compared to the rest of the city’s population (13.3 per cent).

Air pollution also affects regional climate, which impacts on future water availability and ecosystem productivity. Black carbon is a particulate matter created through the burning of fossil fuels (such as diesel) and biomass. As well as effecting human health, it is responsible for glacial melting in the

Himalayan and Tibetan Plateau. Black carbon deposits on snow and ice darkens surfaces, resulting greater absorption of sunlight and faster melting.

Research from the World Bank estimated that the global economic cost of air pollution-related deaths to be US\$225 billion in lost labour income (in 2013) and more than \$5trn in welfare losses. The OECD predicted that global air pollution-related healthcare costs will increase from \$21bn in 2015 to \$176bn in 2060. And by 2060, the global annual number of lost working days that affect labour productivity is projected to triple to reach 3.7bn – it is currently around 1.2bn.

#### *Air creative*

A number of creative ways of understanding and addressing the air pollution problem were seen throughout 2016. In London, racing pigeons took to the skies equipped with pollution sensors and a Twitter account, to raise awareness of the capital's illegally dirty air. Amsterdam carried on the bird theme, with smart bird houses that light up to show the air quality status, while offering free Treewifi.

Other innovations included the development of an inexpensive over-the-counter inhaler that protects the lungs against air pollution, and the installation of a seven-metre tall tower in Beijing, which sucks pollutants from filthy air.

Raising awareness of the causes and effects of air pollution is important, as we are not only victims, but also contributors to the problem. There have also been many air quality monitoring projects to engage citizens on air pollution issues such as “curious noses”, which saw Antwerp residents measure traffic pollution and “clean air zones” in North Carolina, US, where individuals measured particulate matter in real time.

We've also seen awareness lead to action, when the demand for clean air led to ClientEarth taking legal action against government failure to tackle illegal air pollution. Meanwhile, artists in London produced their own campaigns, aimed at warning young people about the effects of poor air quality.

#### *Change is in the air*

This year the UN's New Urban Agenda, the Sustainable Development Goals and the Breathe Life Campaign called for action to improve urban air quality and deliver social, environmental and economic co-benefits.

Meanwhile, Paris, Mexico City, Madrid and Athens have pledged to remove all diesel vehicles from their streets by 2025, while promoting walking and cycling infrastructure. In Asia, a city certification programme is being piloted to encourage cities to make advances in air quality management.

If anything, 2016 has showed us that poor air quality is a scourge of the developed and developing world alike – and that it requires immediate action. The evidence is clear: we need to clean up our act, to protect human health and reap the benefits of clean air for all.

The Conversation  
Gary Haq is a senior research associate in sustainable development and human ecology at University of York.

## 4 unique ways of fighting air pollution

*Date: 14-Jan-2017 Source: The Times of India*

In London, one of the most polluted cities in the world, 1 in 12 deaths are linked to dirty air. Air pollution in Delhi shortens the life expectancy of its residents by 6.3 years. According to the WHO, 3 million people die of pollution every year even as only 1 in 10 individuals globally lives in a city that complies with WHO's air quality guidelines. As the problem cries out for urgent remedy, a BBC report listed some innovative solutions.

### *SMOG-FREE TOWERS*

Seven-metre high structure built by Dutch inventor Daan Roosegaard with support from China's environment ministry opened in a Beijing park last September. It's a giant outdoor air purifier.

How it works:

- The way static electricity makes loose hairs stick to a comb, airborne particles are sucked into the tower where they get a positive charge.
- The particles are captured by a negatively charged dust-removal plate and clean air blown out of the other end.
- It captures more than 75% of particulate matter in an area the size of a football field.
- Runs on 1,400 Watts, that is, less electricity than a desk-top air purifier.
- Waste collected can be used as building material and to make smog-free jewellery.

### *BIOCHAR*

Also a Dring project, it involves the creation of building material out of a charcoal-like substance obtained by burning agricultural crop by-products or tree clippings in a pyrolysis kiln (in a process that induces decomposition through high temperatures).

How it works:

- Simply put, you take carbon out of the sky, convert it into a material, and then use it to build.
- Trees too take carbon out of the air and trap it as wood.
- Biochar is a mouldable, plastic type material that you can shape - which you can't really do with wood making it the perfect material for architectural design.
- Dring's new building material, called Made of Air, will make its first appearance as industrial factory cladding in Berlin this year.

### *PIGEONS*

They took to the sky from a north London hill last March wearing backpacks that monitored air pollution.

How it works:

- They sent live air-quality updates via tweets to Londoners' smartphones. Sadly, in most cases, the readings were not good.

## *PHOTO-CATALYTIC TITANIUM DIOXIDE*

Tried out by Berlin-based architect Allison Dring in Mexico City in the early 2000s.

How it works:

- The idea is to tackle nitrogen dioxide from vehicle exhausts.
  - It uses the ultraviolet rays from sunlight to convert NO<sub>2</sub> into nitric acid.
  - The nitric acid is neutralised into a harmless salt and washed away by the rain
  - Dring created a coral-like design to catch light and wind from all sides. Her project covered 2,500 square metres of a hospital in Mexico City, cutting pollution in the street below by the equivalent of approximately 1,000 cars per day.
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## **NEERI, IIT-Bombay: Air pollution at key traffic junctions alarming, says study**

*Date: 15-Jan-2017 Source: Indian Express*

Air pollution at Mumbai's busy traffic junctions has hit alarming levels, a new study reveals. The study, conducted by the National Environment Engineering Research Institute (NEERI) and the Indian Institute of Technology (Bombay), reveals that busy traffic intersections in the commercial capital witness air contamination six to 27 times the optimal permissible levels, impacting the city's overall air quality.

Alarmed by the findings, the Maharashtra Pollution Control Board (MPCB) has decided to install air purifiers at 33 traffic junctions in the city. The facility was inaugurated for three junctions last week.

According to the study, the main indicators to gauge the level of contaminants in the air are the levels of Particulate Matter (PM) 2.5 and PM 10. While PM 2.5 indicates the extent of small pollutant particles released mainly from the exhaust of vehicles, the latter stands for slightly larger, coarser particles from windblown dust, road sweeping and construction.

While the permissible limits for PM 2.5 and PM 10 are 60 microgrammes per cubic metre (µg/m<sup>3</sup>) and 100 µg/m<sup>3</sup>, the study found that the existing levels at the traffic junctions were far worse.

The traffic junction outside Oberoi Mall in suburban Dindoshi, the scene of huge snarls during peak hours, was found to be the worst on these counts, with the PM 10 count at the site measuring 2709.25 µg/m<sup>3</sup>. The lowest PM 10 count, recorded outside Dadar's Siddhivinayak Temple (596 µg/m<sup>3</sup>), was nearly six times above the permissible limit. In fact, the surveyors found that for the 19 out of 33 junctions surveyed, the pollution was more than 10 times the permissible levels.

Officials attributed the "heavy vehicular movement" on the northbound end of the Western Express Highway during peak evening hours to be one of the worst contributors to air pollution in Mumbai. Further, officials fear that with the construction work of Metro along the same stretch underway, the traffic and the pollution count will worsen further.

Currently, Mumbai's overall air quality levels is recognised as 'very poor', according to SAFAR. Mumbai's Air Quality Index (AQI) is recorded by the System of Air Quality and Weather Forecasting and Research (SAFAR), which is run by the Indian Institute of Tropical Meteorology with the support of India Meteorological Department. On Saturday evening, Mumbai's AQI was more than 300  $\mu\text{g}/\text{m}^3$ , the worst area recorded was Mazgaon with 345  $\mu\text{g}/\text{m}^3$ .

The joint air pollution study further revealed that a high percentage of toxic matter released from vehicles had accumulated near the junctions.

Officials said the 33 congested traffic junctions were selected based on several factors such as location of the site, vehicular congestion, pedestrian movement and construction in the area. The sampling time of the survey was during peak-hour time of the junctions and they were all surveyed last year before and after the 2016 monsoons.

WAYU (Wind Augmentation and Air Purifying Unit), that are currently operational in Kalanagar, Sion and Ghatkopar junctions, is an active air pollution mitigation technology that works on the principle of breaking down carbon monoxide, officials said. The gadget WAYU was created in a joint collaboration between NEERI and IIT. More WAYU devices are proposed to be set up in the other 30 traffic junctions in the city.

Each of the WAYU devices has filters attached with a thermal oxidiser to separate the toxic content from the air, which is then released back into the atmosphere with the help of a fan. There area air quality sensors have been used to assess efficiency of the devices and the efficiency of the devices is expected to purify 40-60 per cent of the air it processes, officials said.

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## **Gurgaon gets relief from cold, but not pollution**

*Date: 15-Jan-2017 Source: The Times of India*

**GURUGRAM:** Even though the city got some relief from cold as the minimum temperature increased to 5 degrees Celsius in on Saturday, there was no respite from rising air pollution levels. Particulate matter (PM) 2.5 rose by nearly 50% compared to the last two days.

While the air quality index crossed the 360 mark on Saturday, which is in the 'hazardous' zone, the level of PM2.5 remained seven times higher than the national safe standard of 60  $\text{g}/\text{m}^3$ . The highest level of PM2.5 was recorded at 445.06  $\text{g}/\text{m}^3$  on Saturday, while the highest on Friday and Thursday remained at 292.90 and 364.90  $\text{g}/\text{m}^3$ , respectively.

Officials of the Haryana State Pollution Control Board (HSPCB) said mornings and evenings, in particular, had been very foggy and thus recorded an increase in pollution levels. "It has been noticed that pollution levels remained high in mornings and evenings. This shows that particulate matter is getting stuck in the lower atmosphere due to the increased fog at that time of day. Dip in temperature has also led to a decrease in the wind speed. The increase in pollution is, therefore, recorded due to extreme weather conditions," said an official of HSPCB.

Besides weather conditions, experts also blamed laxity on part of authorities for the worsening air pollution levels. "While last year, the authorities were talking about air pollution due to more smog in the lower atmosphere, this year, days are brighter and thus the authorities are not bothered. The fact is that pollution is as high as it was last year. The authorities need to take immediate steps to bring down air pollution," said Niranjana Raje, a former member of the Environment Pollution (Prevention and Control) Authority.

"Emergency measures such as restricting movement of diesel vehicles, temporary closure of polluting industries and closure of schools and colleges need to be taken to combat high air pollution levels," he added.

The met department has predicted light rain on Sunday, but said that minimum temperature is likely to go up.

Doctors, on the other hand, advised people to stay indoors as far as possible. "Children, elderly and pregnant women should remain indoors. Even healthy people should avoid doing physical activity outdoors," said Dr Sachin Verma, a city-based pulmonologist.

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## Air pollution levels in Vijayawada, Guntur alarming

*Date: 16-Jan-2017 Source: The Times of India*



*Representative image*

Amaravati: Even as the state administration is gearing up to ground Amaravati construction works with massive structures and industries, air pollution levels in two major cities in the capital region - Vijayawada and Guntur - are going up at an alarming pace. Unless immediate corrective measures are put in place, the situation may go awry.

Senior medical professionals are worried that the day is not far off for the people of Vijayawada and Guntur to face a New Delhi like situation if steps are not taken to check the trend on a war footing. If the situation is not kept under control now, it

may reach dangerous levels in the future, making it difficult for people even to breathe, say experts.

Interestingly, the Central Pollution Control Board (CPCB) had alerted the state government about the rapidly increasing air pollution levels in the state almost four months ago. CPCB says ambient particulate matter (PM10) was found exceeding the national ambient air quality standards (NAAQS) in Vijayawada, Guntur, Kurnool, Nellore and Visakhapatnam. Air pollution is a serious matter considering the adverse impact on health.

CPCB also reminded the government how seriously the Supreme Court, high courts and the National Green Tribunal (NGT) handled air pollution issues while asking the government and the state pollution control board to be ready with a blue print to control pollution.

A few months after the CPCB warning, global NGO Greenpeace came out with a more stunning report saying that air pollution levels at Guntur, Ananthapur and Visakhapatnam have exceeded the national average. While national average of PM10 concentration is 60 ug/m<sup>3</sup>, Guntur has touched almost a record level of 100 ug/m<sup>3</sup>. Thus, Guntur has secured a place in the top pollutant cities in the country. Similarly, it was around 84 ug/m<sup>3</sup> in Anantapur and 61 ug/m<sup>3</sup> in Visakhapatnam.

However, according to CPCB, it is Vijayawada which has the highest level of PM10 in the state with 110 ug/m<sup>3</sup>. The air pollution levels in Vijayawada city have been constantly going up in the last five years. While it was around 90 ug/m<sup>3</sup> in 2011, it was 97 ug/m<sup>3</sup> in 2012. It crossed the 100-mark when it reached 104 ug/m<sup>3</sup> in 2014. It broke its own record by touching 110 ug/m<sup>3</sup> in 2015. This is almost double the national average of 60 ug/m<sup>3</sup>. "Air pollution is one of the major health concerns for citizens as the the number of cases of breathing problems is growing fast," observed noted pulmonologist Dr G Ravindranath.

The air pollution levels in Guntur have gone up from just 74 to 100 in a span of five years. Interestingly, the levels in Visakhapatnam have come down from 84 ug/m<sup>3</sup> to 61 ug/m<sup>3</sup>. Fast degrading greenery in and around the capital city is one of the major reasons for growing air pollution levels in the twin cities, said professor P Sundara Kumar, who conducted various studies on loss of greenery in the capital city region.

Although capital region development authority (CRDA) has initiated several measures to make Amaravati a green-blue city, no one in the civic bodies at Vijayawada and Guntur seems to be bothered about the plight of the locals.

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## Air pollution problem 'very serious', urgent steps needed: Supreme Court

*Date: 17-Jan-2017 Source: The Times of India*



NEW DELHI: The Supreme Court on Tuesday warned that the problem of air pollution was very serious and solutions need to be found urgently, rather than in years.

"This pollution problem is very serious. If you talk for years for a solution, then it is a problem," a bench of Justices MB Lokur and PC Pant said, adding that some of the victims of air pollution are due to inefficient systems and non-implementation of norms. The observation came after amicus curiae and senior advocate Harish Salve said there

was a need to ensure 100 per cent compliance of Pollution Under Certificate (PUC) and linking them with the insurance of vehicles done every year.



"The year period is too far. Insurance of vehicle is done annually. We need to find solutions fast," the bench said and asked Solicitor General Ranjit Kumar, appearing for Centre, to specify the number of PUC centres in Delhi.

Kumar said there were 962 such centres in Delhi with each of them inspecting around 5000 vehicles every three months.

He said show cause notices have also been issued to some 174 for irregularities, licences of 14 have been cancelled, licences of 75 have been suspended and warning notices issued to 78 such centres.

The bench asked the Centre to furnish a status report regarding show cause notices issued to PUC centres and directed the Environment Pollution Control Authority (EPCA) to inspect all 962 PUC centers and submit the report about their functioning.

The Centre informed the court that consultations among all stakeholders is being done regarding banning of petcoke and furnace oil as industrial fuel in Delhi-NCR region.

The SG said reports have been sought from Council of Scientific & Industrial Research (CSIR), National Physical Laboratory, Ministry of Petroleum and Natural Gas, The Energy and Resource Institute (TERI) and industrial houses with regard to banning of the fuel.

"Report has been sought from various stakeholders and meeting among them is scheduled Wednesday on the issue of banning of petcoke and furnace oil. We need some deliberations among them as industries which are reliant on such fuels needs to adopt some alternatives and government has to issue notification in this regard," Kumar said.

The apex court asked the Centre to file the status report with regard to banning of petcoke and furnace oil on the next date of hearing on February 6.

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## **Delhi air pollution: Why graded action is a good idea, but tough to implement**

*Date: 18-Jan-2017 Source: The Indian Express*



huge challenges of implementation.

What does a 'graded response' to air pollution mean?

The intention is to take progressively strict steps even before an emergency is reached. But it will require coordination among at least 16 agencies.

The union Environment Ministry last week notified a 'Graded Response Action Plan' against air pollution for Delhi and the National Capital Region. The plan puts governments under the lens and holds out the promise of improvement in air quality, if followed properly. But it also faces

A graded response lays down stratified actions that are required to be taken as and when the concentration of pollutants, in this case particulate matter, reaches a certain level.

At the level of 100 microgrammes per cubic metre of PM 2.5, for example, mechanised sweeping and water-sprinkling along roads has to start.

Traffic police personnel have to ensure smooth flow of traffic, and all pollution control measures that are already in place — such as stopping landfill fires, and enforcing Pollution Under Control (PUC) norms and a ban on firecrackers — have to be imposed strictly.

According to a Central Pollution Control Committee (CPCB) report, the average PM 2.5 level in Delhi between May 2015 and March 2016 was around 105  $\mu\text{g}/\text{m}^3$ .

The response will change as pollutant levels increase. In January 2016, the average PM 2.5 concentration was 211  $\mu\text{g}/\text{m}^3$ , with concentrations crossing 300  $\mu\text{g}/\text{m}^3$  on a few days. If this level persists for more than 48 hours, an emergency will be declared, which means a return of the odd-even road rationing scheme, ban on construction activity, and no entry of trucks in Delhi unless they are carrying essential commodities.

It is in December and January that the measures will mostly be in place, as pollution levels are the highest then.

The actions under the graded response plan are cumulative in nature.

The plan was prepared by the Supreme Court-mandated Environment Pollution Control Authority (EPCA), which held meetings with stakeholders from all states over several months.

How will the system work practically?

The concentration of pollutants will be communicated to EPCA by a task force that will primarily comprise officials from the respective pollution control boards and India Meteorological Department. This will be an average for the entire city.

The job of ensuring implementation of the action plan will be EPCA's, which will delegate the responsibility to the concerned departments. According to EPCA's report, at least 16 agencies will have to work together to implement the various parts of the plan.

These include the municipal corporations of all NCR towns, the traffic police, police, transport departments, Delhi Metro Rail Corporation, Delhi Transport Corporation, Resident Welfare Associations, Public Works Departments and Central Public Works Department, Chief Controller of Explosives, and the Petroleum and Explosives Safety Organisation. Each body has been set a task that it will have to carry out when EPCA asks it to, based on the concentration of pollutants.

What are the challenges in implementing the plan?

A large number of agencies, from different states, will have to work together — this in itself is a huge challenge. That a coordination agency — EPCA — has been appointed is the silver lining.

Some agencies have already pointed out problems in implementing the plan. During an air quality emergency, for example, odd-even has to be imposed. The Delhi government has, however, stated that it will be very difficult to implement the scheme without a notice of at least a week, so that alternative arrangements for public transport can be made and an awareness drive launched.

The municipal corporations, which have to hike parking rates by 3-4 times if the air quality is very poor, have to hold an elaborate meeting each time they change these rates.

A system will have to be devised, experts say, to smooth out these problems. The next month is expected to see a flurry of meetings involving all concerned agencies, especially pollution control authorities and state governments.

But what was the need to devise such a complex system?

According to EPCA officials, the idea is to put in place graded response actions in a way that the emergency level is never reached. The plan focuses on taking progressively tougher actions as pollution crosses each level, without waiting to impose strict measures when the emergency situation has already been reached.

During the first week of November 2016 — post Diwali — pollution levels were so high that several actions were taken simultaneously, including stopping construction, restricting the entry of trucks into Delhi, and shutting the Badarpur power plant.

Experts say that such knee-jerk reactions will not be required if the graded plan is followed. There is also a lot of stress on the strict implementation of existing rules, such as controlling crop-burning, open burning and landfill fires, implementing PUC norms and traffic rules, stopping the spread of fly ash, and regulating brick kilns.

Has such a system been tried elsewhere?

Beijing and Paris, most notably, have implemented graded action plans over the past few years. Paris recently implemented the odd-even road rationing scheme when PM 2.5 levels crossed 95 µg/m<sup>3</sup>. It also made public transport free to encourage people to leave their vehicles at home.

Several Chinese cities have a road rationing scheme when pollution reaches severe levels. They also shut schools and industries when particulate matter levels stay higher than around 300 µg/m<sup>3</sup> for more than two days in a row, and a Red Alert is triggered.

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## **'Very Serious' Air Pollution, Urgent Steps Needed: Supreme Court**

*Date: 18-Jan-2017 Source: NDTV*

On Tuesday, the Supreme Court expressed concern over the increasing air pollution in Delhi saying it was a "very serious problem" and solutions need to be found urgently.



A bench of Justice M.B. Lokur and Justice P.C. Pant said that some victims of air pollution suffer due to inefficient systems and non-implementation of norms. "This pollution problem is very serious. If you talk for years for a solution, then it is a problem," said the bench after it was told by amicus curiae and senior advocate Harish Salve that there was a need to ensure 100 per cent compliance of Pollution Under Control (PUC) Certificates and linking them with the insurance

of vehicles done every year.

The bench asked Solicitor General Ranjit Kumar, appearing for the Central government, to specify the number of PUC centres in Delhi, and was told that there are 962 such centres in the capital with each of them inspecting around 5,000 vehicles every three months. Show cause notices have also been issued to some 174 centres for irregularities and licences of 14 centres have been cancelled, he said, adding that licences of 75 centres have been suspended and warning notices issued to 78 such centres, Kumar told the bench.

Hearing this, the court asked the Central government to file a status report regarding show cause notices issued to PUC centres. It also directed the Environment Pollution Control Authority (EPCA) to inspect all 962 PUC centers and submit the report about their functioning. After the bench was informed that consultations among all stakeholders is being done regarding banning of petcoke and furnace oil as industrial fuel in Delhi-NCR region, it asked the government to file the status report in this regard before the next date of hearing on February 6. The bench also sought from Centre an Action Taken Report on setting up of real time Air Quality Monitoring Centres in Delhi-NCR region in compliance with its earlier order.

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## **Novel solar-powered bicycle to combat air pollution**

*Date: 19-Jan-2017 Source: The Indian Express*

Scientists have designed a new solar-assisted bicycle maybe a low cost, eco-friendly alternative to two wheelers which may release early next year.



In an effort to reduce air pollution due to vehicular emissions in the country, scientists have designed a new solar-assisted bicycle that may prove to be a low-cost, eco-friendly alternative to two wheeler motor vehicles, and may hit the market by next year.

The bicycles, which can switch between the solar energy powered motor and the pedals, may cost

around 12,000 to 15,000 rupees, researchers said. India was the sixth largest motor vehicle manufacturer in 2014-15, producing a record 23.4 million vehicles in the period, they said.

Two wheeler production reached 18.5 million units in the same year. The growth of vehicles has doubled in last two decades, and they have become the major source of pollution in urban India.

The major air pollutants emitted from vehicles are carbon monoxide (CO), nitrogen oxides (NOx) and particulate matter (PM). Increasing air pollution is not only affecting the environment, it also has adverse health effects like lung cancer, cardiovascular mortality, leading to 10 per cent deaths in the country per annum according to estimates.

“To overcome this problem, an effort is being made for developing an eco-friendly vehicle to reduce pollution in India,” said S A Puviyarasu, from Dr N G P Institute of Technology, Anna University in Tamil Nadu.

“If we use solar assisted bicycle, we can reduce overall 60 per cent of all vehicle pollution in our country,” Puviyarasu told PTI. The design consists of brushless DC motor mounted on the front wheel of the bicycle, an electric throttle for varying the speed of the bicycle, and a lead acid battery that stores solar energy.

“A solar panel is mounted on the bicycle carrier. We can use solar panels of any specification, and depending upon the specification of solar panel, energy is produced,” Puviyarasu said.

When the power supply is given to the hub motor from solar panel unit, the bicycle wheels rotate to move. The rider can choose between the motor and the pedals, or even use both at the same time.

The bicycle can be customised according to the needs of the user, Puviyarasu said. For example, if users are looking for a bicycle with speeds of about 80 km/hr, the solar panel specification and hub motor power can be adjusted accordingly to suit people’s needs. “My plan is to implement this bicycle soon. We can expect these type of bicycles by the year 2018 in India,” Puviyarasu said.

The research was published in the Indian Journal of Science and Technology.

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## Traffic police face the brunt of rising air pollution

*Date: 21-Jan-2017 Source: The Hindu*



The city’s traffic police, faced with the task of managing over 65 lakh vehicles, is facing the brunt of rising air pollution. The result is an uptick in instances of lung-related problems among traffic police personnel.

A pulmonary function test conducted on 235 traffic policemen in Bengaluru has revealed that 31% of those surveyed had reduced lung function. A total

of 20% had some form of respiratory system problems. The results will be submitted to the traffic police, which has a strength of 2,700 personnel.

The report, compiled by Mangaluru-based Anti Pollution Drive (APD) Foundation and Eureka Forbes, puts on record issues that traffic policemen have been complaining of for a long time.

Forced to stand at junctions that see some of the worst traffic jams in the country, the lack of proper pollution control enforcement for vehicles makes an already bad situation worse.

“We work at junctions for more than eight hours daily as thousands of vehicles pass by. Trucks and buses are the worst as they emit black smoke. Wheezing or coughing is very common among my colleagues,” said a constable stationed at Minerva Circle junction.

According to the report, 166 policemen complained of various associated symptoms including cough, blocked nose, watering of eyes, breathlessness, wheezing and chest tightness.

“Our target is to screen at least 80% of the traffic policemen to assess the actual impact,” said Abdullah A. Rehman, founder, APD Foundation.

According to doctors, these symptoms are more pronounced among traffic police personnel, when compared to residents in Bengaluru.

“This is much higher than what was found in the general population in a previous study that looked at the epidemiology of asthma, respiratory symptoms and chronic Bronchitis in adults,” said Priya Ramachandra, Department of Pulmonary Medicine, St. John’s Medical College.

She added that other factors like smoking as well as family history could also contribute to lung problems.

“Long-term effects include worsening of cough or breathlessness or Chronic Obstructive Pulmonary Disease (COPD),” he said.

As many as nine policemen were diagnosed with obstructive lung function, a form of COPD. Suggestions on how the situation can be mitigated will be submitted to the traffic police.

“The police is committed to the well-being of our staff and will look at the recommendations made. If cost-effective measures can be put into place, we will certainly consider them,” said R. Hitendra, Additional Commissioner of Police (Traffic).

‘More efforts needed to help policepersons’

Recognising the need to protect traffic policemen from the harmful effects of air pollution, the State government has instituted measures to combat health problems afflicting personnel.

But experts argue that there should be more effort to help policemen do their job effectively.

Currently, policemen are subject to a health check-up once a year. This helps highlight issues with lung function and associated disorders such as allergies and infections.



“We are also holding several check-up camps and rotate our staff regularly from traffic duties to other police work,” said R. Hithendra, Additional Commissioner of Police (Traffic).

The effects of air pollution from vehicles as well as dust and industrial pollutants are not restricted to policemen on the ground and can even affect those inside police stations, officers said.

Stations located close to major traffic junctions are equally vulnerable. “Look at Cubbon Park and Halasuru Gate station. Both these buildings are at the centre of major junctions,” a senior officer pointed out.

Masks can be ineffective

Masks have also been distributed to policemen but many prefer not to wear them as they cannot blow their whistles at violators. “We have been issuing masks to our staff. They have been sensitised about the importance of wearing them as well,” Mr. Hitendra added.

But experts say that these masks, without a replacement of filters or regular cleaning of masks can actually make the situation worse.

“If the masks are not kept clean or if the filters are not changed regularly, issues like skin infection or other infections can occur. Besides, masks need to be made compulsory with orders being issued for every traffic policeman to wear them,” said M.N. Sreehari, a traffic expert.

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## Bringing a breath of fresh air to the UK’s polluted cities

*Date: 22-Jan-2017 Source: The Guardian*



Featuring a sturdy leather head-strap and mask, two large tubes and a transparent backpack containing a small potted plant, designer Chih Chiu’s response to crowded, polluted cities is stark.

“My initial idea was to separate an individual from the public space,” he says.

Titled *Voyage on the Planet* and originally created by Chiu for his BA final project in China

in 2013, the work is set to take to the streets in *Space to Breathe*, a two-day exhibition based at Somerset House, central London, that is hoping to propel the issue of air pollution and public health into the limelight.

Kitting out visitors with the apparatus and taking them on to the Strand, Chiu, now a joint student at the Royal College of Art and Imperial College, hopes the sight of the people donning the otherworldly masks will shake the city out of its complacency.

“When all of us are sharing this polluted air, but none of us has a reaction to it, we feel nothing [is] really seriously wrong,” he says. “But when people start to have a reaction to the polluted air, like wearing this [mask], we start to [pay] attention.”

It is time we did. Amid a growing crisis in cities around the world, air pollution in parts of London smashed through the annual limit in the first week of this year. And with poor air quality linked to dementia, heart attacks and strokes, it is taking its toll on public health.

“What people really struggle with is the dislocation in time,” says Ian Mudway, lecturer in respiratory toxicology from the environmental research group at King’s College London. “The exposures you have now could produce effects in 20, 30, 40 years’ time,” he adds, pointing out that air pollution is estimated to cause around 40,000 premature deaths a year in the UK alone.

A collaboration between curators Shrinking Space, scientists from the environmental research group at King’s College London and Cape Farewell, an organisation that pioneers the use of art to promote cultural changes to tackle climate change, Space to Breathe is an energetic mix of art, science and entertainment.

Among the weekend’s highlights, which includes a DJ set by former Pulp frontman, Jarvis Cocker, visitors will be able to don virtual reality headsets to take a tour around the Strand with the project Energy Renaissance. A 360° video, the experience explores how the area could be transformed through interventions ranging from tree planting to urban wind turbines and zero-emission buses.

Taking the ideas further, the weekend will encompass a set of panel discussions, with representatives from the Greater London Authority, the British Lung Foundation and Tidal Lagoon Power, the company behind the mooted Swansea Bay project, to share their views on the air pollution crisis and how to tackle it while, perhaps more creatively, a pollution-removing bench designed by Airlabs will be exhibited on the river terrace.

Also on show is a specially commissioned installation by sound artist Wesley Goatley based on six months’ worth of air pollution data gathered by instruments in the area surrounding Somerset House. The aim, says Goatley, is to offer visitors an innovative way to explore pollution data, while pushing back against the perception that such figures and statistics are only for specialists.

Entitled Breathing Mephitic Air, the experience involves a 360° soundscape with three different components of air pollution – nitrogen dioxide, nitric oxide and particles known as PM10s – depicted by different sounds. These sounds, the rush of traffic, a catalytic converter and the sound of a refinery are themselves linked through their relationship to a metal intricately involved in the problem of air pollution: platinum.

The sounds, notes Goatley, rise and fall in volume with the levels of the pollutant they represent, while the apparent direction of sound mimics the direction and speed of the wind when the data was recorded. “There is a very firm connection between what you hear and what the data says – you can kind of read the data through the sound,” he says, adding that the data is also depicted dynamically through a visual display.



But Space to Breathe is not only about raising awareness of air pollution: it's also an attempt to put the public back in control. Scientists will be offering visitors the chance to try out some of the latest real-time pollution-monitoring technology, as well as revealing how web-based apps can be used to plan journeys and dodge pollution hotspots.

"We will get people not just to think about what the pollution is on the day, but to actually have a perception of what their long-term exposures are likely to be," says Mudway. The hope, he adds, is that the experience will galvanise visitors into action, from the way they navigate cities to the cars they choose to drive, and even encourage them to lobby those in power for change.

Andy Franzkowiak, a creative producer of the exhibition from Shrinking Space, agrees. "Every single person can make a difference," he says.

Space to Breathe takes place at Somerset House, London WC2, on 28 and 29 January

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## Delhi govt students hit the roads to assess air quality

*Date: 22-Jan-2017 Source: Hindustan Times*



A group of thirty middle school students hit the roads of south Delhi's Vasant Vihar with portable air quality monitors and sensors, recording the pollution levels and assessing the causes.

Clean Asia in partnership with the US embassy and Delhi government conducted a pollution sensitisation programme at Vasant Vihar's Sarvodaya Vidyalaya.

The two-day workshop, which started on Wednesday, aimed at creating awareness among students on the sources of pollution in the city and how it can affect different categories of people. On Thursday, the students walked through the CBI colony, and took a round of the Priya shopping complex and saw how the levels of particulate matter fluctuated at different spots.

"We learnt how small actions such as not switching off the ignition of our cars in traffic jams and throwing garbage in the open can be harmful for us and people around us," said Class-6 student Rashi Maurya.

This was the last leg of the workshops, which started in December, and covered two other schools—Bharatiya Vidya Bhavan in Kasturba Gandhi Marg and Sarvodaya Vidyalaya in Mansarovar Garden.

On day-1, students were told about the different sources of pollution and the pollutants which are likely to dominate in an area because of the surroundings. The selected students also conducted a neighbourhood walk and noted how factors such as open cooking, traffic movement and construction activities can contribute to pollution levels.

“We have never done such workshops with such young children but it was amazing to see how interested and receptive they were. At the end, we also gave projects to children and the results of these will be submitted to the Delhi government and the US embassy in February,” said air quality researcher Sohana Debrama, who conducted the workshop.

The students said they wanted to educate other students, parents and neighbours on how they can reduce pollution emissions. Principal Kavita Rana said the school will encourage students in spreading awareness.

“We have offered Clean Air Asia assurance that our students can become ambassadors in helping them spread the awareness for the cause. We were thinking they could in fact be accompanied by teachers and can address commuters at traffic signals and tell them about the effects of idling,” said Rana.

Idling is a practice of not switching off the ignition of a vehicle when it is not moving.

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## **Fog fuels spike in Gurgaon’s air pollution level**

*Date: 23-Jan-2017 Source: The Times of India*

GURGAON: Air pollution shot up to 'unhealthy' level on Sunday as the mercury took a slight dip and fog covered large parts of the city, hiding the sun. The minimum temperature on Sunday was recorded at 9 degrees Celsius, down from 9.6 degrees Celsius on Saturday. Met office has forecast a comparatively brighter and warmer Monday.

However, the Met department has predicted light showers on Wednesday and Thursday owing to winds from northern region, which may again bring the temperature down. The data available with the Haryana State Pollution Control Board (HSPCB) suggested that the concentration of particulate matter (PM) 2.5 on Sunday was at a level that was five times higher than what is prescribed as safe by World Health Organisation (WHO).

The highest value of PM<sub>2.5</sub> was recorded at 279.97g/m<sup>3</sup> on Sunday, a sudden rise from what was recorded during the past two days. The highest value of PM<sub>2.5</sub> was at 136.98 g/m<sup>3</sup> on Saturday and 114.07g/m<sup>3</sup> on Friday.

Air Quality Index (AQI), which touched the 165-mark during the day, also touched the 'unhealthy' level.

The levels of carbon monoxide (CO) were recorded between 0.55mg/m<sup>3</sup> and 2mg/m<sup>3</sup> on Sunday and Saturday, respectively, considerably low in comparison with the 70 mark reported earlier this month. As per WHO, the poisonous gas's concentration should not cross the 4-mg/m<sup>3</sup> level in the atmosphere.

HSPCB claimed that a slight dip in temperature caused the pollution level to worsen. "Sunday was not as bad as days in last week in terms of pollution. A slight increase in the level of particulate matter has been reported owing to a dip in temperature," an official of the state pollution body said.

"A drop in the mercury level and an increase in fog generally reduce wind speed, leaving particulate matter trapped in the lower atmospheric level," he said.

Experts said the rise in air pollution vindicated the Supreme Court's warning issued recently, and demanded implementation of all emergency measures as soon as the PM2.5 level touched the 300-mark.

"The authorities simply blame weather conditions for the increase in PM2.5 concentration.

However, nothing has been done to implement pollution control measures, to stop waste burning in the open and dust swirls caused by mindless construction activities in the city," said Vivek Kamboj, an environmentalist from Haryali (an NGO).

Some experts also raised concern over non-reporting of PM10 in the city. "Gurgaon is expanding day by day, but the city has only one air monitoring station. Besides, the station is not capable of giving reading of both PM2.5 and PM10 simultaneously," said Col. Suresh Singh, a resident of Sector 22 and a retired professor of environmental sciences.

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## Breathing death: Air pollution fix missing in poll rhetoric, motorists fume

*Date: 23-Jan-2017 Source: The Indian Express*



Voters, especially those residing in suburbs of Mumbai, say it's time politicians accord priority to this burning problem that claims several lives each year

Mumbai, the country's richest municipality, goes to polls a month from now. Political parties have already put forth many issues, including demonetisation and development, to woo voters. But the burning problem of rising air pollution,

which causes several deaths each year, is so far missing from the election rhetoric. And voters, especially those residing in the suburbs of Mumbai, say it's time politicians accord priority to this issue.

A recent study, conducted by the National Environment Engineering Research Institute (NEERI) and the Indian Institute of Technology (Bombay), has found that air pollution has reached alarming levels near the city's traffic intersections. The study, which surveyed 33 busy intersections in the commercial capital, says these junctions witness air contamination six to 27 times above the permissible levels. This, in turn, impacts the city's overall air pollution index.

The situation is grim especially in the suburbs, which account for three quarters of the traffic intersections that were surveyed. In fact, 15 intersections are situated in the more populated western suburbs.

Rohan Sharma, an MBA student, who resides in Goregaon's Bangur Nagar, claimed that besides increasing the time he takes to travel to his college in Vile Parle, the "never-ending" road construction menace has worsened air pollution levels. "The work on new Metro lines has only compounded matters. Two months ago, I was forced to purchase a mask to breathe better while riding my motorcycle... it has made a difference," said Sharma.

Kandivli resident Aliakbar Attarwala said over the past two years, the condition has deteriorated on the Western Express Highway. “I wear a scarf to avoid breathing in the dust. There are dumpers moving on that road, spewing dust into the air. The Metro construction will further worsen my journey,” added Attarwala, who travels between Kandivli and his Andheri office.

“The Dindoshi (Goregaon) junction is the worst. There is an engineering error with the bridge that slows northbound traffic but, for a bike rider around Oberoi mall, it is very unbearable. It is time politicians take up the pollution issue and fix it,” said Attarwala.

According to the study, the traffic junction outside the Oberoi mall near Dindoshi, which is perennially clogged, is the most polluted. The particulate matter (PM10) — one of the pollution indicators — count for this junction was found to be 2,709.25  $\mu\text{g}/\text{m}^3$  against the permissible 100  $\mu\text{g}/\text{m}^3$ . For 19 of the 33 surveyed junctions, the count was at least 10 times the permissible level. The lowest PM10 count recorded by the survey was near Dadar’s Siddhivinayak temple (596  $\mu\text{g}/\text{m}^3$ ), which, too, was nearly six times above the permissible limit.

In 2015, the city’s first-ever dust map, which was drawn up by three city-based professors, too had identified the Western Express Highway’s stretch in Borivli as the most polluted. During this mapping exercise, Marine Drive was found to be the least dust-polluted region.

“While political parties often promote new infrastructure projects as a means to improve the quality of life in the city, no one is pushing measures to overcome the bad air problem. How can there be an improvement in the city’s overall living index if the air quality does not improve,” asked Rajesh Tukde, a Dadar resident.

Recently, Paresh Vaishnav, a professional actor, who resides in Evershine Nagar of Malad, purchased a car and sold his motorcycle in his effort to avoid air pollution. Goregaon’s Varsha Nayar echoed his views, “I learnt to drive a car because during evening hours that is the only way to protect oneself from the pollution and the constant honking,” she said. Nayar lives in a building adjacent to the recently opened Ram Mandir railway station on the western line. “There was intense politics over naming the station, why can’t there be similar intensity on issues that directly affect the locals on an everyday basis,” she said.

Sion resident Akash Kamble has another cost-efficient trick. “I know it is time-consuming but I use the BEST buses to travel anywhere in the city. That keeps me above the line of vehicle exhausts. With all roads dug up, it is difficult to walk. I have not heard any politician in the city take it up as an agenda,” said Kamble, who is a freestyle dancer and performs in various studios across the city.

Even in the eastern suburbs, the air quality is poor because of small fires in the Deonar dumping ground and movement of heavy vehicles. Sanjay Nargarkar, a Baingonwadi resident, said while dropping his daughter to school, he covers her nose with two handkerchiefs and is afraid she might get asthma like most children in the area.

## THE AIR POLLUTION CHART

PM10 is an important index used to measure air pollution levels. Basically, it is the extent of the presence of large particulate matter such as road dust, exhaust from vehicles, etc., in the air. While the permissible

limit for PM10 is 100  $\mu\text{g}/\text{m}^3$ , the NEERI/IIT study found that the pollution levels at traffic junctions were worse. The ones to fare the worst were:

Oberoi mall, Dindoshi: 2,709  $\mu\text{g}/\text{m}^3$

Borivli station (E): 2,271  $\mu\text{g}/\text{m}^3$

Makhurd Link road junction: 1,984  $\mu\text{g}/\text{m}^3$

Borivli station (W): 1,823  $\mu\text{g}/\text{m}^3$

Dahisar check naka: 1,670.32  $\mu\text{g}/\text{m}^3$

Dharavi junction: 1,276  $\mu\text{g}/\text{m}^3$

Mith Chowki, Malad (W): 1,146  $\mu\text{g}/\text{m}^3$

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## Large parts of NI record high levels of air pollution

*Date: 24-Jan-2017 Source: Belfast Telegraph*



The high levels of pollution are believed to be the result of local sources such as road vehicles and home heating emissions combined with cold, calm weather conditions in which pollutants are not dispersed'

Many parts of the UK have been suffering from very high or high levels of air pollution in the still, cold weather.

The Department of Agriculture, Environment and Rural Affairs (DAERA) said high pollution levels were being monitored in Armagh, Belfast, Londonderry and Newry yesterday.

Moderate levels were recorded in some other urban centres across Northern Ireland. However, air quality was expected to improve from last night and into today as winds strengthen.

During periods of high pollution the symptoms of people with lung or heart disease may worsen. Healthy people are unlikely to experience any ill effects.

The high levels of pollution are believed to be the result of local sources such as road vehicles and home heating emissions combined with cold, calm weather conditions in which pollutants are not dispersed.

In very bad conditions, people are advised to limit exercise outside, while those with lung and heart problems and older people should avoid strenuous activity.

Where there is high air pollution, adults and children with lung problems and adults with heart problems, as well as older people, should reduce the amount of strenuous exercise they do.

All regions of England except for the North East suffered high levels of air pollution yesterday, as well as South Wales.

The Green Party's Baroness Jones accused the Government of not doing enough to warn people elsewhere in the country of the issue.

And she said: "When air pollution episodes are capable of triggering an extra 300 deaths as well as hundreds of emergency admissions to hospitals around the country, I think that we have to consider emergency measures to discourage driving, encourage a switch away from diesel and promote less polluting alternatives."

NI pollution updates are available at [www.airqualityni.co.uk](http://www.airqualityni.co.uk) and DAERA's freephone helpline (0800 556 677)

Belfast Telegraph

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## **Poor Hospital Air Quality for Patients and Employees**

*Date: 25-Jan-2017 Source: Yahoo Finance*

Hospital Air Quality that is Compromised by Pollutants can Lead to Patient Infections and Negatively Affect Hospital Employees says Hospital Air Filtration Experts at Camfil

RIVERDALE, NJ / ACCESSWIRE / January 25, 2017 / There is no overstating the importance of hospital air quality, because these facilities are supposed to be sterile and clean, enabling patients to recover from illnesses.

But hospitals that do not maintain an effective air filtration strategy may find that airborne contaminants become a health issue within a facility that is intended to protect people from getting sick.

With outdoor air pollution becoming worse every year, maintaining good indoor air quality at hospitals has become even more challenging, but no less important.

### **Sources of Contamination**

Multiple studies have shown that in addition to patient-borne illnesses and chemicals used to clean hospitals, one of the largest sources of airborne pollutants in a hospital is outside air.

In fact, research by the U.S. Environmental Protection Agency (EPA) has found that in many areas, indoor air quality is 10 times worse than the quality of outdoor air.

Vehicle exhaust and diesel fuel from generators designed to prevent power failures at hospitals are two of the biggest sources of indoor contaminants from outdoor pollution.

What makes the problem worse is that many urban hospitals which were built in the 1950s or before have not undergone the kind of upgrades in their ventilation systems that would mitigate the amount of bad outdoor air that circulates through the inside of a hospital.

### **Effect On Hospital Staff Productivity**

Hospital air quality isn't just an environmental problem, though, it has actual human costs as well.

A study by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) found that indoor air quality that was improved by effective ventilation reduced acute respiratory illnesses (ARIs) by 23 percent to 76 percent.

Furthermore, hospitals are already plagued by a number of airborne viruses, bacteria, and contaminants which results in a statistically higher number of ARIs than in occupations where these pollutants are not as concentrated.

Hospitals with poor or ineffective ventilation systems are at a higher risk of incubating illnesses caused by airborne contaminants, and these illnesses will have a debilitating effect on the productivity of hospital staff who will either have to work at reduced capacity, or miss work entirely due to respiratory illnesses.

#### Effect On the Health of Patients

Moreover, the level of pollutants may also affect patients at hospitals with poor air quality.

There's an irony in the fact that doctors take the Hippocratic Oath, which states: "First do no harm."

The irony is that doctors can't even guarantee that their patients are safe in a hospital, which is the one place in the world that patients should feel that their health is being made better, not worse.

That's the dilemma facing many hospitals that are wrestling with the issue of airborne contaminants.

Another irony is that some patients are the cause of these contaminants, making clean air solutions even more challenging.

Patients who suffer from diseases may be a source of contaminants that can settle on surfaces or clothing and become airborne, thus affecting other people in the facility.

But patients are also at the mercy of hospital cleaning staffs that often use high-grade chemicals to clean rooms and surfaces.

These chemicals may create toxic gases that become airborne and can affect the well-being of patients, especially those with compromised immune systems.

All of these air quality maladies can be mitigated through the proper selection of air filters that maintain required levels of hospital air quality and can significantly reduce hospital expenditures by reducing energy use.

#### About Camfil USA

Camfil's commitment to energy savings is reflected in the design of its air filters that cut installation costs in half and also provide savings on hospital waste disposal services.

For nearly 50 years, Camfil has been an industry leader in medical facility air filtration, providing clean air solutions to hospitals and other health care facilities, and will continue to offer the most cutting-edge air filtration systems on the planet.

## January air quality largely poor in Salmon

*Date: 26-Jan-2017 Source: Post Register*

SALMON — The city and surrounding area saw more January days in which the air was polluted by particles tied to residential wood burning than days when air quality was considered good or moderate, according to data from the Idaho Department of Environmental Quality.

Particle pollution, said by the American Lung Association to increase the risk of heart disease, lung cancer and respiratory conditions like asthma, coincided this month in Salmon with temperature inversions in which cool air at the surface was trapped below a layer of warm air.

The weather phenomenon plays a role in impaired air in Idaho valley communities such as Salmon, said Rensay Owen, DEQ's regional manager for air quality, trapping pollutants near valley floors instead of dispersing them.

The majority of the 16 days in January (through Jan. 19) that triggered air pollution alerts showed levels considered unhealthy for sensitive groups such as people over 65, infants and children and people with conditions such as asthma, heart disease or diabetes.

Short-term symptoms tied to particle pollution include irritated eyes and nose, coughing and shortness of breath. Year-round exposure has been linked to an increased risk of lung cancer, slowed lung function growth in children and teens, development of asthma in children up to age 14 and heightened risk of death from cardiovascular disease, according to the American Lung Association.

The number of polluted days the Salmon area has experienced so far this year comes as DEQ is reviewing applications from volunteers wishing to serve on a citizen advisory committee tied to air quality. The committee is expected to meet for the first time next month, Owen said.

The agency last year proposed establishing the committee to address daily air pollution amounts in the Salmon area beginning in 2012 that were above national standards for particulate matter. Sources of dirty air in Lemhi County include burning of wood in residential stoves and smoke from wildfires, prescribed burns and open burning.

The advisory group is to come up with measures that could be taken to reduce poor air in a show of good faith aimed at federal regulators, indicating the community was voluntarily seeking to achieve air quality targets rather than be forced to do so, Owen has said.

A recent report by the American Lung Association on air quality in U.S. communities showed Lemhi County received a failing grade.

The Salmon area is not alone in seeking to combat pollution that during cold winters mostly stems from residential woodstoves. The regional DEQ office in Coeur d'Alene earlier this week sought to alert residents that a predicted temperature inversion in that region would likely result in degraded air quality tied to wood smoke.



The agency said steps that people can take include burning the right material such as clean, dry wood, pellets or manufactured logs. DEQ suggested people avoid overloading a stove or engaging in a practice known as banking to keep a fire burning overnight, producing more smoke and wasting wood.

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## **NASA airborne mission chases air pollution through the seasons**

*Date: 27-Jan-2017 Source: Phys Org*



Earth is a planet that breathes with the seasons. In winter months atmospheric gases and air pollution accumulate, waiting dormant until spring and summer bring sunshine and plant-life, sparking transformations that change the make-up of gases in the atmosphere. A NASA airborne mission will take a world-wide survey of these seasonal transformations by flying from the heart of winter in the Northern Hemisphere, down into

the sunny summer in the Southern Hemisphere and back again.

This will be the second atmospheric survey made by the Atmospheric Tomography, or ATom mission, which first flew in July and August, 2016. The science team will be measuring more than 200 gases as well as airborne particles aboard NASA's DC-8 flying laboratory. In particular, they are interested in greenhouse gas pollutants such as methane and tropospheric ozone, and poorly understood particulates like black carbon. How these pollutants interact and move around the planet will help scientists better understand air pollution and climate change now and in the future.

"We're going to the northern polar regions at the very best time," said Steven Wofsy, an atmospheric scientist at Harvard University in Cambridge, Massachusetts, and ATom's project scientist.

This winter, they expect to observe the accumulation of pollutants from Europe, the United States, Canada, northern China, and Russia, which get trapped in the cold dome of the wintertime circulation until spring.

"We'll be watching this chemistry using instrumentation that nobody has had before, and we will really be beginning to understand what happens as this stuff builds up," Wofsy said. The winter accumulation of gases sets the stage for the chemical processes that occur in the atmosphere when sunlight returns to the Arctic.

Sunlight is energy, and in the same way that it supports life on Earth through plants' photosynthesis, it also drives the chemical system in the atmosphere. Incoming ultraviolet radiation provides high energy photons that can tear apart gas molecules, transforming them into new highly-reactive fragments. One of ATom's science goals is to understand these photochemical processes which help remove pollutants and greenhouse gases from the atmosphere.

These photochemical processes will be in full swing as the mission flies from Alaska down the Pacific Ocean to New Zealand and the Southern Hemisphere summer.

"We're heading into the southern hemisphere in prime time," said Michael Prather, an atmospheric scientist at University of California Irvine and ATom's deputy project scientist. "This is when sunlight's down there. It's the biggest photochemical activity. It's the biggest biological activity of the southern oceans."

Because the Southern Hemisphere holds fewer land masses and less of the world's population, the southern atmosphere is generally cleaner than that of the Northern Hemisphere. According to Prather, this means it will potentially be easier to observe gases and particles, particularly from marine plants, that react with gases already in the atmosphere. Ocean-related reactions are currently poorly understood and are one of the main reasons ATom is making its survey.

"To get the detail we need, in an attempt to better understand the atmosphere, we need to survey as much of it as possible so we will be flying vertical profiles through the atmosphere from 500 feet above the ocean surface up to 35,000 feet, where commercial airliners fly," said project manager David Jordan of NASA's Ames Research Center in Mountain View, California.

For the around-the-world-journey, NASA's DC-8 aircraft will carry more than 20 scientific instruments that measure both major and minor gases as well as particles. The plane is about the size of a medium-sized commercial airliner and bristles with intake valves to sample the air. It will make a nearly continuous series of gentle descents and ascents in order to capture the most chemically active part of the atmosphere, from the relatively warm humid air above the ocean surface as well as the colder, dry air at its peak altitude of 35,000 feet, and everything in between.

After an initial flight from NASA's Armstrong Flight Research Center in Palmdale, California, to the equator and back, the DC-8 will make nine stops over the course of 28 days, departing from California for the North Pole, then on to the tropics, the Southern Ocean around Antarctica, and across to the southern tip of South America before flying north over the Atlantic ocean toward Greenland, then across the Arctic ocean back to Alaska. The final leg will return the science team to California.

ATom's winter mission will be the second of four deployments that will take place through 2018. It is funded by NASA's Earth Venture program and managed by the Earth Science Project Office at Ames. A team of over 100 people—scientists, engineers, flight crew and staff—across government agencies and universities will be supporting the mission both in the air and from the ground.

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## **Council ‘working to improve air pollution levels’ in village**

*Date: 27-Jan-2017 Source: County Times*

Horsham District Council has said it is ‘working to improve air pollution levels’ after high levels were reported in some areas of the district.

Figures from the Department for Environment, Food and Rural Affairs (Defra) on Monday (January 23) recorded ‘moderate’ to ‘high’ levels of air pollution in Storrington during January.

Horsham District Council says this has been a problem throughout the district for more than 20 years but is working to reduce it.

A spokesman for Horsham District Council said: “Regarding particulate matter (PM10) specifically, the council is working to address this pollutant through measures aimed at reducing emissions from road transport and, in particular, through increasing the uptake of low emission vehicles. All new development in the district is required to have regard to the Planning Advice Document: Air Quality and Emissions Reduction Guidance (published in May 2014), which sets out air quality mitigation/offsetting measures commensurate with its size/predicted impacts.

“The council has also supported the development and maintenance of the regional eV charge point network “Energise” with two points in the district classified as ‘rapid’ - installed in Billingshurst (Six Bells car park) and Storrington (Library car park).”

HDC said these figures relate to a period of cold, still and foggy weather which can lead to higher levels of air pollution.

The spokesman added: “As the air pollution in Storrington is predominantly traffic related it has been important for Horsham District Council to work in partnership with West Sussex County Council as they are the highway authority. Both organisations together with Storrington and Sullington Parish Council have representatives on the Storrington Air Quality Steering Group.

“Horsham District Council has been working to improve air pollution levels throughout the district for some 20 years. The council started monitoring the quality of air in Storrington some 10 years ago.”

West Sussex was one of eight areas to record ‘high’ levels of air pollution including London and eastern England.

Speaking on the nationwide air quality situation, a spokesman for Defra said: “Widespread moderate levels of air pollution are currently being measured across many parts of England, Wales and Scotland, with localised high levels in London and the South East. Levels in Northern Ireland are expected to remain low.

“Pollution is expected to return to low levels over the whole of the UK on Saturday as winds become more westerly and rain sweeps eastwards.

“We are firmly committed to improving the UK’s air quality and cutting harmful emissions.

“That’s why we have committed more than £2billion since 2011 to increase the uptake of ultra-low emissions vehicles, support greener transport schemes and set out how we will improve air quality through a new programme of Clean Air Zones. In addition, we announced a further £290m to support electric vehicles, low emission buses and taxis, and alternative fuels in the Autumn Statement. “We will update our air quality plans in the spring to further improve the nation’s air quality.

## The Observer view on air pollution

*Date: 29-Jan-2017 Source: Pollution Opinion*



The smog in London was not just a local difficulty, it is a problem for the whole country and it is blighting people's lives

It might be tempting to dismiss the air pollution crisis that affected London last week as a piece of local bad luck, an atmospheric misfortune that has little consequence for the rest of the nation. With a stable, blocking anticyclone coming to rest over southern England, a dense slab of freezing air was trapped above the capital. As a consequence,

increasing amounts of nitrogen oxides and soot particles, generated by diesel engines and, to a lesser extent, wood-burning stoves, were held in the air over London until they reached their maximum measurable levels in the atmosphere at 24 sites across the city last Sunday. The result was a bad air day for London.

People with heart and lung disease were cautioned to avoid strenuous exercise while asthma sufferers were warned to use their inhalers more frequently. By contrast, the level of pollution in the rest of the country was considerably lower. The whole business was simply London's tough luck, you might conclude.

Such parochialism would be misplaced, however. London has always been the country's bellwether when it comes to air quality, as the Chartered Institute of Environmental Health has noted. After all, it was the city's deadly pea-soup fogs of the 1950s that forced the government to pass the Clean Air Act 1956, a piece of legislation that limited the burning of coal in cities and brought major benefits to the whole country. The air we breathe today across Britain is markedly fresher and healthier than it was 60 years ago, thanks to the lessons learned in London at the time.

These improvements should not be taken for granted, however. Our air is still under threat, though from a different source. Once it was coal burning. Today emissions from cars, particularly those with diesel engines, account for much of the pollution that affects our air and the hazard affects the whole nation.

However, it is concentrated – to a striking degree – in London because the capital has an economy that is heavily reliant on motorised transport. It also possesses a rapidly increasing population density and, for good measure, has an ageing infrastructure. It is a triple whammy that presents civic leaders with serious headaches when trying to improve London's air. The government has fixed 2025 as the year when London should meet its legal air quality commitments that it agreed with Europe and so reduce its soot particle and nitrogen oxide emissions to acceptable levels. So difficult are the issues facing a city in which delivery vehicles are in constant movement and building sites have pumps and generators in continual use for days on end that most experts doubt if they will succeed until 2030 or even later.

Easing London's air pollution is clearly going to be a tricky business but the task is certainly worth pursuing, not just for the sake of its own citizens but for the nation in general. The argument is

straightforward. If air pollution can successfully be tackled in London, where conditions are worst, then it can be vanquished anywhere else in the country. In other words, if we can clean up London's air, the rest of the nation will have nothing to worry about.

That is why we should take the air pollution problems of our capital seriously and that is why the city's major, Sadiq Khan, is to be congratulated for tackling the issue in a comprehensive manner, in particular by promising to protect London's schools and the city's children from the worst impacts of car exhaust emissions. A range of measures is now being considered to limit emissions in London. These include the introduction of higher parking charges for vehicles with diesel engines, introducing ultra-low-emission zones within the M25 and imposing fines for those who leave engines idling near schools.

As we have noted in our report on city smog, air pollution has no respect for borders. Polluted winds from France and Spain frequently blow into Britain, for example. In turn, our exhaust emissions are often swept towards Denmark, such is the nature of the weather patterns of western Europe. We cannot then be certain we will always be able to curtail air pollution to a fixed minimum. There will always be external forces at play. This is no excuse for inaction, however. These factors merely underscore the importance of Britain doing everything it can to ensure that air pollution is kept to an absolute minimum and in a state that ensures its inhabitants have the best possible opportunity to live healthy lives.

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## What causes London's air pollution, and other smoggy questions

*Date: 30-Jan-2017 Source: City Metric*



I fear my chronic sore throat may be caused by air pollution – but I'm too nervous to ask the GP. I'm not one of the "very sensitive individuals" that this Defra blog says should be concerned. I am not old, pregnant, nor suffering from a pre-existing lung or heart condition. And even if the pollution is giving me gip, I can hardly expect our over-stretched NHS to prescribe a cure for breathing.

But is it time to ditch my press-on-regardless mentality with regard to air quality? On Monday last week, pollution levels in London were so high

that Mayor of London Sadiq Khan issued his first "very high" alert. When levels are this bad, the government's Daily Air Quality Index recommends that even healthy members of the public "reduce physical exertion, particularly outdoors".

On a day to day basis, Defra advises that UK air pollution "is not expected to rise to levels at which people need to make major changes to their habits to avoid exposure".

But London's most recent pollution-peak is not a one off. Brixton Road in Lambeth breached the EU's legal limit of annual exposure to Nitrogen Dioxide (NO<sub>2</sub>) within the first five days of 2017. And the consequences of long-term exposure, even to low level ambient pollution, are not to be sniffed at. The

Royal College of Physicians estimates that outdoor air pollution is a contributing factor in around 40,000 deaths per year. The estimate on the Defra website is 25,000.

So when do the short term effects, such as sore eyes and throat, become symptoms of a chronic health concern? When does an air pollution “episode” become long term exposure?

The short and shocking answer is that if you lived in London for the whole of 2016, then you likely exceeded the limits for long-term exposure to at least one kind of air pollution. According to Timothy Baker, principal analyst at The London Air Quality Network, “the vast majority of London exceeds its long term annual average of Nitrogen Dioxide levels”.

Lawyers from ClientEarth have even taken the government to court over the country’s illegal levels of NO<sub>2</sub> – not just in London, but in 37 out of 43 zones across the UK.

So if you think it’s time to de-smog your knowledge of the subject, here’s what you need to know:

How bad is London, really?

We are used to seeing contemporary images of Beijing’s brown haze or older photos of Britain’s “peasouper” smogs – and, in comparison, London’s recent fog appears a relatively picturesque affair.

But don’t be fooled. According to The Telegraph, at 3pm on Monday 23 January the government’s Air Quality Index hit a peak of 197 micrograms per cubic metre for particulate matter. That’s 190 micrograms higher than the World Health Organisation’s upper safety limit and 7 micrograms higher than notoriously unhealthy Beijing.

What are these pollutants doing to me?

A report published last year by the Royal College of Physicians, argued that the serious effects of long-term exposure to air pollution, even at lower levels, “cannot be ignored”. Cancer, asthma, stroke and heart disease, diabetes, obesity, and dementia are just some of the conditions to which air pollution has been linked. There is even evidence to suggest that it may be damaging your mental health.

Young children are particularly at risk. This passage from the RCP report is particularly chilling: “Children living in highly polluted areas are four times more likely to have reduced lung function in adulthood. Improving air quality for children has been shown to halt and reverse this effect. For older people, living near a busy road speeds up the rate of lung function decline that is associated with ageing.”

You can’t see it. You often can’t smell it. So how do we even know air pollution exists?

The government’s Daily Air Quality Index measures for particle pollutants of size PM2.5 and size PM10: this means that the air contains tiny particles of soot (black carbon), metals and other compounds that are either two and one half microns or less, or ten microns or less, in width. It also measures the levels of the gases Nitrogen Dioxide (NO<sub>2</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Ozone.

DEFRA collects this data from over 300 monitoring sites across the UK, which you can find listed on this interactive map. The most intensive measuring network in the country, however, is run by the London Air

Quality Network at Kings College London. The team here uploads hourly pollution indexes for the capital to their website and apps.

What causes it and how can it be stopped?

Timothy Baker from The London Air Quality Network, says that last Monday's peak was due to a build up of localised fumes, pollution drifting in from the continent, and a period of windless weather that failed to disperse the dirty air.

Some of the localised pollution contained high levels of particles from wood burning fires – possibly from families putting their feet up on a chilly Sunday afternoon. But don't let the temptation to moan about fire-place owners distract you from the most pressing cause of London's pollution problem: the nitrogen dioxide emissions resulting from an increased use of diesel cars.

"Diesel is a lot worse than petrol," says Baker. "Petrol cars over the last twenty years have had their act cleaned up [...] but modern diesel cars are only just meeting the same sort of standards that they should have been meeting ten years ago."

What can I do to protect myself?

Checking the daily air pollution forecasts in your area is a sensible place to start. Then you can decide whether or not to exercise outside, avoid busy roads, or don (as I'm considering) your very own Darth-Vader-style protection mask.

What can be done by others?

There is hope. Last week, Sadiq Khan announced funding for audits that will identify ways London schools can lower their exposure to pollution, while in Paris, authorities responded to pollution peaks by imposing temporary driving restrictions and making public transport free.

But more action is also needed from the government. "The government has consistently failed to deal with air pollution across the UK," says ClientEarth lawyer Anna Heslop. "We get these smogs every winter, so besides the air quality plans which the government has been ordered to improve by the UK High Court, we need action in the very short term, especially in our bigger cities."

In the meantime (cough), I should perhaps take a deep breath and book that GP appointment.

India Bourke is editorial assistant at the New Statesman, where this piece was originally published.

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## **After two-day respite, Delhi's air pollution increases**

*Date: 30-Jan-2017 Source: Business Standard*

After only a two-day respite, Delhi's air pollution worsened due to a surge in harmful pollutants on Monday, especially particulate matters (PM).

The national capital along with adjoining Noida and Gurugram breathed clean air on January 27-28 after almost three months of choking pollutants and smog. The reason for that, according to experts, was the rain from January 25 to 27.

However, the air quality on Monday became "poor" and "very poor" at different stations, according to the data from the Centre's air quality research agency SAFAR and Central Pollution Control Board (CPCB).

The Air Quality Index (AQI) for Delhi on Monday had an index value of 294 units which is labelled "poor", against "moderate" on Saturday and Friday. Index value beyond 300 is "very poor". The air quality on Sunday was however also poor, though less intense.

"We must stop relying on the meteorological influences, like wind speed or the rains. There are lots of things which need to be done, like applying graded system as soon as possible and stopping bio-mass burning in Delhi's neighbouring regions," said Sunit Sharma, a research fellow with TERI.

Sharma quoted an IIT-Kanpur study saying that almost 25 per cent of Delhi's PM2.5 (particles in air with diameter less than 2.5 mm) are caused by bio-mass burning.

The major cause of the drop in air quality on Monday was PM2.5, which rose to alarming levels in some areas including Dhirpur and Pitampura, according to the data obtained from SAFAR.

According to weather forecasters, Delhi may see rain again on February 5 and 6.

"It may rain on February 5 and 6, which would help in bringing down the pollutants in the air," said Mahesh Palawat, Director of private weather forecaster Skymet.

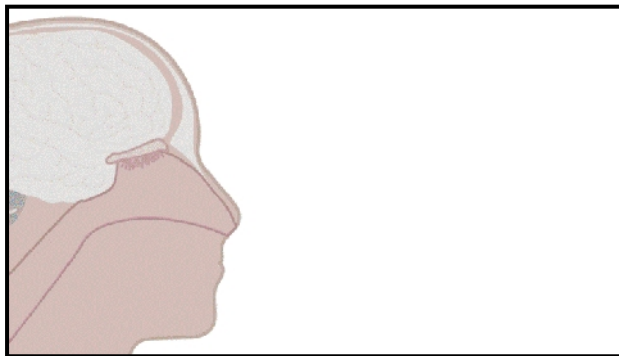
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## Air pollution may lead to dementia in older women

*Date: 31-Jan-2017 Source: USC News*



Tiny particles that pollute the air — the kind that come mainly from power plants and automobiles — may greatly increase the chance of dementia, including dementia caused by Alzheimer's disease, according to USC-led research.

Scientists and engineers found that older women who live in places with fine particulate matter exceeding the U.S. Environmental Protection Agency's standard are 81 percent more at risk for global cognitive decline and 92 percent more likely to develop dementia, including Alzheimer's.



If their findings hold up in the general population, air pollution could be responsible for about 21 percent of dementia cases, according to the study.

“Microscopic particles generated by fossil fuels get into our body directly through the nose into the brain,” said University Professor Caleb Finch at the USC Leonard Davis School of Gerontology and co-senior author of the study. “Cells in the brain treat these particles as invaders and react with inflammatory responses, which over the course of time, appear to exacerbate and promote Alzheimer’s disease.

“Although the link between air pollution and Alzheimer’s disease is a new scientific frontier, we now have evidence that air pollution, like tobacco, is dangerous to the aging brain.”

The adverse effects were stronger in women who had the APOE4 gene, a genetic variation that increases the risk for Alzheimer’s.

“Our study — the first of its kind conducted in the U.S. — provides the inaugural scientific evidence of a critical Alzheimer’s risk gene possibly interacting with air particles to accelerate brain aging,” said Jiu-Chuan Chen, co-senior author of the study and an associate professor of preventive medicine at the Keck School of Medicine of USC. “The experimental data showed that exposure of mice to air particles collected on the edge of USC damaged neurons in the hippocampus, the memory center that is vulnerable to both brain aging and Alzheimer’s disease.”

Their study, published Jan. 31 in the Nature journal Translational Psychiatry, adds to an emerging body of research from around the world that links air pollution to dementia. The offending pollutants — known as PM2.5 — are fine, inhalable particles with diameters 2.5 micrometers or smaller. A human hair is about 70 micrometers in diameter, making it 30 times larger than the largest PM2.5.

The research was a collaboration between USC Davis, the Keck School of Medicine and the USC Viterbi School of Engineering.

#### Combining human data and lab experiments

The researchers analyzed data of 3,647 65- to 79-year-old women from the Women’s Health Initiative Memory Study (WHIMS). These women lived across 48 states and did not have dementia when they enrolled.

The researchers adjusted for potential bias associated with geographic region, race or ethnic background, education, socioeconomic status, lifestyle and medical conditions.

Constantinos Sioutas, the Fred Champion Professor of Civil and Environmental Engineering at USC Viterbi, invented the technology to collect air particles for controlled exposure of mouse models.

USC scientists chronically exposed female mice carrying the APOE4 gene to nano-sized air pollution for 15 weeks. Compared to the control group, mice predisposed to Alzheimer’s disease accumulated as much as 60 percent more amyloid plaque, the toxic clusters of protein fragments that further the progression of Alzheimer’s.

“Our state-of-the-art aerosol technologies, called particle concentrators, essentially take the air of a typical urban area and convert it to the air of a freeway or a heavily polluted city like Beijing,” said

Sioutas, co-author of the study. “We then use these samples to test exposure and assess adverse neuro-developmental or neuro-degenerative health effects.”

Worldwide, nearly 48 million people suffer from dementia, and there are 7.7 million new cases every year, according to the World Health Organization.

“Our study has global implications as pollution knows no borders,” said Finch, holder of the ARCO/William F. Kieschnick Chair in the Neurobiology of Aging.

USC researchers and others in this field said more research is needed to confirm a causal relationship and to understand how air pollution enters and harms the brain. Accurate pollution monitors are important for this task.

Less than one-third of all counties in the United States have ozone or particle pollution monitors, according to the American Lung Association. Ambient monitoring data from the EPA are critical for scientists conducting research on air pollution and public health, Chen said.

“We analyzed data of high PM2.5 levels using standards the EPA set in 2012,” Chen said. “We don’t know whether the lower PM2.5 levels of recent years have provided a safe margin for older Americans, especially those at risk for dementia.”

Six of the top 10 most polluted cities in the nation by PM2.5 are in California, including Los Angeles, Long Beach and Fresno, according to the American Lung Association.

Yet certain areas have seen cleaner air in recent decades. Reducing PM2.5 in the air we breathe coincides with fewer cases of dementia, the researchers pointed out, referencing the data of others.

The insidious effects of PM2.5

“Many studies have suggested that early life adversities may carry into later life and affect brain aging,” Chen said. “If this is true, then maybe long-term exposure to air pollution that starts a downward spiral of neurodegenerative change in the brain could begin much earlier and rev up in later life.”

In other studies, Chen and his colleagues linked long-term exposure to high PM2.5 levels to smaller gray and white matter volumes in important areas such as the frontal lobe, which carries out thinking, decision-making and planning.

For every 3.5 micrograms of PM2.5 per cubic meter of air, white matter (insulated nerve fibers that connect different brain regions) decreased by 6 cubic centimeters, according to one earlier study.

The new study in Translational Psychiatry examined only women and female mice. Future studies will include both sexes to evaluate generalizability to men as well as examine how PM2.5 interacts with cigarettes and other pollutants.

Finch and Chen in 2010 developed the AirPollBrain Network and have recruited 20 USC faculty into this new research area.

The air pollution study, the Women’s Health Initiative and WHIMS are collectively supported by the National Institute on Aging of the National Institutes of Health; the Southern California Environmental

Health Sciences Center funded by the National Institute of Environmental Health Sciences; the National Heart, Lung, and Blood Institute; the U.S. Department of Health and Human Services; Wyeth Pharmaceuticals Inc.; St. Davids, PA, and the Wake Forest School of Medicine; and the Cure Alzheimer's Fund.

The nationwide Women's Health Initiative Memory Study is coordinated by the Wake Forest School of Medicine in North Carolina. The WHIMS was begun in 1996 to analyze how postmenopausal hormone treatment affects cognitive impairment and brain aging.

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## February 2017

### **Delhi's air quality still poor, Badarpur plant to remain shut for now**

*Date: 01-Feb-2017 Source: Hindustan Times*



The Badarpur Thermal Power Station (BTPS) is going to remain shut until summers.

The Delhi Pollution Control Committee (DPCC) on Tuesday evening extended the ban on the 705 MW plant by directing the National Thermal Power Corporation (NTPC) Limited to keep the plant closed.

“As per directions from the Environment Pollution Control Authority (EPCA), the Badarpur thermal power plant shall remain closed until further directions from the authority are received,” the order issued by DPCC read.

The 43-year-old plant, a major contributor to Delhi's air pollution, was to open from February 1. However, as the air quality continues to be poor, the Delhi government decided to keep it closed for now.

“In no way the plant can operate now. Air pollution levels are still either very poor or severe. EPCA had already given clear directions to the Delhi government,” said Sunita Narain, member EPCA.

According to the Graded Response Action Plan, the Badarpur power plant ought to be shut as soon as PM 2.5 levels or ultra-fine particles in the air cross 250 micrograms per cubic. “Shut down BTPS and maximise generation of power from existing natural gas based plants to reduce operation of coal based power plants in the NCR,” the action plan states.

Chief minister Arvind Kejriwal imposed the prohibition on November 6 in 2016 when Delhi was experiencing its worst spell of smog and pollution in recent memory. Apart from prohibition on its functioning, the DPCC has also barred lifting of flyash for any purpose along with ensuring the regular sprinkling of water in the flyash storage area in the Badarpur plant, one of the major sources of pollution in the city, identified by an IIT Kanpur study.

At the EPCA meeting on January 20, members had made it clear that the plant will remain shut unless there is any power crisis in the city.

## Some Little Known Rainy Weather Facts

*Date: 01-Feb-2017 Source: Oakdale Leader*



Rainy seasons vary across the globe. In much of North America, spring is when rainfall peaks.

Cherrapunji, in the Indian state of Meghalaya, is credited with being the wettest place on Earth. While many people will never experience the rainfall residents of Cherrapunji have grown accustomed to, they still can expect to see their fair share of precipitation.

The next time you reach for your trusty umbrella, give pause and think about these fascinating facts about rain.

Many people surmise that the world's deserts receive the least amount of rain. However, this is not the case. Despite being covered mostly with ice, Antarctica only gets 6.5 inches of rain or snow per year, making it the continent with the lowest annual rainfall.

Scientists say that raindrops look more like chocolate chips than teardrops. Larger drops may resemble parachutes. Raindrops also come in many different sizes. The largest drops ever recorded fell in Brazil, where some drops measured as large as 10 mm.

It is possible for rain to fall at a velocity of up to 22 miles per hour, according to Explaining Science.

Rain has fallen on other planets, but such rain does not have the same chemical composition as the rain that falls on Earth. For example, rain on Venus is made of sulfuric acid. Because of Venus' proximity to the sun, the rain evaporates even before it reaches the surface of the planet.

Acid rain is a type of precipitation that has sulphur dioxide and nitrogen oxides mixed in. These chemicals are created by factories and power stations.

Cloud shapes can help a person predict if rain is likely to fall. Nimbostratus clouds, which are the flat, low-level gray clouds, produce rain. Also, cumulonimbus, the tall, puffy clouds that look flat on top, can be indicators that rain is soon to fall.

Rain can take on the hue of particles in the environment. For example, dust or sand particles can mix in, tinting the rain.

There is such a thing as phantom rain, and you may not need an umbrella when it's falling. With phantom rain, the droplets evaporate before they can reach the ground, and it can be difficult to tell if it is raining or not. Phantom rain is common in desert climates.

Due to dissolved nitrogen from the air contained in raindrops, grass and other plants may look greener after a heavy rainfall.

‘Petrichor’ is a term coined in 1964 to describe the pleasant, earthy aroma that occurs following rainfall.

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## Air Pollution May Relocate Cornwall Residents

*Date: 02-Feb-2017 Source: Financial Tribune*



Residents in pollution hotspots could be relocated under new clean air proposals.

Cornwall Council has discussed plans that could include compulsory purchases of properties in areas with "particularly poor air quality".

It admitted the scheme was likely to be "very controversial", but said it was cheaper than alternative measures, BBC News reported.

The council said relocation was just one of several options being considered.

As part of the Clean Air for Cornwall Strategy, six approaches have been explored, including creating new neighborhoods in "clean air" zones, although "no specific area" has been chosen.

Councilor Geoff Brown said none of the options has been excluded, including compulsory purchase "as a last resort".

There are currently seven Air Quality Management Areas in Cornwall, which fail to meet national air quality objectives. All seven areas have been singled out for the pollutant nitrogen dioxide, which is associated with respiratory problems, lung disease and cancer.

Claire Hewlett, chairwoman of Camelford Clean Air Group, said relocating residents from highly polluted areas was a "radical" idea, as it appeared to contradict the council's transport strategy, which was about people living close to where they work.

"Surely you want people to stay where they're working so that they can walk or cycle," she said.

Tim Pitt, who has lived in Camelford for 12 years, said he did not agree with residents having to move home.

"Deal with the pollution and leave people where they are," he said.

ClientEarth Healthy Air campaigner Andrea Lee branded the idea "extraordinary", but said it was important to tackle the sources of air pollution.

Another option being considered by the council is "anti-idling legislation" which would see motorists fined £20 for keeping their engines running while idle in places like taxi ranks, train stations and schools.

Legal advice would be taken before any decisions are made.

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## Government's claim Heathrow's third runway will not affect air quality contradicted by its own experts

*Date: 03-Feb-2017 Source: Independent*



As London schools consider getting pupils to wear pollution masks, consultants say there is a risk that adding another runway to serve the city will affect attempts to stay within air quality safety limits

An independent report commissioned by the Government contradicts its claim that the planned third runway at Heathrow will not affect the UK's efforts to bring air quality into line with legal safety limits.

In the latest episode of the tragedy of errors surrounding the Government's attempts to keep air

pollution within acceptable standards, Transport Minister Chris Grayling proudly announced "we will meet our legal requirements on air quality" and fossil fuel emissions despite the airport expansion.

However, as he spoke, the Department for Transport released an analysis by consultants WSP Parsons Brinckerhoff.

And it said: "There is a risk that the [extra runway] options will delay or worsen compliance with limit values.

"This risk is lowest for Gatwick 2R [Second Runway] and highest for the Heathrow options, in particular Heathrow ENR [extended northern runway] without the updated surface access strategy in place.

"Furthermore, the risk increases the earlier the option is assumed to come into operation."

However the consultants added the extra runway would eventually come into line with European Union air quality regulations, saying it would "not affect compliance" in 2030.

Their report laid out the Government's embarrassing record on air pollution in stark detail.

In 2015, the Airports Commission had been asked to look into the effect of the third runway based on the Ministers' then plan to bring the UK into line with EU rules by 2030.

But the Government was successfully sued by legal environmental activists ClientEarth over this lengthy delay with the Supreme Court ordering it to come up with a new, more effective plan.

This document was published in December 2015 with a revised target of 2025.

ClientEarth went back to court and, once again, judges ordered the Government to come up with a better plan.

This is now due to be published by the end of July this year.

Despite the lack of the new improved target, the Government's policy document on Heathrow expansion stated that Ministers believed "the Heathrow Northwest Runway scheme would be capable of being delivered without impacting the UK's compliance with air quality limit values".

John Sauven, executive director of Greenpeace UK, which first spotted the contrasting assessments, said: "Now we have it straight from the horse's mouth.

"The Government-commissioned assessment shows a third runway risks delaying action to bring air pollution down to legal levels for years.

"And even after 2030, ministers' hopes of complying with air quality laws are based on drivers using less polluting cars.

"But with an air pollution crisis already linked to over 9,000 premature deaths a year in London alone, people's health cannot be dependent on rose-tinted assumptions and a notoriously unreliable car industry.

"It's time for ministers to come clean. They don't have a solution to the extra emissions from a third runway that will cause more air pollution and climate change. Going ahead with this project would be reckless and unlawful."

The news comes as school governors in London have suggested that pupils should wear pollution masks while travelling to and from school.

ClientEarth's chief executive James Thornton said: "If we have got to the point where parents are reaching for masks to protect their children's lungs as they walk to school, it's clear that the Government has done much too little to tackle illegal air pollution or reassure parents that they are protecting our health.

"While using masks is a proactive step by parents to safeguard children's health, pollution must be tackled at source.

"There are just weeks to go before the Government reveals its new plans to clean up the UK's toxic air.

"They must protect children across the country with bold measures to tackle air pollution. We need to see a comprehensive network of Clean Air Zones, targeted scrappage schemes for the dirtiest diesel vehicles and, in the short term, measures to combat pollution spikes."

ClientEarth recently warned the Government that it could take Ministers to court again, but this time over its failure to produce a plan to cut the UK's fossil fuel emissions.

A Department for Transport spokesperson said: "The Government believes that the Heathrow Northwest Runway scheme can be delivered without impacting on the UK's compliance with air quality limit values, with a suitable package of policy and supporting measures."

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## **Medical experts: Air pollution a likely cause of infant deaths in rural Daviess County**

*Date: 04-Feb-2017 Source: NWI Times*

WASHINGTON, Ind. — "He's growing great, by the way," Dr. Norma Kreilein said of the underweight baby suckling on a pacifier in his mother's arms.

"I thought so," said Angel Riggle, as her husband changed their other son's diaper during a pediatric checkup in November. "It's good to see the numbers."

"Sleeping good?"

"Oh, yeah, he wakes up every three hours to eat."

The baby, Matthew, and his twin brother, Mark, entered the world Oct. 4, six weeks ahead of schedule. Matthew weighed 3.5 pounds, Mark 4.4.

Matthew had a hole in his heart and a narrowing of his aorta. He was flown by helicopter to an Indianapolis children's hospital.

His mother and brother stayed behind here in southwest Indiana. "It was hard. I felt torn about where you were supposed to be," said Angel, 35, who lives in this small town, the county seat of Daviess County.

Ten days before the birth of the twins, an air quality warning went out in her part of the state. Her husband, Allan Riggle, remembers their older sons being sick and using an allergy spray, and that he had "crud" in his own eyes and lungs.

"I remember there was something going on around the time they were born," said Riggle, 41. "It's been a problem for years. It seems to be getting worse. You definitely see the discoloration coming out of the power plant all the time."

Matt was in the neonatal intensive care unit for 19 days. He underwent heart surgery. It was touch-and-go for his first few weeks.

Kreilein, the Riggles' pediatrician, is convinced the environment played a role in the twins' preterm birth. Not only that, she believes it causes infants to die in her county. Twins, however, are more likely to have birth complications than single babies.

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From Oct. 31 to Nov. 7, a few weeks after the air quality alert, there were seven premature births at the Washington hospital, she said. In an average week, there would be less than one.

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## **‘Air pollution killing double of what tobacco kills in Kathmandu’**

*Date: 06-Feb-2017 Source: My Republica*



Sustainable transport system a must to minimize air pollution in the Valley

A medical doctor and epidemiologist (MD-PhD) by training, Dr Carlos Dora, has a distinguished career in public health and environmental issues. At the World Health Organization (WHO), he is the coordinator of the unit ‘Interventions for Healthy Environments’ which is a part of the Department of Public Health and Environment. In

this capacity, he has spearheaded efforts to bring together various types of Health Impact Assessment (HIA) at the global level.

He was recently in Kathmandu to hold meetings with the concerned stakeholders to implement a new project concerning the minimization of air pollution. Republica briefly caught up Dr Carlos at the sideline of his meeting with the office bearers of Nepal Medical Association (NMA) last Friday to talk about his works and air pollution in Kathmandu. Excerpts:

What brings you in Kathmandu this time?

We are starting a project to help develop healthy Kathmandu. We are going to do this in the next year or two. We are articulating and doing analysis of the local data, looking for local policy options to create scenario I described here. We will work with the local institutions. Because air pollution is a big issue globally. We are currently working in this area.

In this project, we will work with cities. What a city can do or what health sector can do to provide the cities with information they need are good solutions in terms of reducing air pollution. So what we do is analyze the level of pollution, sources of pollution, and we talk to people who can do something about them.

How did you find the condition of air pollution in Kathmandu?

I think Kathmandu is not amongst the worse cities in the world and it is not nearly amongst the best. So you are among the middle. What is noticeable about air pollution in Kathmandu is that there are many sources which could be easily resolved. For example, the whole amount of waste burning. That’s

something seen everywhere in other parts of the world. There is relatively simple solution to this. When I was here in December we went to a rural area which shares the same thing. There was a lot of solid fuel burning.

There was a lot of smoke inside home and near the homes for cooking for animals. This could affect even Kathmandu because it is nearby. So, burning is a big problem. The indoor air pollution is a very big problem even if it is not inside the city. Then the traffic in the road sector is very noticeable. Obviously, there are a lot of problems. Some are very polluting and some are very clean.

You have some electric vehicles which is very positive. But I think what is important is you really need to think about your environment and how it can become pollution-free, dust-free and healthy.

What are the implications of air pollution for public health?

It has a great implication for public health. In Nepal, the number of deaths caused by air pollution -indoor and outdoor- is 30,000 a year. This is twice as much as the number of deaths caused by tobacco. Tobacco kills 16,000 people in Kathmandu.

Traffic injury is 5,000. So you have really many more deaths from air pollution. That means there is a great opportunity. Resolving this will not only help to have a better city but a pleasant city to walk or cycle. You would also have health benefits as well.

What do you think all concerned stakeholders should be doing to address this problem?

The government has some roles to play and the private sector has other roles. So, if you talk about transportation and urban environment, many people who own land and those who run the public transport system, also have some roles.

The role of the health sector is to clarify one of the options that exist in urban environment regarding public transport in Kathmandu. We can then provide details of different scenarios. This is to empower or clarify different policy options. We are all in charge of our health. This is important for our health.

What do you think the government in particular should be doing in this regard?

I think the role of the government is to monitor or carry out good monitoring, and disseminate information widely so that everybody could use them. But there is also a role for the citizens' side. You can do this. Your monitors go out in the streets. We know that these monitors are less reliable.

They need 150,000 dollar machine that measures very precisely. We understand that. What you need to do is calibrate your machine against the big equipment in a regular basis because that improves the quality of your measures. So you should be doing that regularly. But I think there is a role for the citizens' side. We have satellite information at the WHO. Look at our map. We use the best information we can from satellite map, air traffic model, from inventory, and from monitoring stations, and we employ the best people who can synthesize these information.

Do you have any specific recommendations for the government to minimize air pollution?

We publish lots of documents in WHO about good practices. One of the policies is to improve health. If you go to our website we have books and enormous amount of information on transport and health, energy and health, and transport, and household energy. I think our recommendations are same for all the governments around the world which are in our guidelines. Sustainable transport is one.

If you go to the WHO website, we have mentioned about the transport system that is good for health. It is public transport of high quality and cycling route that is safe are some things that we say very clearly to everybody. This is the way to go forward if you want to have healthy transport. That is the general recommendation just because there is lower rate of accidents, lower pollution, less noise and more physical exercises. So the great solution for public health is sustainable transport system.

Finally, do you have anything to say to our readers?

I want to say that Kathmandu is a great city, very attractive one. Everybody loves to come here to breathe well, to breathe freely and to enjoy the city. The way land is being used in Kathmandu stops people to enjoy this because of the safety risk and because of the pollution. So outsiders like I would like to come here with my children. But there are some impediments. Maybe backpackers are more risk takers. Middle aged men like I want little more comfort.

I think many people in Kathmandu want to see Kathmandu with more trees, more space for pedestrians to walk on the streets, more safety on the road. I think those issues, as coming from outside, are what strike first. Being a tourist city, being a city with UNESCO Heritage Sites, I want to see these spaces much more usable in the future.

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## **Researchers to explore effects of air pollution on health of children with chronic respiratory complaints**

*Date: 06-Feb-2017 Source: News Medical*

Starting in 2017, researchers will commence their study in Eindhoven on the effects of days with high air pollution on respiratory complaints, medication use and lung function of children suffering from chronic respiratory complaints such as wheezing or asthma.

Vera van Zoest, doctoral candidate at the Faculty of Geo-Information Science and Earth Observation (ITC) at the University of Twente is one of the researchers in the project. "We use the information of a high resolution network of air quality sensors in order to map air quality in space and time. By linking this information to the daily variation of asthma symptoms and lung function of children, we gain insight into the effect of air quality on the health of children suffering from asthma."

The study employs the Innovative Air Measurement System (Innovatief Lucht Meetsysteem, ILM), a sensor network that has been used to measure the air quality in Eindhoven since 2013 on a much more detailed level than currently possible in other cities. The ILM allows for much more accurate recording of the health impacts of air pollution in Eindhoven specifically. The ILM was created by AiREAS, a unique civil initiative in which the local citizens, the municipality of Eindhoven, the province of Noord-Brabant

and scientific institutions, including the University of Twente and Utrecht University, all collaborate. Scientists of these universities will conduct the study under the supervision of Professor Alfred Stein.

#### Reason for the study

Previous studies have shown us that children with chronic respiratory complaints experience more severe complaints on days with increased air pollution. The extent of this effect, as well as the substances that cause these health effects, are not very well known. Research in various countries has demonstrated that the actual effects are not the same everywhere. This is why it is important for a Dutch city like Eindhoven to establish the nature of the health effects, and which substances are most influential. The ILM provides us with accurate information about air quality, which allows us to estimate the level of air pollution exposure for every child much better than we could previously.

#### Research method

For this particular study, children between the ages of 7 and 11 suffering from chronic respiratory complaints like asthma, frequent wheezing and/or using respiratory medicines (bronchodilators) are asked to answer questions about their medication use and their respiratory complaints daily for a period of four months. They will keep a digital journal to document this. For two months, their lung function is measured twice a day by breathing onto a device as hard as they can.

The air quality sensor network in Eindhoven consists of 35 sensor boxes which give a good overview of the air quality on a daily basis. By using the information of the sensor box closest to the child's home or school, we know the quality of the air children are breathing in on any given day. This allows us to study whether children experience more severe respiratory complaints, use more medication, or have reduced lung function on days with increased air pollution.

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## Jamaica Choking - JET Calls For Action On Air Pollution

*Date: 07-Feb-2017 Source: The Bleaner*



The Jamaica Environment Trust (JET) is calling on the regulatory bodies with responsibility for air quality in Jamaica to carry out their duties.

JET is also requesting that Prime Minister Andrew Holness, who is the minister of the environment, take immediate steps to address Jamaica's worsening air quality and give the issue the priority it deserves.

JET's CEO Diana McCaulay's appeal comes in wake of an article published in the February 5 edition of The Sunday Gleaner titled 'Pollution crisis - Portmore residents with respiratory illnesses urged to flee foul community'.

But the issue of pollution is not limited to Portmore, as air quality has been deteriorating in the Kingston Metropolitan Area, with data from the National Environment and

Planning Agency (NEPA) showing that the air quality in areas such as Spanish Town Road, Mona and Rockfort declined to the worst ever readings in 2015.

According to McCaulay, along with the Ministry of Health, NEPA, and the National Solid Waste Management Authority, all have some responsibility for the issue.

"The public-health threat of open burning remains unaddressed by NEPA, the National Solid Waste Management Authority, or the Ministry of Health," McCaulay charged in a release to the media yesterday.

"The main sources of air pollution in Jamaica are industrial, motor vehicle emissions; open burning by individuals and businesses, garbage dumps, and forest or bush fires. Despite many meetings, reports and promises over two decades, little progress has been made in controlling these sources."

McCaulay further highlighted that Jamaica has no motor vehicle emission standards, and while we do have air-quality regulations for major and significant facilities as defined by law, these facilities (mainly industrial) are required to do their own testing for a number of pollutants (depending on the industry) and report those tests to NEPA.

"Except for particulates, NEPA does not have the equipment to do independent testing for the criteria pollutants (for which there are air quality standards), let alone the 78 priority pollutants (for which there are guideline levels) identified in the air-quality regulations," McCaulay said. "NEPA does not proactively release information on air quality in a form that is understandable by a layperson so it is not easy for a citizen to find out what he or she is breathing."

### Turning A Blind Eye

Environmentalist Diana McCaulay believes the authorities have been turning a blind eye to many illegal practices across the island that have been contributing to the deteriorating air quality.

These, she says, include an illegal operation to retrieve copper from waste tyres, which burns visibly and harmfully every week in the vicinity of Spanish Town.

"Cane fires remain unregulated, although there have been promises over many years that they will be stopped. Farmers still use fire to clear land, sometimes with catastrophic results," McCaulay further outlined.

"Although the fine for open burning under the Public Health Nuisance Regulations is \$50,000, the Ministry of Health seemingly has no response to the many trash fires which burn every day all over the island in proximity to large human populations.

"We already know, however, that even where regulations exist, enforcement is grossly inadequate."

JET has begun implementing a new project titled Jamaicans for Clean Air and Water and is currently undertaking a review of the air and water quality legal framework in Jamaica which is anticipated will be completed by March 2017.

In Sunday's article, consultant physician and pulmonologist at the University Hospital of the West Indies, Dr Althea Aquart-Stewart, advised persons who suffer from respiratory problems to avoid living in Portmore, if possible. She said there were a number of people coming from Portmore with exacerbation of their medical problems. Asthmatics she said, "go through hell".

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## **Air pollution choking India, UP home to 5 most polluted cities in the country**

*Date: 08-Feb-2017 Source: Hindustan Times*



Half of the most polluted cities in India are in Uttar Pradesh with Allahabad ranked as worst, the Central Pollution Control Board air quality data of the 46 million cities showed.

Delhi ranks fourth for the average annual particulate matter pollution in 2016, 19% deterioration since 2014. Other cities are Jaipur, Dhanbad, Ranchi and Amritsar.

The worrying trend emerging from the data was that air pollution was rising at a rapid pace in most of the big cities except Raipur, Kolkata and Indore, where it has gone down slightly because of proactive action by local bodies.

The annual average pollution was more than four times the permissible limit in 10 most polluted cities, meaning that on the worst days, especially in winter, it was up to 20 times the national safety parameter and 60 times of the World Health Organisation (WHO) norm.

The data tabled in Parliament on Tuesday had five UP cities — Allahabad, Varanasi, Lucknow, Ghaziabad and Agra — among the top worst air quality cities in the country.

[Check your city's real time pollution levels here](#)

The only saving grace for the state is that the levels in Ghaziabad has improved slightly since 2014 even though it was 6th most polluted city. Regional officer of UP Pollution Control Board Mohd Sikander admitted that the particulate matter was high within the city limits. He blamed dust, vehicular exhaust, brick-kilns and garbage burning as main reasons.

“The main cause is increasing vehicle use in absence of adequate public transport system, construction activity, coal burning and high emission thermal plants,” said Aarti Khosla, India Programme Lead, Global Strategic Communications Council.

While this winter the focus on air pollution control had been on Delhi and its neighbourhood, most of the UP cities, including Allahabad, had witnessed heavy smog.

In fact, the pollution level was at par with Delhi on several days. In Varanasi, the air quality was not found to be good even on a single day after Diwali.

The Care 4 air campaigner Ekta Shekhar said the PM level increased by eight times because of burning of waste, unplanned demolition of old buildings and slow construction of roads. Rajasthan's capital Jaipur also finds place in the top 10 with experts blaming it on rising vehicle population and congestion.

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## **Raipur sees fall in air-pollution levels over last two years**

*Date: 09-Feb-2017 Source: Business Standard*

Chhattisgarh's capital Raipur has witnessed a decline in air pollution level in the past two years, according to a Central Pollution Control Board (CPCB) report.

"CPCB had submitted a report of annual average air pollution (P.M.10) of 46 prominent towns and cities on February 7 on the floor of the Parliament," an official statement here said today.

"The report mentions that there is a drastic fall in air pollution in the capital Raipur from 2014 to 2016," it said.

The CPCB releases the details of air pollution at regular intervals.

According to the report, in 2014, the average pollution levels was 325 microgram per meter cube in Raipur; it reduced to 190 microgram per meter cube in 2015 which then dipped to 150 microgram per meter cube last year, the release said.

Notably, earlier during a review meeting of the environment department, Chief Minister Raman Singh had instructed the concerned officials to regularly monitor the air quality standard.

"The concerned authorities had prepared a master plan to improve the air quality of the capital and the entire state. According to the departmental protocol, ambient air quality monitoring station is being operated at separate places by separating Raipur into grids which will help in controlling pollution in industrial units operational in Raipur and its adjoining areas through proper monitoring," Housing and Environment Department Principal Secretary Aman Kumar Singh said.

Efforts are being made to check pollution in the city at five different levels including controlling vehicular pollution, implementation of online monitoring of industrial units, promotion on use of LPG against using firewood, kerosene and biomass for household purpose and proper storage and disposal of medical as well as industrial waste, he said.

Besides, on the direction of state government, at least 3.50 lakh trees were planted last year in the industrial area which has resulted in improving the air quality, he said.

Strict action is being taken against those who violate the pollution guidelines, he added.

Notably, Raipur was listed as 7th top polluted cities in the world by World Health Organisation (WHO) last year following which the state government had drafted an action plan to control pollution menace over the next two years in the city.



Although the local officials had then claimed that the WHO's report (2016) on Raipur's pollution was based on statistics between years 2008 and 2013.

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## Preventing air pollution from ships

*Date: 11-Feb-2017 Source: The Manila Times*



I am beginning to get an overdose of the news, commentaries and discourses on the environmental destruction caused by mining, which has obliterated the verdant surface of our archipelago. Add to this the presence of fish pens and cages that gradually changed the freshness of the waters of Laguna Bay and turning it into a putrid and muddy stream. The jeepney, the king of the road, attracted attention of late too, for the emission of black, carbon dioxide-filled smoke.

Measures to address the sources of the pollutants have resulted in the order issued by the Department of Environment and Natural Resources (DENR) to close some twenty-three mining companies and the dismantling of fish pens in Laguna de Bay. The Department of Transportation (DOTr) through the Land Transportation and Franchising Regulatory Board (LTFRB) on the other hand, issued a policy declaring the phase-out of old jeepneys, citing air pollution as one of the reasons.

It is observed though that stamping out sources of air pollution focuses on land-based stationary and mobile structures such as manufacturing plants and transport units, e.g. cars, buses and jeepneys. The Clean Air Act of 1999 specifically mentions only those transport units operating in public streets and highways.

What happens to the emissions of ships, which undoubtedly contribute to the damage to the atmosphere? Ships' emissions contain harmful air pollutants, including sulphur oxides, nitrogen oxides and particulate matter, which studies show are associated with a broad array of adverse impacts that harm human health and the environment.

Capt. Alfredo Vidal, Deputy Administrator for Operations of the Maritime Industry Authority (MARINA) noted the absence of regulations that would cover emissions of ships and highlighted the agency's efforts to push for the ratification of Annex VI of the International Convention on the Prevention of Pollution from Ships, 1973/1978 (MARPOL). The convention, which initially covered discharges of ship-generated pollutants into the marine environment (under Annexes I to V), was subsequently amended by the Protocol of 1997 adopted by the International Maritime Organization (IMO) to include prevention of air pollution from ships (Annex VI). The Philippines has ratified Annexes I to V.

House Bill No. 49 and House Bill No. 1843 on the Prevention of Pollution from Ships were filed in the 17th Congress. The proposed bills aim to transpose the MARPOL provisions into the Philippine maritime legal regime, such step being considered necessary to ensure effective implementation of the said convention on the prevention of marine and air pollution from ships, and at the same fulfill the country's

commitment as Party to MARPOL. In anticipation of the country's ratification of Annex VI, the draft bills stipulate that harmful substances from ship emissions must be controlled.

DA Vidal further mentioned the efforts of MARINA to accelerate the adoption of regulations that deal with the prevention of air pollution from ships pending the enactment of an enabling law. He confirmed that development of a framework of strategy for the implementation of MARPOL Annex VI is in progress as part of the ongoing GEF-UNDP-IMO-sponsored global Project on "Transforming the Global Maritime Transport Industry towards a Low Carbon Future through Improved Efficiency" (GloMEEP). The Project deals with the mitigation, control and prevention of emissions from ships with particular focus on fuel efficiency. The Philippines is one of ten countries participating in the GloMEEP Project and is keen on optimizing the expected benefits of implementing Annex VI.

MARPOL was ratified by the Philippines in 2000; to date, no enabling law has been passed to implement the convention. Protection of the marine environment from ship-generated waste is based on regulations that are by no means complete, and are most often confusing and unclear. There is no regulation governing ship emissions. Bills to implement MARPOL has been filed and re-filed in Congress under four Presidents since the convention was ratified. We have not given up on a MARPOL law being enacted.

This time, we might succeed.

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## **By denying the link that exists between air pollution and deaths, the Centre is being myopic**

*Date: 12-Feb-2017 Source: Hindustan Times*



The winter is over and the outrage that erupted over pollution after last year's Diwali has also been overtaken by other news events. But the problem of polluted air stubbornly persists, affecting the health of the citizens. The Global Burden of Disease (GBD), a comprehensive regional and global research programme including 500 researchers representing over 300 institutions and 50 countries, has estimated that 3,283 Indians died per day due to outdoor air pollution in India in

2015, making the potential number of deaths due to outdoor air pollution in India in 2015 to 11.98 lakh. But the Union minister of environment, forests and climate change Anil Dave seems to be either unaware of the data or doesn't want to believe it. In a written reply to Rajya Sabha earlier this week, he said that there is no conclusive data to link deaths exclusively with air pollution. He added that Greenpeace India's report 'Airpocalypse,' which was released in January, is based on secondary information on air quality collected through RTI, annual reports of state pollution control boards and literature review in which it claimed that 12 lakh deaths take place due to air pollution.

The Greenpeace India report had said Delhi tops the list of 20 most polluted cities in the country where 12 lakh deaths take place every year due to air pollution. It also claimed that none of the 168 cities it assessed complies with air quality standards prescribed by the World Health Organisation (WHO). According to the report, the deaths every year in India due to air pollution are only a “fraction less” than that caused by tobacco usage. Three per cent of the GDP is lost due to air pollution, it added.

In response to the minister, and correctly so, Greenpeace India has said that country is way past the stage of discussing what may have caused this nation-wide epidemic of poor health and compromised childhoods — instead of picking at the data, and the sources for it, government agencies need to come up with a clear, national action plan. In fact, the health evidence necessary to take policy action has already been well documented by the ministry of health and family welfare’s steering committee. What is necessary, experts say, at this stage is to chart the road ahead to address what is a national issue that threatens to deflate India’s demographic dividend. Instead of trashing the links between citizens’ health and air pollution, the minister must invest in more comprehensive scientific studies into the phenomenon and come up with concrete and effective solutions to tackle pollution.

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## **Acid rain sampling needs volunteers**

*Date: 13-Feb-2017 Source: Eagle-Tribune*

The Acid Rain Monitoring (ARM) Project at the University of Massachusetts Amherst’s Water Resources Research Center needs volunteers to collect water samples at selected sites in Essex County on Sunday, April 2.

Volunteers are needed to sample Mystic Pond in Methuen, Upper Attitash Pond in Amesbury, the Ipswich River in Ipswich and Black Brook in Hamilton.

The Water Resources Research Center will mail sample bottles, maps and instructions for sampling to volunteers in March. On April 2, volunteers will collect their samples from lakes and streams in the morning and drop them off at one of 12 laboratories across the state whose staff will analyze the samples for pH and alkalinity and send the results to the Water Resources Research Center.

The Acid Rain Monitoring Project began in 1983. From 1983-93, the project’s mission was to develop a comprehensive picture of the sensitivity of Massachusetts surface waters to acid deposition. In 2001, the goal evolved into determining long-term trends in acid sensitivity.

“Volunteering for this project is a great way to get out and enjoy the lakes and streams in our communities,” says Travis Drury, statewide ARM coordinator. “Without the generous support of volunteer samplers, we would be unable to collect valuable data that show the effects of acid deposition and how our waters have improved since the 1990 Clean Air Act Amendment.”

Locations of all sampling sites, yearly reports and comprehensive results from 1983 to present are available online at <https://wrrc.umass.edu/research/acid-rain-monitoring-project>.

To volunteer or to obtain more information, contact Drury at 413-545-5979 or [tdrury@umass.edu](mailto:tdrury@umass.edu).

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## Beijing bans higher emission vehicles to control air pollution

*Date: 14-Feb-2017 Source: The Economic Times*



BEIJING: Beijing has banned high-emission vehicles in a bid to control recurring air-pollution enveloping the city with a population of 21.7 million people.

Starting from tomorrow, light-duty gasoline-powered cars that fail to meet the National Emission Standard III will be banned from entering Beijing's fifth ring on weekdays.

Substandard cars will also be taken off the road through annual inspections or spot checks.

The Chinese capital currently requires new cars to comply with the "Beijing VI" emission standard, which is higher than the widely-used National Emission Standard V and equivalent to the Euro VI standard, the strictest in China.

The National Emission Standard I was introduced in 1999 and the National Emission Standard II followed in 2004.

"After weeding out yellow-labelled cars (outdated and heavy-polluting vehicles), vehicles consistent with the National Emission Standards II and III release most of the pollutants on the roads," state-run Xinhua news agency quoted Yu Jianhua, chief engineer of the Beijing Municipal Environmental Protection Bureau.

Higher-polluting gasoline vehicles account for less than 10 per cent of vehicles on the road, but discharge over 30 per cent of nitrogen oxide and 25 per cent of volatile organic compounds, Yu said.

Beijing's 5.7 million vehicles produce 500,000 tonnes of various pollutants annually and account for 31 percent of locally-generated PM 2.5, a particulate matter associated with hazardous smog, making it the prime source of PM 2.5, according to the environmental authority.

Plagued by smog over the past decade, the capital city has initiated a series of regulations to improve its air quality but the pollution persisted sparking public criticism.

It has moved out high-polluting industries, pulled outdated cars off the road, continued to improve the public transportation system and rolled out policies to support new energy vehicles.

Average density of PM 2.5 in the capital was 73 micrograms per cubic meter in 2016, down 9.9 per cent from the previous year, the Beijing Municipal Reform and Development Commission said.

A new round of air pollution hit Beijing and 20 other cities in eastern China due to unfavourable weather conditions.

Apart from the Beijing-Tianjin-Hebei region, which is expected to see heavy pollution till tomorrow, air quality in more than 20 cities in provinces such as Shandong and Henan is forecast to deteriorate due to unfavourable weather conditions.

A cold front is expected to help disperse the pollution on February 16.

The pollution returns to these cities after a fortnight holiday during which most of the factories have been shutdown now resumed production affecting the air quality.

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## People who use Tube 'exposed to eight times more air pollution than those who drive to work'

*Date: 15-Feb-2017 Source: Evening Standard*



Commuters travelling on the Tube are exposed to eight times more air pollution than those who drive to work, a study has found.

The study, carried out by the University of Surrey, compared the levels of pollution commuters were exposed to on cars, buses and the Underground in different parts of London.

It found that being sealed inside a car means people are exposed to less harmful particulate matter from the outside.

Those who travel on the Tube are exposed to 68mg of PM10 - tiny particles of soot that are breathed into the lungs - while car drivers only had 8.2mg.

This is despite the fact motorists produce the most pollution per commuter.

The study found PM levels were highest on trains on the Victoria and Northern lines, which have opening windows, while passengers on newer District Line trains with closed windows were exposed to far lower concentrations.

Bus commuters were exposed to an average of 38mg of PM10.

The study also found the morning commute has more pollutants than afternoon and evening journeys, while there was no link between deprived areas and higher exposure, although people from affluent areas tend to breathe in less pollutants because more people use cars.

Dr Prashant Kumar, who led the study, said: "We found that there is definitely an element of environmental injustice among those commuting in London, with those who create the most pollution having the least exposure to it.

"The relatively new airtight trains with closed windows showed a significant difference to the levels of particles people are exposed to over time, suggesting that operators should consider this aspect during any upgrade of Underground trains, along with the ways to improve ventilation in underground tunnels."

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## **Don't Blame the Middle Class for India's Air Pollution Mess**

*Date: 17-Feb-2017 Source: FORTUNE*



India in recent years has surpassed and overtaken China as the fastest-growing economy and the largest recipient of foreign direct investment, achievements that would make any citizen proud. But unfortunately, even as the economy surges ahead, India has also bested China in a third and less enviable metric: air pollution.

But this should not come as a surprise. As seen in China, stellar economic growth includes a wealthy populous that wants to buy the latest cars, fridges, and air conditioners, all of which require energy, thus adding demand on power plants, contributing to even more pollution and worsening air quality.

However, the good news is that pollution, and more broadly speaking, climate change, is not a divisive subject in India. There is political consensus on the issue, and policymakers may be able to turn things around. The question is whether there is political will and money to enact the necessary change.

For any frequent visitor to New Delhi, research reports and studies are not needed to validate the obvious: Air quality in and around the city has sharply deteriorated. The effects are so palpable that any climate change skeptic should visit Delhi to see what pollution looks like in real time. A quick search of weather conditions before your trip will indicate that the forecast is an ominous "smoke"—not clouds or fog or haze, but "smoke." And then, after arriving and spending a few days in the capital, the traditional side effects begin to emerge: red eyes, sore throat, and headaches.

India is in the midst of rapid economic transformation with a burgeoning middle class that aspires for the same lifestyles and goods as their Western peers. A previous generation may have opted to bike to work or settled for a ceiling fan. But things have changed, and a country with a young and increasingly educated and wealthy population prefers to drive and use air conditioners in summers where the temperature can reach 120 degrees.

After decades of globalization where the message was largely aimed at eliminating poverty and bringing millions of citizens into the middle class, an odd thing happened: It worked. Middle classes have emerged, and they want to buy products just like their Western peers.

And this is the argument that India justifiably makes: It cannot ask its citizens to live in austerity just as their lives are improving. But the problem of Delhi's pollution is not as simple as consumer preference for luxuries like cars and air conditioners. It is part of the problem, but there is more at play.



For example, highly polluting coal makes up the bulk of India's power plants. Diesel-based vehicles, which emit more pollution than standard fuel, have been a popular choice for consumers until recently due to lower operating costs. Furthermore, many vehicles in India run on outdated emissions standards that lag behind global international benchmarks. Finally, infrastructure is inadequate, resulting in traffic jams filled with idle cars polluting the air. Urban mass transit systems (like subways) have only recently come on line.

Then there is the issue of old habits. Farmers north of Delhi find it more cost effective to burn their crops every October/November to clear the fields for the next harvest rather than paying employees to do it by hand. This is responsible for the notorious "smoke" that often hovers over Delhi.

Despite this dire situation, there is reason to be optimistic that India's urban pollution can be mitigated. As a starting point, politicians across all ideologies recognize that pollution is problematic, not only for health and aesthetic reasons, but for national security and the economy. Less dependence on imported oil unshackles India from sometimes-unpredictable oil exporters who may have different international strategic objectives. Furthermore, fewer imports supports India's overall current account deficit, balance of payments, and immunizes the country from oil-induced inflation shocks.

There is also political consensus on the causes, which makes finding a solution slightly easier. Accordingly, the government is pursuing policies to substantially build out the nation's alternative energy sector, including solar and wind.

Since coming to office in 2014, Prime Minister Narendra Modi set a target of generating 175 gigawatts of energy from alternative sources by 2022. The country even has a Ministry of Renewable Energy, which is tasked with executing these plans, including developing the world's largest solar power plant. Separately, the government is considering banning vehicles made before 2002 in order to take higher-polluting cars off the roads.

At the local level, many cities are competing to build the fanciest subway systems. Some are requiring their taxis and buses to use natural gas, while others are experimenting with car restriction plans, where odd and even number license plates can only drive on certain days.

These are all well intended policies that can actually impart change and clean up urban air pollution. But, money, execution, and political will are needed for these endeavors. The irony is that despite record economic growth, investments in the energy sector are not keeping up pace to fund the 175 gigawatts of alternative power Modi wants to substantially improve India's air quality.

In addition, while Indian politicians do not have to ask citizens to give up their cars and air conditioners, they will have to ask for other changes in behavior requiring substantial political will.

For example, who will have the power to stop farmers outside of Delhi from crop burning? Banning old cars is easy on paper, but will small towns actually follow through? Will proposed fines on car use cost votes at the ballot?

India has the potential to shed the distinction of having the world's worst air. Leaders have proposed ideas that make sense, but their ability to implement these policies will determine whether Delhi has a bright or

“smoky” future. Shailesh Kumar is senior analyst in the Asia practice at Eurasia Group and former India economist at the U.S. Department of Treasury.

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## **Poba demands effective steps to tackle Dhaka air pollution**

*Date: 18-Feb-2017 Source: Dhaka Tribune*



Poribesh Bachao Andolon (Poba) on Saturday formed a human chain in Dhaka to demand the government take action to end air pollution in the city

Demanding effective governmental action to tackle air pollution in Dhaka, Poribesh Bachao Andolon (Poba) on Saturday formed a human chain in front of Faculty of Fine Arts at Dhaka University.

A group of environmental leaders and activists under the banner of Poba also demanded strict implementation of existing environment-related laws and regulations, punishment of polluters, and creation of more awareness among Dhaka residents.

Citing a report published by the United States-based research organisations Health Effects Institute and Institute for Health Metrics and Evaluation, they claimed that Dhaka holds second place in terms of air pollution, which has a severe negative impact on the country’s economy and on public health.

UK-based newspaper The Guardian, in a recent news article about this report, visualised some of the data, ranking the cities based on their level of pollution. One of the graphs, that ranked selected Asian cities, showed Dhaka in the second position. However, this was misinterpreted as a global ranking.

World Health Organisation numbers say it is 44th among the cities it monitors, in terms of fine particle (PM2.5) pollution. In terms of PM10, or coarse dust pollution, it ranks 71st, according to a Dhaka Tribune article published on February 16. WHO continuously collects data on particle levels in air across the world from various sources.

“A middle class family in Dhaka must now spend an extra Tk10,000 per month due to the acute dust pollution in the mega city. The city’s hospitals are filled with patients affected by the pollution, suffering from breathing problems such as asphyxia, with most of them being children and the elderly.

“However, the government and authorities concerned pay little attention to the matter,” Poba Chairman Abu Naser Khan said at the human chain.

“Though we have environment-related laws and regulations for building and road construction to prevent pollution, they remain unenforced due to lack of will and awareness.



“City corporation authorities have declared they would make Dhaka green and pollution free, but there is no sign of implementing what they promised,” he said.

The speakers also demanded an end to the frequent city-wide road digging and building construction works, without complying with the rules, in order to reduce pollution.

A monitoring system should be introduced as well to control air pollution, which is generated through brick kilns, unplanned development works, waste mismanagement, and poisonous smoke released from vehicles and industries, they said.

Poba Assistant Secretary Abul Hasanat said pollution is negatively impacting the nation’s economy as city residents have to use more water, detergent, medicine etc.

Household furniture and electronic devices become damaged too early due to the excessive dust in the air, while the residents wind up wasting thousands of work hours every day, he added.

“We have to first stop the sources of the pollution. The city corporations and other authorities concerned must monitor road digging projects while they’re underway.

“The mounting waste must be removed from roads and managed properly. Most importantly, those responsible for the air and dust pollution must be brought under exemplary punishment,” he also said.

The speakers at the human chain also called on the government to build public awareness about pollution and urged them to increase monitoring by city corporations and Rajuk to combat the problem.

They also suggested the authorities concerned buy the necessary equipment and recruit efficient manpower to tackle the air pollution.

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## London coughing through winter as air pollution makes people sick

*Date: 18-Feb-2017 Source: The Settle Times*



Every winter, as soon as the weather turns cold, Tara Carey, an international-aid worker living in London, ritually places cough syrup on her bedside table because she knows her sleep will be punctuated by hacking coughs. She also coughs at work. And she coughs while cycling to her office, on a road so toxic that for a brief period last month the air pollution there was greater than in infamously smoggy Beijing.

With her cough persisting winter after winter, Carey, 43, sought medical help. She was shocked by the doctor’s eventual diagnosis: asthma.

In Carey's view, the only reasonable explanation for her illness was the pollution to which she was exposed over the past six years cycling through thick traffic on Brixton Road, one of London's busiest and most noxious routes.

"You get a massive mouthful of fumes," she said, noting that asthma does not run in her family. "But we don't really realize how much toxic air we breathe in because we're acclimatized to it. It's pernicious."

London is choking from record levels of pollution, much of it caused by diesel cars and trucks, and wood-burning fires in private homes, a growing trend. It has been bad enough to evoke comparisons to the Great Smog of December 1952, when fumes from factories and home chimneys are thought to have killed as many as 12,000 Londoners.

That crisis led to the landmark Clean Air Act in 1956.

London's air pollution today is different from seven decades ago, and more insidious. No longer thick as "pea soup," as it was traditionally described, the city's air is now laced with nitrogen dioxide, a toxic gas mostly produced by vehicles with diesel engines.

The pollution is linked to 23,500 deaths in Britain each year, according to the Department for Environment, Food and Rural Affairs. Britain has the highest number of annual deaths from nitrogen dioxide in the European Union after Italy, EU statistics show.

On Wednesday, the EU ordered five members, including Britain, to reduce vehicle-pollution levels or risk being sent to the European Court of Justice, where they could face huge financial penalties.

#### Miscalculations

The current problem is, in part, an unintended consequence of previous efforts to aid the environment.

The British government provided financial incentives to encourage a shift to diesel engines because laboratory tests suggested that would cut harmful emissions and combat climate change. Yet it turned out that diesel cars produce, on average, five times more emissions in real-world driving conditions as in the tests, according to a British Department for Transport study.

"No one at the time thought of the consequences of increased nitrogen-dioxide emissions from diesel, and the policy of incentivizing diesel was so successful that an awful lot of people bought diesel cars," said Anna Heslop, a lawyer at ClientEarth, an environmental-law firm.

Air pollution is a more significant public-health hazard in China, India and Eastern Europe, where the average annual levels of PM2.5 pollution, the fine-soot particles and molecules that pose the greatest danger to health, are up to 10 times as high as in London.

But in mid-January in Brixton, in south London where Carey lives, hourly mean levels of PM2.5 were higher than in Beijing. And over five days in January, Brixton exceeded the EU's nitrogen-dioxide legal limit for the entire year.

London last month was put on a “very high” pollution alert for the first time, as cold air and a stationary weather pattern failed to clear the toxic air caused by diesel traffic, as well as by the high use of open fires, which contribute to about 10 percent of pollutants in winter.

#### Long-term worry

London authorities are scrambling to defuse what many consider a ticking time bomb for public health.

Some schools are considering handing out gas masks to pupils, saying children’s lungs are in danger of being stunted. More than 440 schools are in areas exceeding legal air-quality levels, according to London Mayor Sadiq Khan.

This month, London’s Metropolitan Police announced a plan to introduce about 300 environmentally friendly cars, including hydrogen-fuel-cell vehicles and hybrid electric cars, as part of a fleet overhaul.

Khan, who has adult-onset asthma, said Friday that in October he would introduce in central London a toxicity charge, a \$12-a-day tax on the most polluting vehicles, typically diesel- and gasoline-powered automobiles registered before 2006.

He also plans in 2019 to expand central London’s low-emission zone across the capital, charging drivers of polluting vehicles \$15 a day to enter. London has had a congestion charge since 2003 to reduce traffic, but the fee’s effect on emissions is unclear. Khan is also planning 12 low-emission bus zones across the city with only hybrid or electric buses on certain routes, including in Brixton.

London has encouraged people to use bicycles more, but there is a growing debate over whether bike lanes make congestion and pollution worse by forcing more cars into fewer lanes and increasing the amount of time they remain stationary. Some people have also suggested that bicycle commuters are exposing themselves to harm by being too close to exhaust-emitting cars.

Researchers from the London School of Medicine say cyclists inhale more than twice the amount of black-carbon particles as pedestrians making the same trip.

Rob Ffello, a Labour member of Parliament, said bike lanes may not be as green as they are made out to be. “The transfer to two wheels clearly hasn’t solved many problems,” he told the Independent newspaper in January. Cambridge, where half the residents cycle at least once a week, became “one of the most congested places in the country,” he said.

Air-quality campaigners support Khan’s efforts to create clean-air zones that restrict the dirtiest vehicles. But activists also are pushing the government to give diesel drivers financial help to switch to cleaner vehicles.

Half of Britain’s private cars are diesel. Despite the health warnings, the latest figures show that the total number of diesel vehicles licensed in London grew from 601,456 in 2012 to 774,513 in 2015, a nearly 29 percent increase.

Khan has asked the government to set up a national fund worth 500 million pounds, or about \$620 million, that would pay drivers and cab owners to buy cleaner vehicles.

Bob Miller, 69, a cabdriver who has crisscrossed London for 30 years, wasn't convinced. He has lost faith in recommendations by policymakers and experts, he said.

"We were told how wonderful diesel is, how they were supposed to be cleaner than petrol," Miller said, idling his cab in heavy traffic with the window open.

"The experts make the rules, then they're wrong," he said, shaking his head. "I give up."

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## **SAFAR issues poor air quality forecast for four pockets**

*Date: 19-Feb-2017 Source: The Times of India*

PUNE: Be cautious if you pass through Katraj, Shivajinagar, Hadapsar and Bhumkar Chowk areas on Saturday. You might come across poor air quality in those pockets of the city.

Pollutants have been crossing the maximum permissible limit in those areas of late. They are likely to have very poor to poor air quality on Saturday as well, IITM's System of Air Quality and Weather Forecasting and Research (SAFAR) forecast revealed on Friday. The particulate matter (PM) 2.5 concentration was above the permissible level on Friday and is likely to remain so on Saturday.

A pollution alert issued by SAFAR stated there was an increasing likelihood of respiratory symptoms in sensitive individuals when exposed to the high concentration of pollutants in the four areas.

According to the SAFAR data, the primary pollutant in Katraj was PM2.5, followed by PM10. The concentration of PM2.5 there was five times more than the permissible limit on Friday and is likely to remain almost the same on Saturday, categorized as "very poor".

The PM10 concentration in Katraj on Friday was twice the threshold limit. It is likely to remain as "poor" on Saturday, the forecast stated.

The PM2.5 concentration in Shivajinagar on Friday was under the "poor" category and was several times above the maximum permissible limit. The pollutant's concentration would remain the same on Saturday, almost three to four times over threshold limits. The PM10 concentration in Shivajinagar on Friday crossed the threshold limit, but is likely to remain "moderate" on Saturday, the forecast stated.

"When the air quality is moderate, unusually sensitive people should consider reducing prolonged or heavy exertion and heavy outdoor work," said an IITM scientist.

The PM2.5 concentration in Hadapsar was over four times more than the permissible limit on Friday, categorized as "poor". The situation in Hadapsar is likely to remain almost the same on Saturday, with poor air quality distressing visitors to the area.

Though pollution tends to get severe during winter, the situation in some areas in the city remains the same irrespective of the temperature in Pune. "The temperature in the city is on the rise, but pollutants continue to cross the maximum permissible limit in some areas. Low temperature is generally thought to

increase the levels of pollutants. The most likely causes of increasing pollution in these localities are increased vehicular activity and construction activities," the scientist said.

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## **Air pollution: Rivers resident decry invasion by black soot**

*Date: 19-Feb-2017 Source: The Guardian*



### **Govt Plans Safety Measures**

Despite the thoroughly degraded environment, which they have had to contend with over the years, there appears to be no end in sight to the vicissitudes of life plaguing residents of Rivers State.

Right now, anxiety is building in the state over the deteriorating air quality, a development that forced

some residents of Port Harcourt, the state capital to take to the streets demanding that government takes decisive steps to tackle the rising air pollution.

Soot is a black powdery or flaky substance consisting largely of amorphous carbon, produced by the incomplete burning of organic matter.

In the recent past, levels of particulate matter (which is popularly referred to as soot) is prevalent in the air in Port Harcourt, Obio-Akpor, Ikwerre, Okrika, and Eleme local councils

In these areas, these substances settle on just anything including rooftops, floors, cars, washed clothes and so on. The dangerous bent to it, however, is the fact that in recent times, the soot has risen to almost 11 times above the recommended safety level set by the World Health Organisation.

Particulate matter, also known as particle pollution, is a complex mixture of extremely small particles and liquid droplets that get into the air. Once inhaled, these particles can affect the heart and lungs and cause serious health effects.

Spotting nose masks, the protesters wielded placards, which bore inscriptions like, "Save our lungs," "Let us breath, stop soot," "The lives of our children matter," "Soot kills. Stop soot," and "Stop the soot, save Rivers," among others.

They also demanded that both the federal and state governments should, expeditiously come up with the most effective ways of curbing the rising air pollution in the state.

Nollywood actress, Hilda Dokubo, who was among the protesters said the sudden saturation of Port Harcourt atmosphere with soot, arising from imperfect combustion, has triggered health concerns among the residents.

She said if the situation is not tackled decisively, residents of the city, particularly children under the age of five, would suffer from severe respiratory infections.

“People are dropping dead daily because of asthmatic attack, even those who weren’t known to suffer from asthma,” she lamented.

Another resident of the state capital, Ross George, complained that parents are becoming agitated whenever they clean the nostrils of their children only to discover layers of soot.

“Our environment is becoming more polluted, and we have waited since November last year to get a response from government, which has not yet come. We are increasingly worried as the situation worsens, and we are becoming agitated. So, we need to know what is going on. We need to be reassured that investigation and analysis are going on.”

Another protester described the air quality in Port Harcourt, Eleme and Rukpokwu at present as very poor by global standards, and urgent steps are required to address the situation.

In sharing this view, Mr. Eli Emeka, told The Guardian that Port Harcourt and its environs, especially Eleme, Abuloma, Iwofe, Rupokwu, Okrika, Woji, were gradually turning into a gas chamber, particularly for children.

“Every day, you can see smog hanging all over the city as a result of pollution. You can longer wash white clothes and spread them outside because of soot. Floors in residential houses and offices, cars are covered with soot. The levels, from investigation, are extremely high, breaching the safe limit by over 11 times at several places in Port Harcourt. This is a health emergency,” he said.

A native of Eleme, who identified himself as Obari Theo, also told The Guardian that it was disheartening that environmental agencies at both the federal and state levels have failed to take cognisance of the fact that for years, petrochemical outfits and refineries operating in Eleme have been belching plumes of soot into the atmosphere.

On the social media, a growing number of persons have been ventilating their anger over governments’ handling of the air pollution in the state, just as residents have been uploading photographs showing how soot has taken over their homes, and calling on the government to do more to protect the environment and citizens.

Concerned by the air pollution, the state government recently set up a taskforce headed by the Commissioner of Environment, Prof. Roslyn Konya, to explore ways of containing the menace.

An air pollution analysis report published by the state Ministry of Environment, revealed that Port Harcourt is one of the most polluted cities in the country.

Konya while addressing the agitated residents, explained that based on her ministry’s investigation, it was discovered that the soot is largely petroleum-based, as a result of incomplete combustion of hydrocarbon.

She assured the people that the state government is using the process of climatology and emission modelling to trace sources of the black soot in the state capital, adding that tests have already been conducted in certain parts of the city, with a view to tracing possible sources.

“We have sampled two sites namely, Abuloma and Peter Odili Road, and you have to sample from 12 midnight to 6am. And then from 6am to 8am to know that difference, whether there will be an increase or decrease from midnight or whether it will be higher or lower in the morning. I personally went with them,” Konya said.

According to her, “WHO acceptable level of particulate matter of 2.5 microns is the size of the soot. The acceptable level by WHO is 25 microgram per cubic metre. What we got was 270 micrograms per cubic metre and these values were got from the two sites between 12 midnight to 6 am. And then from 6am to 8am, we found out from Odili Road that the value was 62 microgram per cubic metre and then from Abuloma town was 124 microgram per cubic metre.

That means that there was a lowering of the content in the morning, and from midnight, it was very high. This shows that the activities producing this soot take place in the night,” she said.

The ministry’s findings, however, revealed that this soot was as a result of incomplete combustion of petroleum products, with refineries, and petro-chemical companies as suspected sources. The other sources include illegal refineries and burning of old car tyres to access copper imbedded in them.

A petroleum expert, Kombo Manson Braide, described as unfortunate, a recent statement by the Navy that 40 illegal refineries have been destroyed, including operating equipment, and storage facilities worth N3b in the process of battling illegal refining activities in the creeks of the Niger Delta.

“Quite unfortunately, such destruction by a combination of aerial, and gunboat bombardment leave a predictable trail of havoc, and ecological degradation behind: oil spills on land and marine environments, and copious inventories of soot, poor air quality, and thermal pollution due to fires and unconfined explosions. The sustained black smog over Port Harcourt is mainly due to the uncontrolled incineration of crude oil following military missions to destroy illegal refineries in the Niger Delta.

“The effect of the fires in the locations of burnt out illegal refineries is equivalent to the cumulative inventory of smoke and fire that would result from the incomplete combustion of 10 to 20 tanker-load of crude oil, at each of the 40 locations,” he explained.

Meanwhile, the state government has urged residents of parts of the state affected by soot to take precautionary measures including, “covering all foods; don’t drink rain or exposed water; don’t eat exposed roasted plantain and suya; keep doors and windows closed; mop floor regularly; keep children indoors and away from the floor; use nose mask (if intensity of soot is much in your area), while asthmatic persons to take extra care.”

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## **How to win the war on air pollution**

*Date: 19-Feb-2017 Source: The Guardian*

Damian Carrington is half right (The war against air pollution has begun – and it will be fought in cities, 13 February) in that cities bear a terrible burden from air pollution and municipal action is critical to address it. However, city governments cannot succeed alone. Much of urban pollution stems from outside



city limits and significant progress will only be achieved with policies that also require national, regional and even international commitment.

A significant part of city air pollution drifts in from regional sources like wood-burning rural households, coal-fired power plants, industries and the open burning of agricultural waste and rubbish. Commuters driving in from car-centric suburbs and transport between cities contribute to urban congestion and pollution too, stymying

smart city initiatives like investments in public transportation and safer streets for walking and cycling.

We know what works. Cities must enact new policies like those mentioned. But, as important, national and state governments must ensure access to clean household energy and enforce limits on emissions from power stations, industry, open burning and other sources. Policies are also needed to support regional public transit, set standards for low vehicle emissions and low sulphur content in petrol and diesel. Until then, a large part of the air quality – and health – of cities will be at the mercy of their neighbours and the wind that carries their pollution.

Tom

Matte

Vice-president for environmental health, Vital Strategies, New York

- Air pollution is not just a London problem (Editorial, 17 February). Of the 43 zones currently monitored in the UK, 38 fail EU standards for NO<sub>2</sub>, so any strategy has to be nationwide and not left to individual councils.

The most likely government response is an extension of clean air zones, but there are serious doubts as to whether this will improve public health. First, designating certain areas as clean does nothing to reduce total emissions; it merely diverts them elsewhere. Second, the health effects of NO<sub>2</sub> and particulates are without threshold, so reducing levels below an arbitrary limit may make sense politically, but will have little effect biologically. Third, the projected improvement in air quality is predicated upon new vehicles producing less NO<sub>2</sub> in line with stricter EU vehicle emission tests, but we already know that emissions of NO<sub>2</sub> “on the road” are four to five times greater than in laboratory tests, a discrepancy that even applies to the latest Euro 6 engines. Finally, studies of London schoolchildren showed no improvement in lung function after three years living in a low-emission zone.

As your leader proposes, we are in urgent need of a new Clean Air Act that hastens the demise of diesel and other highly polluting technologies, something the government could and should have championed more than 20 years ago.

Dr Robin Russell-Jones

Former chair CLEAR, Campaign for Lead Free Air, Stoke Poges, Buckinghamshire



## How air pollution harms your health - and how to avoid it

*Date: 20-Feb-2017 Source: The Guardian*



The European Commission has told the UK to clean up its air. Levels of nitrogen dioxide – which is linked to heart and lung disease and contributes to the early deaths of 40,000 people a year in the UK – are particularly bad. We're not the only ones with filthy air; the five most-developed countries in the EU (Germany, France, Italy, Spain and the UK) are all in breach of the recommended limits and have been given two months to take action. Yet gone are the days of epic smogs, such as the

great smog of 1952 that enveloped London in a thick fog for four days and killed an estimated 12,000 people. That crisis led to a new awareness of the dangers of air pollution and the need to protect our air with legislation. So surely our health is less at risk now?

Does air quality matter?

Yes. Ambient (outdoor air pollution) in cities and rural areas caused three million premature deaths worldwide in 2012 – predominately in low- and middle-income countries. And the World Health Organisation (WHO) is confident that, if we reduce air pollution, it would cut rates of stroke, heart disease, lung cancer, asthma and respiratory disease. Researchers at King's College London (KCL) have recently confirmed that high levels of toxic air particles from traffic and combustion are associated with an increase in hospitalisations and deaths from heart and lung disease in children and younger adults.

But it is a huge task; in 2014, only 8% of the world's population lived in places where the WHO air quality guidelines were met. The vast majority of us are breathing sub-standard air. Yet change is possible. According to the Department for Environment, Food and Rural Affairs (Defra), between 1970 and 2015, there was a long-term decrease in UK emissions of all air pollutants (ammonia, nitrogen oxides, non-methane volatile organic compounds, particulate matter and sulphur dioxide).

What is air pollution?

Air pollution can be indoor or outdoor. Four key pollutants – particulate matter (PM), ozone, nitrogen dioxide and sulphur dioxide – can cause health risks if limits set by the WHO are exceeded. PM is a mix of solid and liquid particles suspended in the air and it affects more people than any other pollutant. In 2012, there were 37,800 premature deaths in the UK attributed to PM exposure, compared with 14,100 premature deaths from nitrogen dioxide pollution. Size matters; the smaller the particle, the worse it is: "The most health-damaging particles are those with a diameter of 10 microns or less, (PM<sub>10</sub>), which can penetrate and lodge deep inside the lungs. Chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer," says the WHO.

Ozone at ground level – which is different to the ozone layer in the atmosphere – forms when sunlight reacts with air pollutants. So, high ozone levels occur when it is sunny and can trigger asthma attacks and breathing problems in susceptible people. Nitrogen dioxide is a product of combustion (burning fuel for

heat, power, engines and ships) and has a negative effect on lung function, especially in children with asthma. Sulphur dioxide is a colourless gas released when sulphur-containing fossil fuels are burned to produce heat and power. High levels cause eye irritation, breathing difficulties and an increase in hospital admissions and mortality among people with heart disease.

What about indoors?

Indoor air pollution is a major health problem for the 3 billion people globally who use solid fuels such as wood and charcoal in cooking and heating, especially if their homes are poorly ventilated. Wood-burning stoves may expose people to higher levels of PM than if they stood in the middle of a busy roundabout at rush hour.

What can we do on bad air days?

The Daily Air Quality Index (Daqi) provides reliable information about levels of air pollution with recommended actions and health advice. This UK government resource says: “Air pollution has a range of effects on health. However, air pollution in the UK on a day-to-day basis is not expected to rise to levels at which people need to make major changes to their habits to avoid exposure; nobody need fear going outdoors.”

Clearly, if your breathing is already compromised by an underlying heart or lung problem (such as angina or asthma), you’re more likely to suffer from the effects; those with asthma may need to increase their use of inhalers on days when levels of air pollution are higher than average. Even the healthy general population may notice symptoms such as a dry throat, sore eyes and a tickly cough when pollution levels are very high, as they were in central London last month. The London Air website gives more specific advice depending on the level of air pollution. When the air pollution banding is rated as very high, the advice to adults and children with lung problems, adults with heart problems and older people is to avoid strenuous physical activity and, for people with asthma, to use their reliever inhaler more often. And the general population is advised to “reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat”.

Are babies at risk?

Air pollution has a small but significant impact on pregnancy and the health of babies and young children, according to a report from UCLA. It is not as bad as smoking during pregnancy or near your newborn baby, because the air pollutants are relatively diluted. But developing lungs are more susceptible to the damaging effects of air pollution and further study into the effects on pregnant women and infants are needed, says the report. Yet a stroll outdoors, even in a traffic-heavy zone, is actually going to give a baby more chance of breathing clean air than being in a smoke-filled car or strapped into a high chair next to a poorly ventilated wood-burning stove. However, on days when air pollution is very high, and if your infant has a bad cough or cold, it may be preferable to stay indoors.

Should I wear a mask to cycle?

It is not clear whether cyclists are particularly at risk from pollution. KCL air quality experts have suggested that urban cyclists could be exposed to lower levels of particulates than average; either because their journeys tend to be short or because being on the move outdoors means you are not trapped in smog.

A small study of pedestrians in an area of high air pollution in China showed lower blood pressure in mask wearers than non mask wearers, possibly indicating less strain on the heart when exposed to pollution. Masks need to fit snugly and have sub-micron filters to filter out the small particles. The trouble is that masks that are comfortable enough to cycle in are probably not effective.

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## Delhi, Patna among cities with highest air pollution: study

*Date: 20-Feb-2017 Source: The Indian Express*



The smog over northern India is extracting a heavy toll, every minute two lives are lost in India due to ambient air pollution.

A study recently released by 48 leading scientists has placed two Indian cities — New Delhi and Patna — among the worst polluted in the world with high PM 2.5 levels or the fine particulate matter that affects the body the most. Published in medical journal The Lancet, the study claims that

over a million Indians die every year due to air pollution. The smog over northern India is extracting a heavy toll, every minute two lives are lost in India due to ambient air pollution, the study says. “An estimated 18,000 people die every day because of exposure to ambient and household air pollution, making it the world’s largest single environmental health risk. Ambient air pollution is particularly pertinent in urban areas, but it also affects non-urban populations,” the Lancet Countdown states.

The study says causes of air pollution and climate change are intricately linked and needed to be tackled together. The Lancet concludes that climate change posed both a “potentially catastrophic risk to human health”, while conversely being “the greatest global health opportunity of the 21st century” if the right steps are taken.

Contradicting some reports, The Lancet says coal fired power plants contribute to 50 per cent of the ambient air pollution. Minister of State for Environment, Forest and Climate Change Anil Madhav Dave recently admitted in Parliament that the country spends a mere Rs 7 crore annually on monitoring air pollution for a vast country of India’s size with a 1.3 billion population. He had also said no credible study to quantify number of people who have developed lung and allied diseases or number of deaths directly as a result of air pollution is available.

Science and Technology Minister Harsh Vardhan, a trained physician himself, says, “Pollution when it starts affecting lungs especially in little children can be a killer, it is like a slow poison and there is no reason for me not to be worried, a lot has been done, but still a lot that needs to be done.”

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# London Commuters Are Suffering, Thanks To Air Pollution

*Date: 21-Feb-2017 Source: Forbes*



Poor air quality kills thousands of urban dwellers, so it's time to start paying attention to the data

Back in July last year, I published a primer on air pollution – what it is, how damaging it can be and the options we have for measuring and combating it. And today I'm writing about it again. Whilst I'd desperately love to be bringing you good news, I'm afraid I can't. But the city that is under severe scrutiny today is my beloved London.

London has a long and complicated history with pollution. The period now known as The Great Stink was largely ended by the development of a reliable sewer network. In 1952, a toxic fog smothered the city, killing thousands, and fatbergs are becoming worryingly commonplace. But 2017 may well become another year to add to the pollution history books.

The city breached its annual limits of nitrogen dioxide (NO<sub>2</sub>) just 120 hours into 2017. A sensor on the always-congested Brixton Road, one of many monitored by King's College London, recorded a staggering 17 hours in a single day when NO<sub>2</sub> concentrations exceeded the “safe” 200 micrograms per cubic meter limit set by the World Health Organization. And at several points in the day, levels of NO<sub>2</sub> peaked at 350 micrograms / m<sup>3</sup>. That news was followed up by a paper, published two weeks ago by the University of Surrey, which showed that Tube passengers are exposed to eight times more air pollution (in the form of particulate matter, or PM) than those who drive to work. That's despite the fact that, as this study showed, car drivers in London are actually the most polluting commuters.

Dr. Prashant Kumar, who led the study, said: “We found that there is definitely an element of environmental injustice among those commuting in London, with those who create the most pollution having the least exposure to it.” Exposure to PM was also shown to depend on the route too – passengers on the District line, which uses trains with closed windows, were exposed to far lower concentrations of PM than those travelling on the Victoria and Northern lines, which each use open ventilation. So there's definitely an argument to be made for better train design. But, of course the real issue is above ground – with the fuel-belching vehicles on London's roads.

The city's Mayor, Sadiq Khan, pledged to battle air pollution in his election campaign, and since taking office, he's started to deliver on it. His promised Ultra Low Emission Zone is already in the planning, and will come into force in September 2020. In that zone, which covers a large proportion of the city, cars, motorcycles, vans, minibuses, buses, coaches and heavy goods vehicles will need to meet restrictive exhaust emission standards – those who fail to meet them will be fined each time they drive into the city. In January, he tweeted a series of warnings when a period of “very high air pollution” hit the city. But, he was roundly criticized for encouraging people to stay home, rather than telling drivers to stay off the road (prompting this tweet from a journalist at Business Insider).

Just last week, he announced a new scheme called the toxicity charge, or T-charge, which will apply to the most polluting vehicles from Oct. 23 this year. Writing in the Independent, Khan said, “Diesel and petrol vehicles that do not meet the Euro 4 emission standard – typically registered before 2006 – will have to pay an extra daily £10 charge to come into central London. This means that those driving into the Congestion Charge zone between 7 a.m. and 6 p.m. on weekdays, in one of these polluting vehicles, will have to pay £21.50 in total.”

Whether that’ll be enough to curb London’s air quality crisis is unlikely, of course, but I hope that, at the very least, this campaign increases awareness of how important air quality measurements are to urban life. I’m not talking about low-cost, personal monitors here, though. As this piece in Nature suggests, the lack of regulation around those devices should make us little skeptical of their promised performance. The co-author of that article, Professor Alastair Lewis, also said in a Guardian interview, that the air pollution monitoring equipment used by governments “typically costs tens of thousands of pounds. If we had a cheap way of doing it, we’d do it the cheap way.”

Thankfully, a number of these government monitoring schemes provide their data in an open format, which has enabled the development of multiple online tools. The newest one is an interactive air quality map titled BreezoMeter, which combines data from governmental sensors, satellites, weather patterns, transportation dynamics and other sources. In my July 2016 article, I also told you about the World Air Quality Index, there’s the Plume Labs database too. Also new-to-the-market is AirVisual, a crowd-sourced platform that provides access to historical, real-time and forecast air quality data from all over the world. Individual regions also manage this sort of data – millions of Chinese urban dwellers rely on smartphone apps, which report on local air quality on a minute-by-minute basis, radio stations in Mexico City report on ozone levels daily, and since moving to New Zealand in December, I’ve also come across a map maintained by the country’s National Transport Agency.

The air quality crisis cannot be ignored any further. So it’s time to get clued up. Have a look around the data available in your region, familiarize yourself with the latest advice from the WHO, and most importantly of all, try to use your car less. Your lungs, and those of the people around you, will thank you for it.

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## **Diesel vehicles not major contributor to air pollution: Centre**

*Date: 22-Feb-2017 Source: Hindustan Times*



Diesel vehicles which are more than 10 years old, are not major contributors to air pollution, the Centre on Wednesday told the National Green Tribunal while seeking stay of its ban order in Delhi-NCR.

Additional Solicitor General Pinky Anand, appearing for the Ministry of Road Transport and Highways, told the green panel that there was no



proof that diesel vehicles which were over 10 years old, were the sole cause of air pollution and that all types of fuel cause some amount of pollution.

“According to IIT and CPCB study, diesel vehicles are not a major source of air pollution. There is no evidence to show that 15-year-old petrol and 10-year-old diesel vehicles cause major pollution and in fact their contribution is minuscule. All forms of fuel including CNG and petrol cause pollution,” the law officer told a bench headed by NGT Chairperson Justice Swatanter Kumar said.

She said that while petrol emits carbon dioxide, CNG too causes pollution as it is high on nitrogen oxides.

Anand said that the ministry has initiated several schemes to create awareness about air pollution and is also giving subsidy to the buyers of electric and hybrid vehicles to encourage their increased use.

The bench then said, “You had stated before us that you were in favour of removing 15-year-old diesel vehicles. Today, you are saying something different. Have you ever measured emission from a single moving commercial or domestic vehicle.”

To this, the ASG replied that all her arguments were backed by scientific studies and would refer to these at the time of detailed hearing in the case.

The matter has now been posted to March 7.

On January 13, the Centre had moved the Supreme Court seeking lifting of the ban on 10-year-old diesel vehicles in Delhi and NCR, saying it was affecting the economically weaker section of people.

Noting that diesel is the prime source of air pollution in Delhi, the tribunal had held that all diesel vehicles which are more than 10 years old, will not be permitted to ply in Delhi-NCR.

“All vehicles, diesel or petrol which are more than 15 years old, shall not be permitted to ply on the roads and wherever such vehicles of this age are noticed, the authorities concerned shall take appropriate steps in accordance with law...,” the tribunal had said in its November 26, 2014 order.

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## Construction industry needs to do its bit to cut air pollution

*Date: 23-Feb-2017 Source: The Financial Express*



India is unlikely to lose its infamous badge of "country with the deadliest polluted air" any time soon -- unless it takes some quick counter-measures.

It is estimated that nearly 70 per cent of the buildings that will exist in Indian cities by 2030 are yet to be built. Which means that India is unlikely to lose its infamous badge of “country with the deadliest polluted air” any time soon — unless it

takes some quick counter-measures. The challenge lies in maintaining the construction momentum while following time-tested practices. Surely, construction projects like the Metro, roads and residential homes need to be undertaken on high priority. For this, sand, gravel, stones, bricks and more will inevitably travel in open trucks criss-crossing crowded cities — and the debris spilled en-route lodges in the human respiratory system, causing insidious life-threatening lung diseases. Construction was banned in the Indian capital for a week last year, but this is not nearly enough.

As the head of a firm that builds homes on residential plots, I have increasingly felt the need to do whatever possible to reduce the spread of construction debris and material into the air we breathe. We have spent considerable hours looking for workarounds and alternatives that will make some difference — because every little bit counts.

Of the sources of construction pollution, the biggest culprit is sand. After all, it comes in a loose format. Truck after truck comes in and dumps enormous loads of sand at the construction site. It often sits there, waiting to be used, and all it takes is a bit of breeze for it to add to air pollution.

A four-storeyed, multi-family residential home on a typical 200 square yard plot requires something in the region of 85 trucks of sand — enough to fill a dozen bedrooms from top to bottom. Obviously, there must be some thought given to reducing the very use of sand in construction.

Sand is used for different purposes during construction. One of these is concreting. Instead of creating concrete at the site (often referred to as site-mix concrete), explore ordering ready-mix concrete (RMC).

It's the same with wall plaster. Dry, ready-mix plaster available in bags can be mixed with water and used for plastering. This eliminates the pollution caused as a result of transportation or even when material is sitting at the site — all packed. We use these alternatives for all the homes we build, reducing the use of loose sand by 80 to 90 per cent.

With thousands of old homes, especially those built in 1960s and 1970s, needing rebuilding, demolition activity and debris transportation are yet another source of air pollution. Try covering the demolition site with a “shade net” from all sides, including the top. It is a solution worth implementing as it contains the spread of material into the air. But the “shade net” has to be sealed on all sides to be effective.

Today, green “shade nets” can be seen in many places where major renovation is happening, but typically only some parts of the building are covered up to prevent them from being an eyesore. I would recommend a fully-enclosed construction site. Workers will, of course, need to work with masks within this enclosure.

A great deal of water is typically used during construction, specially to cure material such as bricks, concrete slabs or on plaster which also needs moisture for cement to gain strength. This water then runs polluted into drains, adding to the general pollution. Spraying a layer of curing compound does away with the need to keep the concrete slabs under water for a couple of weeks or spraying brick walls and cement plaster with water.

Use of Autoclaved Aerated Concrete (AAC) blocks rather than red bricks is better as they don't need to be soaked before use. Similarly, readymade plaster means that water doesn't have to be poured over walls and so on. Materials that come in closed bags reduce the probability of their mixing with the air.

Using RMC rather than sand, aggregate and cement mix on the site actually works out to the same in terms of cost, as does the use of gypsum plaster compared with on-site plaster and putty. The price AAC blocks is comparable to red bricks. Readymade plaster, however, does cost approximately double. The savings in terms of better health for all concerned, however, are inestimable.

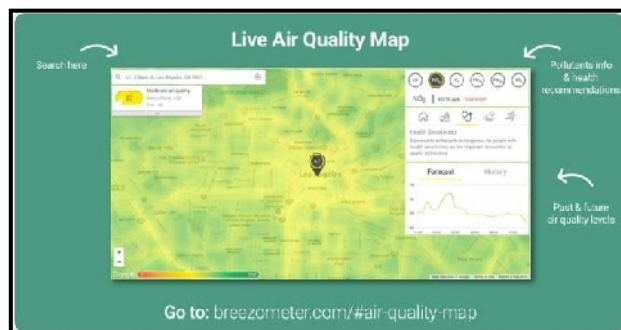
The Ministry of Environment notified a Graded Response Action Plan to fight air pollution in Delhi and the National Capital Region area last month. With the plan in place, measures such as odd-even rules and restrictions on construction work will be automatically implemented whenever the level of PM2.5 breaches 300 micrograms per cubic metre and PM10 levels stay above 500 micrograms per cubic metre for two days in a row.

Unless the construction industry takes action to reduce its contribution to air pollution, it's bound to lose out on the completion of its projects.

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## BreezoMeter introduces interactive map to provide real-time air pollution data

*Date: 23-Feb-2017 Source: News Medical*



Air pollution data company now offering an interactive air pollution map on its website, allowing visitors to search for real-time air pollution levels

BreezoMeter, an air pollution data provider, today launches its interactive air quality map, an essential air monitor providing real time air pollution information, predictive hourly forecasts, and historical data based on its user's address. The

map, made possible by the company's latest algorithm update, is highly visual and boasts a matchless accuracy down to the street level. Additional features include analyses of the dominant pollutants in the air, as well as health and fitness recommendations, such as when to avoid an outdoor workout or when those with health sensitivities may experience respiratory issues.

BreezoMeter is a big data platform using governmental sensors, satellites, weather patterns, transportation dynamics and other sources to analyze how pollution disperses, in a similar analogy to weather. Using concentrated traffic data, BreezoMeter has developed machine learning techniques to precisely evaluate the pollution each jam emits in real time.

"Today's traditional air pollution monitoring methods include only annual traffic data, which doesn't reflect the day-to-day changes residents see and breathe on their local streets," said Emil Fisher, CTO of BreezoMeter. "BreezoMeter's newest algorithm serves as a massive research and development breakthrough, bringing air pollution data accuracy to a new and precise level, monitored worldwide."



“Businesses and consumers previously had to rely on inaccurate and generic point data regarding pollution, a truly global health crisis. Through a simple API, businesses can integrate this powerful data into their product, and consumers now have access to on-demand air pollution levels,” said Ran Korber, CEO of BreezoMeter.

BreezoMeter’s air quality data is currently integrated by major brands such as Dyson, Dermalogica, AccuWeather, Eureka Forbes and Cisco. The company will be showcasing its interactive map via a unique pollution dashboard at Mobile World Congress 2017 – located at Hall 5, Stand 5E81.

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## Air pollution may have masked mid-20th Century sea ice loss

*Date: 23-Feb-2017 Source: PHYS ORG*



Humans may have been altering Arctic sea ice longer than previously thought, according to researchers studying the effects of air pollution on sea ice growth in the mid-20th Century. The new results challenge the perception that Arctic sea ice extent was unperturbed by human-caused climate change until the 1970s.

Scientists have observed Arctic sea ice loss since the mid-1970s and some climate model simulations have shown the region was losing sea

ice as far back as 1950. In a new study, recently recovered Russian observations show an increase in sea ice from 1950 to 1975 as large as the subsequent decrease in sea ice observed from 1975 to 2005. The new observations of mid-century sea ice expansion led researchers behind the new study to the search for the cause.

The new study supports the idea that air pollution is to blame for the observed Arctic sea ice expansion. Particles of air pollution that come primarily from the burning of fossil fuels may have temporarily hidden the effects of global warming in the third quarter of the 20th Century in the eastern Arctic, the researchers say.

These particles, called sulfate aerosols, reflect sunlight back into space and cool the surface. This cooling effect may have disguised the influence of global warming on Arctic sea ice and may have resulted in sea ice growth recorded by Russian aerial surveys in the region from 1950 through 1975, according to the new research.

"The cooling impact from increasing aerosols more than masked the warming impact from increasing greenhouse gases," said John Fyfe, a senior scientist at Environment and Climate Change Canada in Victoria and a co-author of the new study accepted for publication in *Geophysical Research Letters*, a journal of the American Geophysical Union.

To test the aerosol idea, researchers used computer modeling to simulate sulfate aerosols in the Arctic from 1950 through 1975. Concentrations of sulfate aerosols were especially high during these years before regulations like the Clean Air Act limited sulfur dioxide emissions that produce sulfate aerosols.

The study's authors then matched the sulfate aerosol simulations to Russian observational data that suggested a substantial amount of sea ice growth during those years in the eastern Arctic. The resulting simulations show the cooling contribution of aerosols offset the ongoing warming effect of increasing greenhouse gases over the mid-twentieth century in that part of the Arctic. This would explain the expansion of the Arctic sea ice cover in those years, according to the new study.

Aerosols spend only days or weeks in the atmosphere so their effects are short-lived. The weak aerosol cooling effect diminished after 1980, following the enactment of clean air regulations. In the absence of this cooling effect, the warming effect of long-lived greenhouse gases like carbon dioxide has prevailed, leading to Arctic sea ice loss, according to the study's authors.

The new study helps sort out the swings in Arctic sea ice cover that have been observed over the last 75 years, which is important for a better understanding of sea ice behavior and for predicting its behavior in the future, according to Fyfe.

The new study's use of both observations and modeling is a good way to attribute the Arctic sea ice growth to sulfate aerosols, said Cecilia Bitz, a sea ice researcher at the University of Washington in Seattle who has also looked into the effects of aerosols on Arctic ice. The sea ice record prior to satellite images is "very sparse," added Bitz, who was not involved in the new study.

Bitz also points out that some aerosols may have encouraged sea ice to retreat. Black carbon, for instance, is a pollutant from forest fires and other wood and fossil fuel burning that can darken ice and cause it to melt faster when the sun is up - the opposite effect of sulfates. Also, black carbon emissions in some parts of the Arctic are still quite common, she said.

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## **Air pollution: 5 steps to vanquishing an invisible killer**

*Date: 24-Feb-2017 Source: New Stateman*

110, 150, 520... These chilling statistics are the number of deaths attributable to particulate air pollution for the cities of Southampton, Nottingham and Birmingham in 2010 respectively. Or how about 40,000 - that is the total number of UK deaths per year that are attributable the combined effects of particulate matter (PM2.5) and Nitrogen Oxides (NOx).

This situation sucks, to say the very least. But while there are no dramatic images to stir up action, these deaths are preventable and we know their cause. Road traffic is the worst culprit. Traffic is responsible for 80 per cent of NOx on high pollution roads, with diesel engines contributing the bulk of the problem.

Now a new report by ResPublica has compiled a list of ways that city councils around the UK can help. The report argues that: "The onus is on cities to create plans that can meet the health and economic challenge within a short time-frame, and identify what they need from national government to do so."

This is a diplomatic way of saying that current government action on the subject does not go far enough – and that cities must help prod them into gear. That includes poking holes in the government’s proposed plans for new “Clean Air Zones”.

Here are just five of the ways the report suggests letting the light in and the pollution out:

#### 1. Clean up the draft Clean Air Zones framework

Last October, the government set out its draft plans for new Clean Air Zones in the UK’s five most polluted cities, Birmingham, Derby, Leeds, Nottingham and Southampton (excluding London - where other plans are afoot). These zones will charge “polluting” vehicles to enter and can be implemented with varying levels of intensity, with three options that include cars and one that does not.

But the report argues that there is still too much potential for polluters to play dirty with the rules. Car-charging zones must be mandatory for all cities that breach the current EU standards, the report argues (not just the suggested five). Otherwise national operators who own fleets of vehicles could simply relocate outdated buses or taxis to places where they don’t have to pay.

Different vehicles should fall under the same rules, the report added. Otherwise, taking your car rather than the bus could suddenly seem like the cost-saving option.

#### 2. Vouchers to vouch-safe the project’s success

The government is exploring a scrappage scheme for diesel cars, to help get the worst and oldest polluting vehicles off the road. But as the report points out, blanket scrappage could simply put a whole load of new fossil-fuel cars on the road.

Instead, ResPublica suggests using the revenue from the Clean Air Zone charges, plus hiked vehicle registration fees, to create “Pollution Reduction Vouchers”.

Low-income households with older cars, that would be liable to charging, could then use the vouchers to help secure alternative transport, buy a new and compliant car, or retrofit their existing vehicle with new technology.

#### 3. Extend Vehicle Excise Duty

Vehicle Excise Duty is currently only tiered by how much CO<sub>2</sub> pollution a car creates for the first year. After that it becomes a flat rate for all cars under £40,000. The report suggests changing this so that the most polluting vehicles for CO<sub>2</sub>, NO<sub>x</sub> and PM<sub>2.5</sub> continue to pay higher rates throughout their life span.

For ClientEarth CEO James Thornton, changes to vehicle excise duty are key to moving people onto cleaner modes of transport: “We need a network of clean air zones to keep the most polluting diesel vehicles from the most polluted parts of our towns and cities and incentives such as a targeted scrappage scheme and changes to vehicle excise duty to move people onto cleaner modes of transport.”

#### 4. Repurposed car parks

You would think city bosses would want less cars in the centre of town. But while less cars is good news for oxygen-breathers, it is bad news for city budgets reliant on parking charges. But using car parks to tap into new revenue from property development and joint ventures could help cities reverse this thinking.

#### 5. Prioritise public awareness

Charge zones can be understandably unpopular. In 2008, a referendum in Manchester defeated the idea of congestion charging. So a big effort is needed to raise public awareness of the health crisis our roads have caused. Metro mayors should outline pollution plans in their manifestos, the report suggests. And cities can take advantage of their existing assets. For example in London there are plans to use electronics in the Underground to update travellers on the air pollution levels.

Change is already in the air. Southampton has used money from the Local Sustainable Travel Fund to run a successful messaging campaign. And in 2011 Nottingham City Council became the first city to implement a Workplace Parking levy – a scheme which has raised £35.3m to help extend its tram system, upgrade the station and purchase electric buses.

But many more “air necessities” are needed before we can forget about pollution’s worry and its strife.

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## FEATURE: Is enough being done to tackle air pollution?

*Date: 24-Feb-2017 Source: Wimbledon Gaurdian*



A wave of reforms have been brought out across the capital in an attempt to tackle air toxicity and pollution in the capital this year, but is it “too little too late”?

The city breached its air pollution limit for the whole of 2017 in just five days this year, when Brixton Road in Lambeth exceeded the annual limit of pollutant nitrogen dioxide on January 5.

The road was joined shortly afterwards by Putney High Street, which breached its regulations by

January 8.

The capital also breached its annual air pollution limits within the first week of both 2015 and 2016.

Exposure to polluted air has been linked to the early deaths of about 40,000 people a year across the country. City Hall estimates 9,400 deaths across London were associated with long-term exposure to pollution in 2010.

It can cause heart disease, lung disease, asthma and impact children’s development, and has been linked to an increased risk of Alzheimer’s disease and dementia.

Just last month toxic air alerts were issued across London, including in Wandsworth, Kingston, Wimbledon, Richmond and Greenwich, as air pollution in capital surpassed levels in Beijing. But is enough being done to tackle what the Mayor of London, Sadiq Khan, has called a “public health emergency”?

At the end of January, City Hall announced 50 schools around London would be receiving air quality audits in attempt to find ways to lower emissions and exposure to pollution around the schools, which could include moving play areas and changing the layout of nearby roads.

There are currently 360 primary schools around London in areas exceeding legal air pollution limits.

Although Mr Khan hailed the move as “a strong step towards helping some of the most polluted schools in London identify effective solutions to protect pupils from toxic fumes”, the measure was criticised by some environmental groups for not doing enough.

Friends of the Earth campaigner Sophie Neuburg said: “London’s children deserve better. The Mayor’s policies to clean up London’s air are a good first step but they do not go far enough. Planning rules must be changed so new schools can’t be built next to air pollution hotspots.

“And Sadiq Khan must listen to the growing calls from health groups and campaigners and commit to ban diesel on London’s roads by 2025.”

Although a ban on diesel vehicles does not appear to be forthcoming, it was announced on Friday, February 17, that drivers of the oldest and most polluting vehicles in the capital would be subjected to a £10 “toxicity charge” in central London from October 23 this year.

The so-called “T-charge” targets vehicles which do not meet Euro 4 emission standards, typically petrol and diesel cars registered before 2006, and will operate during the same times as the congestion charge.

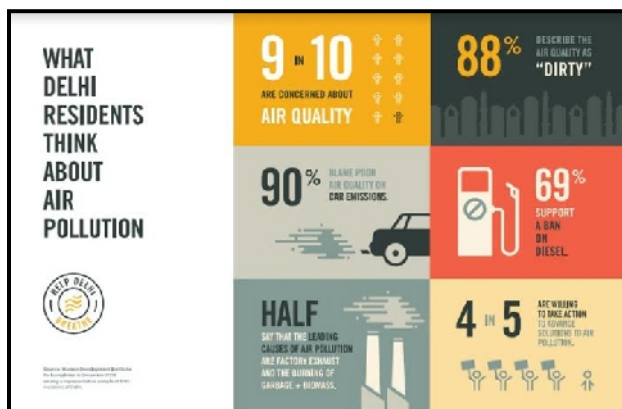
However, this measure has been criticised by the Greater London Authority (GLA) Conservatives’ environment spokesman, Shaun Bailey, who argued that research showed it would only reduce nitrogen dioxide by between one and three per cent.

Mr Bailey said: “Londoners will be disappointed to see the Mayor unable to defend a policy predicted to cost 9,000 drivers a combined £23 million a year. What we need, instead of politicising the environment, is a sensible policy that actually tackles air pollution.”

Other boroughs around London have also taken it upon themselves to adopt fines for polluting cars, including Merton Council which is preparing to bring in a diesel levy that will increase the cost of parking permits by £150 over the next three years for diesel vehicles.

## Is Delhi ready for drastic measures against pollution?

Date: 25-Feb-2017 Source: Daily O



If you're a citizen of the capital, then particularly in the last few months, you've felt the choke and wheeze of the air in the city.

Whether it's just to step out for a walk, go out for some fresh air, or even to open the windows, Delhiites have had a hazardous winter in terms of air quality and pollution.

The Delhi government's once-successful odd-even scheme proved futile in the face of the US Embassy finding that air quality index (AQI)

stands at 999.

The standard chart to record AQI finishes at the "hazardous" level of 500. But the air cleared, vog masks covered fewer faces, the Supreme Court banned firecrackers (you'll still see them sporadically if a festival or wedding is around the corner) and soon, the issue of air pollution disappeared from the collective consciousness of the news cycle, the government and the people.

Fortunately, a poll commissioned by the Help Delhi Breathe coalition, conducted in October-November 2016 by the Human Development Institute, won't let us forget this problem easily.

The survey, which was conducted through in-person interviews with 500 residents of Delhi, following quotas for age, gender and education - that are representative of the Delhi population - will soon be out for the public to gauge. A staggering 88 per cent of the capital's citizens described the air quality as "dirty" and, unsurprisingly, zero per cent described it as "very clean".

The good news is that a few of the results suggest that the capital is not as laidback in addressing the issue of air quality as the authorities. Nine out of 10 residents are concerned about the air quality in the city and while the causes, to their minds, vary, data suggests they are ready to accept drastic measures in order to control the PM levels.

Four out of five Delhiites said they would be willing to take action to advance solutions to the problems faced.

69 per cent were even agreeable to a complete ban on diesel, since 88 per cent identify vehicular emissions as a leading cause of air pollution. While the findings suggest the capital's inhabitants are ready to radically react to the notorious "most polluted city in the world" tag that has come to suffocate the city, this data will help keep the issue alive. And hopefully, thereby, the rest of us Dilliwalas too.

The poll is available on [www.helpdelhibreathe.in](http://www.helpdelhibreathe.in).

## Illegal air pollution levels endangering health of capital's children

*Date: 25-Feb-2017 Source: Belfast Telegraph*



Tens of thousands of children in a quarter of all London's schools are exposed to illegal levels of air pollution that can cause permanent damage to their health, a study has found.

Pupils at 802 of the capital's schools, including a third of nurseries, are routinely breathing in toxic air that increases their chances of developing conditions such as asthma.

The report also shows that London's poor are far more likely to be living in areas affected by air pollution linked to 9,000 early deaths every year in the capital.

It is one of many places hit by the UK's air quality crisis, which has caused the Government to be issued with a "final warning" by the European Commission for repeated breaches of legal limits.

London mayor Sadiq Khan, who commissioned the report, vowed to tackle air pollution, which is also linked to heart and lung diseases.

He said: "It is an outrage that more than 800 schools, nurseries and other educational facilities in the capital are in areas breaching legal air pollution limits.

"We know air pollution is permanently affecting children's lung development - resulting in smaller lungs for life.

"I refuse to stand by when our children are being exposed to dangerously polluted air, putting them at greater risk of serious health conditions when we know it's within our power to tackle the problem."

Among the measures he plans to introduce are air quality audits to help schools identify ways to protect their children from "filthy air", much of which is come from traffic fumes.

Mr Khan has already announced the introduction of a £10 "toxicity charge" for drivers of some of the oldest and most polluting cars in central London from October.

He also suggested that he could go further by banning certain cars from the streets, warning "nothing is off the table".

The latest research shows that 802 of the capital's 3,261 nurseries, primaries, secondary schools and colleges in 2013 were within 150 metres of nitrogen dioxide levels that breached the EU limit.

The number of schools affected nearly doubled from 2010 when it was 433.

London is not the only city affected by the air quality crisis.

Birmingham, Derby, Leeds, Nottingham and Southampton are also planning to charge for the highest polluting vehicles to enter clean air zones.

A Government spokesman said: "The Government is firmly committed to improving the UK's air quality and cutting harmful emissions. That's why we have committed more than £2 billion since 2011 to increase the uptake of ultra-low emissions vehicles and support greener transport schemes and set out how we will improve air quality through a new programme of Clean Air Zones.

"In addition, in the Autumn Statement, we announced a further £290 million to support electric vehicles, low emission buses and taxis, and alternative fuels.

"We will update our air quality plans in the spring to further improve the nation's air quality."

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## **Air pollution: New EPCA plan to cut PM2.5 levels in Delhi by 70%**

*Date: 28-Feb-2017 Source: Hindustan Times*

A new comprehensive plan to bring down air pollution in the Capital will aim to bring down the annual average of PM2.5 down by 70% to meet the clean air standard.

The plan, which is being drafted by the Supreme Court-appointed Environment Pollution Prevention and Control Authority along with Central Pollution Control Board and Delhi Pollution Control Committee, is slated to be submitted to the Supreme Court on Wednesday.

"The three-year annual average, for 2014, 2015 and 2016, of ultrafine PM2.5 in Delhi is 132 microgramme per cubic metre. This needs to be reduced by about 70% to meet annual standard of 40. This comprehensive plan will work towards that," Anumita Roy Chowdhury, head of CSE's clean air campaign, who was present at the EPCA meeting on Monday, told HT.

The plan, which will address all sources of air pollution, will take more stringent actions against combustion sources like vehicles, industry, power plant and waste burning.

"These combustion sources are more toxic in nature. However, each and every source of pollution in Delhi will be addressed in the plan with short, medium and long term measures. Appropriate action will also be taken against dust sources," she said.

This new anti-pollution plan to combat Delhi's foul air is based on a 2012 blueprint prepared by the Sheila Dikshit government along with facets of the 42-point action plan of the Union environment ministry and EPCA's own action plan.

"The February 2012 plan of the Delhi government included features like increasing the city's bus fleet to 15,000, setting up of 14 bus rapid transit (BRT) corridors by 2016, introducing variable time-based parking rates, increase road tax on private vehicles and ensure an early roll out of Euro VI emission standards, among others," a government official said.



It had even reached the Cabinet level but did not proceed further due to political turn of events which saw Dikshit losing after being in power for 15 years and Aam Aadmi Party forming the Delhi government in December, 2013.

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## Global studies on India's air quality flawed: CPCB

*Date: 28-Feb-2017 Source: The Hindu*



Bodies such as WHO used 'arbitrary' conversion factors to measure pollutants.

The Central Pollution Control Board (CPCB) — an Environment Ministry organisation that sets guidelines for monitoring and controlling pollution — says international studies linking air quality in India to disease and death are flawed because "...the ethologic, personnel immunity (sic) and demography of India are incomparable with international practices."

Bodies such as the World Health Organization (WHO) used "arbitrary conversion factors [to measure the prevalence of different pollutants]" to rank cities for air quality, the CPCB alleged in an internal newsletter published in November 2016 but not made public.

The publication, called Matter-Fine Particulate: An Environmental Challenge, is a guide to understanding the genesis, prevalence, sources and health effect of extremely small particles of dust that can result from a wide range of causes including road dust, domestic cooking and fossil fuel burning.

The size of these particles determines the ease with which they can be lodged within the body. Those smaller than 2.5 micron (PM2.5) are generally implicated for respiratory and cardiovascular ailments.

Reacting, last week to reports that air pollution killed 1.1 million Indians in 2015, Environment Minister Anil Dave said at a press conference, "We seem to be far more influenced by things out of India. We have several of our own organisations and experts...and I trust them as much as I do our Army."

While acknowledging that PM2.5 pollution was a problem, no Indian agency has quantified death and disease due to air pollution in the country.

On the other hand, other than disavowing mortality figures, the government has also never officially disputed any international report on how they measured pollution numbers for Indian cities.

In its most recent update in 2016, the WHO said that 10 of the 20 most polluted cities in the world were in India, whose air quality standards require that the daily PM 2.5 averages not exceed 60 mg/cubic metre and 40 mg/cubic metre annually.

The WHO arrived at its figures by collecting 24-hour and annual average of PM 10 and PM 2.5 of cities from government websites and, when it didn't have figures for PM 2.5, used a constant number to convert from PM 10 measurements. Of the 124 Indian cities, whose pollution figures are available in the WHO database, only 8 had direct PM 2.5 measurements.

According to the CPCB publication — by far the only available government critique of this methodology — this conversion is problematic, as air quality monitoring machines varied widely in their measurements even within the same city.

In some cases PM2.5 was only 8% of PM 10 and other cases 86%, according to a 2014 assessment of air quality parameters in Delhi by the CPCB. “The average thus works out to about 47%,” D. Saha of the CPCB and one of the authors of the report told The Hindu.

“But the WHO assessment uses a 75% conversion [and therefore leads to a higher estimate of PM 2.5].” Devices that measured PM 10 and PM 2.5 employed different methods as the latter — given the size of particles — were extremely prone to fluctuation. Notwithstanding that India didn't have a certification agency that checked the quality of air pollution monitors, particulate matter levels in a city were also influenced by weather and the model that simulated weather patterns in Europe couldn't be extrapolated to India, the report said.

“Most of the simulation models being used in India have foreign origin...only the catchy outputs are discussed and disseminated to public and ultimately attract media,” it added.

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## **Air Pollution: Noida, Greater Noida get automated monitoring stations**

*Date: 28-Feb-2017 Source: Hindustan Times*



The Uttar Pradesh Pollution Control Board (UPPCB) will install four air monitoring stations in Gautam Budh Nagar. One station will be set up in Noida in the next 15 days while three others will set up in Greater Noida soon, officials said.

The air monitoring stations are being set up following the directions of the Centre. The state and central agencies will equally share the financial burden for setting up the stations.

Around Rs 5 crore will be spent on setting up the four new stations, said an official.

Both the Centre and the state are under pressure to set up more air monitoring stations to provide regular updates on pollution levels to the public. “We are ready to set up one automatic machine to monitor air quality at Amity University in Noida's Sector 126. This station will be the first in Noida to be set up by UPPCB and the Centre. It will give instant updates to residents round-the-clock,” Dr BB Awasthi, regional officer of the UPPCB, Noida, said.

The UPPCB has two monitoring stations — in sectors 1 and 6 — which cover only 30% of Noida. Both work on a manual system, due to which residents cannot get instant updates.

Even as the air quality in the NCR continues to be critical, UPPCB does not have even one automatic machine to monitor air quality. It still calculates pollution levels manually and it is time-consuming to prepare a report.

The System of Air Quality and Weather Forecasting and Research (Safar), located in Sector 62, is part of the ministry of earth science and is funded by the Centre. However, it provides data only for that particular sector, which is located off the NH-24.

“The Centre has clearly directed officials to set up two manual and one automatic air monitoring stations each in Noida and Greater Noida. We already have two manual stations in Noida and one automatic station will become operational in the next 15 days. In Greater Noida, three new stations (one automatic and two manual) will be set up soon,” Awasthi said.

“Pollution is at an all-time high in NCR but there is still no air pollution monitoring system in Greater Noida. We do not even know the pollution level in our area to take precautions, particularly for our children. It is lamentable that the cash-rich Noida does not have automatic machines to monitor air and update residents,” Dushyant Singh of Sector Alpha-I said.

The automatic air ambient monitoring system provides real-time data on 12 parameters such as particulate matter, NO<sub>2</sub>, SO<sub>2</sub> and CO<sub>2</sub>.

At present, the manual systems only provide data on the level of particulate matter-10, SO<sub>2</sub> and NO<sub>2</sub>.

Noida has around 7,000 industrial units, six sewage treatment plants and hundreds of under-construction realty projects, which are major reasons for pollution.

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## Linking climate change, air pollution and public health

*Date: 28-Feb-2017 Source: PHYS ORG*



We often view climate change and air pollution as two separate entities. But, the two issues are united by one common driving factor: human emissions. Nicholas School of the Environment Earth Sciences Professor Drew Shindell reminds us how interconnected these issues truly are, and how we must begin viewing them as such to create change.

Shindell argues that climate change and air pollution are often misrepresented. Air pollution is a problem that seems elusive to the individual, and yet it is the No. 1 cause of premature death. The problem is often polarized from us, and we forget that we are largely at fault for its increasing effect. We

place the blame on the emissions of large corporations, when our own car emissions are just as detrimental. Shindell argues that it is the "othering" of these issues that makes it hard for us feel a need to create change.

But by clearly linking climate change and air pollution together, and linking those two to human health, Shindell believes we will develop a greater sense of responsibility for our environment. He gives the example of Pakistan, where increased ozone levels due to human emissions have severely decreased the air quality. As a result, there has been a 36% decline wheat and rice production. This dent in Pakistan's agricultural systems poses a great threat on food security for the entire nation, and could potentially create a wave of health issues.

But policy often blurs the line between air pollution, climate change and human health. Shindell says he doesn't know of a single jurisdiction that explicitly mentions the scope of negative effects air pollution and climate change can have on our health (stroke, lung cancer, new disease vectors, to name a few). He suggests expanding our metrics and developing a broader-based impact analysis so that humans are well-informed of the interconnectedness of these issues.

If we included public health in our impact estimates for methane emissions, for example, the cost would be much larger than anticipated. But, Shindell highlights that to bring these emissions down requires a change that is not easy to ask of our energy-dependent, consumer-driven world. Decreasing our meat consumption by 48%, for example, would save us billions of dollars, but to trigger such a change would demand a desire from the public to alter their behavior, which time and time again has proven to be challenging.

At the end of the day, this scientific issue is a largely psychological one. We assume our contributions make a negligible difference, when in reality it is our consumer behavior that will drive the change we wish to see in our environment. But, how are we expected to feel the burden of air pollution on our health, when policy isn't directly linking the two together? How can we see climate change as an issue that threatens the security of global agricultural systems when legislation fails to draw the two together explicitly? It is here where we must see a change.

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## March 2017

### **5 Facts About Animal Agriculture and Air Pollution That You Just Can't Argue With**

*Date: 01-Mar-2017 Source: One Green Planet*

Nearly all farm animals — 99 percent — are raised on one of the 20,000 factory farms located in the United States. That includes an estimated 42 million cows that go through the factory farm system every single year. These “factory farms” or “CAFO”s (Concentrated Animal Feeding Operations) are minimally regulated due to ag-gag laws, which has led to a whole host of health and environmental problems. Sadly, this contamination of our air is destroying our planet and making us sick.

#### **1. Animal Waste Causes Harmful Air Pollution**

Animal farms may produce food, but they also produce massive amounts of animal waste like urine and manure that emit around 400 different harmful gases into the atmosphere. Some of these gases include nitrous oxide, ammonia, particulate matter, endotoxins, and hydrogen sulfide. Because thousands of animals are kept together in factory farms, the concentration of the gases produced can be extremely dangerous to the local community. For example, roughly 80 percent of ammonia emissions in the U.S. comes from animal waste.

Additionally, when factory farm waste decomposes, it releases airborne particulate matter along with the harmful gases. These particulates can include dry manure, feathers, bits of feed, and animal dander. They can travel through the air for miles and turn the sky hazy near the factory farm. The antibiotics that livestock are given to protect them while living in a high stress, filthy environment are also potent airborne matter.

In one experiment, researchers from Texas Tech placed air samplers 10 to 30 yards both upwind and downwind from beef and dairy feedlots throughout the fall and winter months. A stunning 100 percent of the samples tested positive for Monensin, an antibiotic that is commonly used in human medicine. While this antibiotic is not thought to contribute to a surge antibiotic resistant bacteria; tetracycline antibiotics, that do contribute to bacteria resistance, were found in 60 percent of the downwind samples and 30 percent of the upwind. Tetracycline antibiotics are used to treat pink eye and urinary tract infections, both of which are becoming more difficult to treat as bacteria develop resistance.

#### **2. Animal Agriculture Releases Almost One-Fifth Of The World's Greenhouse Gas Emissions**

The United Nations Food and Agriculture Organization (FAO) estimates that livestock production is responsible for 14.5 percent of global greenhouse gas emissions, while other organizations like the Worldwatch Institute have estimated it could be as much as 51 percent. Even in the more modest estimate, this is more than all the cars, trucks, planes, and ships in the world!

One reason for this is that more than a third of all raw materials and fossil fuels consumed in the U.S. are used in animal production. Specifically, livestock accounts for an estimated nine percent of global carbon

dioxide emissions, 35 to 40 percent of global methane emissions, and 65 percent of nitrous oxide emissions.

In fact, methane gas is one of the largest contributors to global warming and can trap up to 100 times more heat in the atmosphere than carbon dioxide over a five-year period. Most of the methane comes from cows on factory farms that are fed low-quality grains that their bodies were not made to digest, resulting in high levels of indigestion and flatulence. All of this gas then enters our atmosphere.

In addition, meat and other animal products have a huge carbon footprint due to the deforestation needed to grow feed and graze animals, as well as all the transportation involved in both feeding the animals and distributing the products to consumers. That ends up being a lot of travel and tons of carbon output.

### 3. Factory Farms Produce An Unbearable Smell For Local Residents

Living by an animal farm can be quite uncomfortable. Livestock in the U.S. produce 500 million tons of excrement every year. This is way more waste than factory farms could ever redistribute as fertilizer, so the majority of waste is left to fester in massive, open-air waste lagoons. When these cesspools get full, factory farms will frequently get around water pollution limits by spraying liquid manure into the air, creating mists of pollutants carried away by the wind.

Having to live with the awful smell and harmful gases released by farm waste can ruin people's health and quality of life. The CDC has even reported that mental health deterioration and increased sensitization to smells can occur in people who live near factory farms. Sadly, many communities located near factory farms fall below the poverty level so they do not have the option to relocate to a place with cleaner air.

### 4. Animal Agriculture Increases Acid Rain

Another problem with the animal waste collecting in the massive lagoons is that the waste breaks down and forms ammonia gas. This then breeds bacteria, which combines with other pollutants in the air to form nitric acid. The nitric acid builds up in the atmosphere and then returns to the surface of the earth as acid rain, harming soil, forest habitats, and water ecosystems.

### 5. Animal Agriculture Causes Several Serious Health Concerns

Given all of this air pollution, it is not surprising that animal farming causes several serious health problems for farm workers and local residents. People tend to suffer from respiratory irritation, bronchitis, lung inflammation, dust toxic syndrome, asthma, and possibly cardiac arrest. Ammonia emissions can cause a variety of harmful health effects like dizziness, eye irritation, respiratory illness, and nausea. Releases of dangerous levels of hydrogen sulfide can cause sore throats, seizures, comas, and even death.

Asthma can be a real concern, especially for children living near these farms. According to the Centers for Disease Control (CDC), children raised in communities near factory farms are more likely to develop asthma or bronchitis.

Finally, the unsanitary conditions on factory farms, poor quality of animal feed, and overuse of antibiotics in livestock have resulted in diseases that are not always easy to manage. Swine Flu and Avian Flu, for example, can be distributed through the air, causing local residents to get sick.

## What You Can Do

They say once you know truth, it's your job to spread it. So in this case, it is up to you to share this article and educate others about the dangers of animal agriculture air pollution – and to look to solutions. The best way to lower the amount of air pollution caused by animal agriculture is to go to the source. If we all take action to lower our consumption of meat and dairy, we can help lessen the demand for these products and slowly stymie the industry. By simply choosing more plant-based foods, you can effectively halve your personal carbon footprint and help mitigate some of the other negative impacts imbued by animal agriculture.

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## Study: British people underestimate air pollution levels

*Date: 01-Mar-2017 Source: Euractiv*



People across the UK are underestimating the impact of the air pollution crisis in their local areas, according to a new survey. EURACTIV's partner The Guardian reports.

Almost two thirds of respondents said they were concerned about the issue of air pollution but only one in 10 said they thought the air they breathe is bad.

Last week it was revealed that there are 802 educational institutions in the British capital where pupils as young as three are being exposed to illegal levels of air pollution that can cause serious long-term health problems.

And government statistics show 38 out of 43 UK "air quality zones" breach legal limits for air pollution.

Friends of the Earth, which carried out the latest survey, said that despite the growing evidence many people – particularly outside London – were still unaware of the dangers of air pollution.

"With only one in ten British adults rating their air quality as poor despite swathes of the country breaking legal limits for air pollution, it seems the message about the scale and danger of air pollution isn't getting through," said Oliver Hayes, a Friends of the Earth air pollution campaigner.

"Often you can't see it or smell it, but it's there – and air pollution is risking the health of an entire generation of children."

To coincide with the findings, Friends of the Earth has launched what it says will be the "biggest ever citizen science air pollution experiment". People can apply to the charity for clean air kits, enabling them to test the air quality where they live, and FoE will provide tips on how to avoid air pollution and what people can do to help support the campaign for clean air.



Hayes said: “Our clean air kits help people to find out about the air quality in the places they care about most: on the street where they live, where they work, where their children go to school and at the heart of their communities.

“The results will help us build up a localised picture of the state of our nation’s air to really bring home why everyone, from individuals to businesses and politicians, must do all they can to make the air we breathe safer.”

Air pollution is linked to heart disease, lung cancer, worsening asthma and poor lung development in children and leads to the premature deaths of around 40,000 people every year in the UK.

The Friends of the Earth report was complemented by a separate study for the Greater London Authority which found a much higher awareness of air pollution in the capital.

It found that nine out of ten people in London believe air pollution is at crisis levels and two thirds describe air quality in their local area as bad.

It also found that every London borough has recorded illegally high levels of air pollution in the last two years.

Hayes said: “Whilst Londoners are starting to understand the air pollution crisis, in part due to welcome attention from politicians and the media, outside of the capital it’s a very different story.”

Friends of the Earth said it hoped thousands of people will join in the charity’s experiment so it can create a comprehensive national air pollution picture. It said the data generated will feed into a national map which will help create a “state of the nation” report on air pollution.

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## Severe air pollution to be reduced in three to five years: expert

*Date: 02-Mar-2017 Source: Ecns.cn*



(ECNS) -- Air quality in China is generally getting better, but more time is still needed to fundamentally control pollution, scientists and researchers with the Chinese Academy of Sciences said, adding that air in Chinese cities could improve in three to five years.

Coal-burning, car exhaust fumes and emissions from industrial production are the main causes of smog in Chinese cities, especially in the Beijing-

Tianjin-Hebei region, said He Hong, a researcher with the CAS Center for Excellence in Regional Atmospheric Environment.

The number of days with severe air pollution has reduced, however, many city residents said they don't feel air quality is improving.



He said it's because the concentration of pollutant particulates in the air has not decreased enough to be obvious.

In addition, air pollution in the country's central and eastern regions is still severe in fall and winter. The concentration level of PM2.5, hazardous particulate matter with a diameter of 2.5 microns or less, did not decrease remarkably in Beijing during 2016, compared with the previous three years, He said.

Unfavorable weather conditions, including low wind speed and temperature inversion, were external causes of smog, it was added.

According to statistics, the average wind speed during the past 40 years in China's northern region continually decreased by 37 percent. The frequency and speed of the north wind, which is a favorable weather condition for air diffusion, also dropped.

Controlling pollution from coal burning and automobile exhaust fumes will help improve air quality. Wang Jianguo, also a researcher with the academy, said a technology that can reduce the emission of pollutants from coal burning could be used in 13 industrial projects next year.

Wang Zifa, a researcher with the Institute of Atmospheric Physics under the academy, said it has made the world's first integrated air forecast system, which can help related departments improve air supervision and treatment.

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## **India Choking: Factors spreading air pollution and abatement techniques to be learned from China**

*Date: 02-Mar-2017 Source: First Post*



The path to blue skies is littered with horror stories, even for the countries that are today rich and clean. One example is the small industrial town of Donora, Pennsylvania, in the United States, where a putrid fog in October 1948 killed 20 people and led to the hospitalisation of 7,000 others. The reason: a weather anomaly that trapped toxic emissions from the town's zinc smelting plant close to the ground. The Donora disaster brought air pollution into focus in the United

States, and paved the way for mitigating legislation.

The cold fact is that toxic air is a side effect of industrialisation. It has long been the collateral damage of development. But can a nation become economically advanced without polluting? The nations of the West do not provide examples that the developing countries of Asia can follow, without polluting copious and damaging amounts.

However, research on the effects and mitigation of pollution exists today, unlike during Europe's industrialisation. Technologies, including pollution abatement equipment, renewable energy and better-grade fuel are available. Moreover, even developing nations have substantial urban middle-classes for whom making a daily wage is no longer the driving force of life – allowing health to become a motivating concern.

For India, China is the contemporary example to learn from. Although Beijing remains synonymous with toxic skies in the international imagination, China has actually undertaken far-reaching measures to ensure that the worst may be over.

Technologies for cleaning the air range from the expensive and high tech, to basic, low cost ones. Let's explore some technological solutions that address industrial, vehicular and construction-related pollution.

#### Pollution abatement techniques used in China

Sulfur Dioxide (SO<sub>2</sub>) is one of the most toxic elements of air pollution, linked to permanent lung damage. Coal and oil-fired power plants, steel mills, refineries, pulp mills, and smelters are amongst the largest releasers of SO<sub>2</sub> since they operate by burning fuels like coal, oil and diesel that contain sulfur.

China's overall SO<sub>2</sub> levels decreased by 14.8 percent between 2006-2010, and even more steeply since – mostly as a result of the installation of pollution abatement equipment on its thermal power plants. This equipment includes devices called “scrubbers” which can remove up to 95 percent of SO<sub>2</sub> emissions. China has in fact emerged as a leading producer of pollution-abatement equipment and is currently upgrading its plants to enable them to remove even higher levels (up to 97 percent) of SO<sub>2</sub> from emissions.

Nitrogen Oxides (NO<sub>x</sub>) are also major industrial pollutants, linked to wheezing, bronchitis and heart conditions. But their emissions can be controlled via several techniques. A simple modification of the combustion process can result in 30-50 percent decreases in NO<sub>x</sub> output. A more expensive option called selective catalytic reduction can reduce emissions by 80-90 percent.

It's important to point out that SO<sub>2</sub> and NO<sub>x</sub> also produce PM 2.5, the pollutant we know to have the worst health effects, indirectly, under the right atmospheric conditions.

In China, NO<sub>x</sub> pollution abatement equipment on power plants was made mandatory in 2014, one of the main reasons why pollution levels in 2015 registered a dip. According to a Greenpeace report there was a 10 percent reduction countrywide in the intensity of smog in 2015 over 2014.

There are several other technologies with jargonistic titles like integrated gasification combined cycles and electrostatic precipitators as well. Combined, these technologies are referred to as “clean coal,” and for a country like India, where nearly two-thirds of the power still comes from coal, there is an urgent need to embrace them.

#### Much to learn from China

For the moment however, India lags far behind China. One example: the share of thermal power plants with basic pollution abatement equipment in China is 95 percent compared to only 10 percent in India.

Other technological solutions involve stricter emissions norms for cars and the availability of appropriate fuel to power them. From this year all vehicles across China must comply with the country's fifth set of emissions standards (Beijing, Shanghai, Nanjing and some cities in Guangdong have already enforced these), which are equivalent to Euro V standards, where the maximum sulfur content permitted for both diesel and petrol is at 10ppm (parts per million).

By contrast, in most parts of India only Euro III norms are followed, (sulfur content of diesel allowed at 350 ppm and 150 ppm for petrol). Thirteen major cities however already have norms equivalent to Euro IV (which mandates sulfur content for both petrol and diesel at 50ppm).

Last year, the government announced that India would skip level V norms altogether and adopt Euro VI-equivalent standards by 2020. These would lower the permitted level of NOx for diesel emissions to a maximum of 80mg/km, compared to the 180mg/km under Euro V.

For India, the challenge will be to ensure that higher grade fuel is available because high sulfur content in the fuel inhibits the proper functioning of anti-vehicular pollution technologies like special filters that reduce diesel particulates. China's oil industry already produces petrol and diesel suitable for vehicles that operate on a Euro V standard.

#### Construction dust

Finally, lower tech, but equally valuable solutions have to do with better management of construction activity, which is a major source of PM 10. Dust from concrete, stone, cement, sand and wood irritates the nose and chest. It can also travel over large distances depending on the windspeed. Building materials transported in uncovered vehicles or left in the open outside construction sites, common practices in India, are amongst the worst offenders when it comes to coarse particles. The problem is only set to intensify given that seventy to eighty percent of the India of 2030 is yet to be built.

Some measures to help control the resultant pollution include making sure that trucks loaded with construction materials are covered, as are building materials like cement and sand. In general, building sites should use fine water sprays to dampen down the site.

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## Omega-3 oils could tackle damage caused by air pollution, research shows

*Date: 03-Mar-2017 Source: The Guardian*



Supplements of healthy fats could be an immediate way of cutting the harm caused to billions around the world by air pollution, according to emerging research.

However, the research also shows air pollution particles can penetrate through the lungs of lab animals into many major organs, including the brain and testicles. This raises the possibility that

the health damage caused by toxic air is even greater than currently known.

The new research on mice showed that omega-3 fatty acids (OFAs), found in flax, hemp and fish oils, can both prevent and treat the inflammation and oxidative stress caused by air pollution, with the OFAs delivering a 30-50% reduction in harm.

Air pollution around the world is rising at an alarming rate, according to the World Health Organization, with virtually all cities in poorer nations blighted by unhealthy air and more than half of those in richer countries also suffering.

Low air quality has long been linked to lung and heart disease and strokes, but scientists are now uncovering links to brain problems such as dementia, mental illness and reduced intelligence, as well as diabetes, kidney disease and premature births.

Dr Jing Kang, at Massachusetts General Hospital, part of Harvard Medical School in the US, who led the research said: “These pathological changes are very important because they are the fundamental mechanisms for the common chronic diseases we have today.

“I can anticipate the same things [that happen in mice] would happen in humans, because many other inflammatory diseases in humans can be treated with OFAs. We feel very confident OFAs can do something very good.”

“I would definitely recommend taking OFAs to counter air pollution problems,” he said. “OFAs are well known to have many other healthy benefits and the key thing is they are not like a drug, but a nutrient with so many benefits.”

Kang said two to four grammes per day would be the equivalent dose in humans to that given to the mice. A small human trial in 2012 also indicated OFAs offered protection against the adverse effects of air pollution and the US Environmental Protection Agency has now begun a larger trial. There is also supporting evidence from work on human cells in the lab.

Two to four grammes of OFAs would be roughly equivalent to two 85g portions a day of salmon or herring, but the NHS recommends no more than one such portion a day and significantly less for children and pregnant women due to the risks of mercury and other pollutants in fish. Flax oil is about 50% OFA and OFA capsules are also widely available but the NHS says people should get medical advice before taking them.

Dr Richard Russell, a consultant respiratory physician in the NHS and medical adviser to the British Lung Foundation (BLF), said the new research from Kang’s team is “a thorough piece of work and the science is good”. But he added: “The findings need to be interpreted with some caution, given that responses in mice are quite different to humans.” He also noted the level of air pollution the mice were exposed to was high.

Nonetheless, Russell said: “There is an increasing amount of evidence showing that these fatty acids do have significant anti-inflammatory effects. Can they be recommended as a healthy thing to be supplementing the diet of us all? Yes, probably. They do not do harm and may well do good.”

Cutting air pollution at source is the ultimate solution to the problem, said Kang: “Pollution is a very critical issue for human health, but we cannot change the environment right away.” His team concluded that OFAs present “an immediate, practical solution for reducing the disease burden of air pollution”.

In September, a new inhaler that could protect the lungs was revealed, and the BLF recommends avoiding hotspots such as busy road junctions when pollution levels are high and reducing strenuous outdoor exercise.

In the experiments, Kang’s team exposed the mice to fluorescent particles of similar size to the tiny specks that form dangerous PM2.5 air pollution. This made it easier to track the progress of the particles through the bodies of the mice.

“Fine fluorescent particles were observed not only in the lungs but also in other organs, including the brain, liver, kidneys, spleen, and testes,” the researchers reported. “These results demonstrate that fine particles can penetrate the [lung] barrier and travel to other organs, potentially inducing systemic illnesses.”

The discovery of particles in the testes “is a concern for fertility and reproduction”, said Kang. Further research is needed to investigate whether this also occurs in men and the risk posed, but he said: “At least we know the particles can harbour in that type of tissue.”

Previous work in rats has found that nanoparticles are able to pass through the lungs into internal organs, but the particles used in Kang’s work are about 200 times larger. The discovery of “abundant” toxic nanoparticles from air pollution in human brains was revealed in September.

How much omega-3 fatty acids could protect against air pollution?

The research is at an early stage but the doctor leading the latest study, conducted in mice, said 2-4g of omega-3 fatty acids (O3FAs) would be the equivalent human dose. A small human trial found benefits from 3g of fish oil per day, though only some of which will be O3FAs.

Does this mean we should eat fish every day?

Two portions (85g) a day of salmon or herring would give roughly 3g of O3FAs a day, but the NHS recommends not more than one such portion a day and just three a week for pregnant women due to the risks of mercury and other pollutants in fish.

How else can you consume these fats?

Both flax and hemp seed oils are rich in O3FAs, with the former containing about 50%. Supplement capsules of O3FAs are also available and, while the fats are widely thought to be beneficial to health, the NHS says people should get medical advice before taking supplements.

Is food a better way to consume O3FAs than supplements?

A balanced and healthy diet is the best way to get the nutrients the body needs and there is some evidence that supplements do not provide the same benefits as O3FAs obtained from food.

What other measures can you take to protect against air pollution?

When air pollution is high, the British Lung Foundation advises avoiding hotspots such as main roads and strenuous outdoor exercise. If in a vehicle, the BLF says keep the windows closed and recycle the air. It says there is little evidence to recommend the use of face masks.

Can planting more trees and plants help cut air pollution?

Trees do reduce pollution, by 7-24% according to one recent study. But poorly planned trees could actually make things worse. If they are too close together along a street they can form a tunnel that traps traffic pollution and prevents the wind from dispersing it. Hedges and plants can help form physical barriers that protect gardens and playgrounds.

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## Air pollution leads to more drug resistant bacteria, study finds

*Date: 03-Mar-2017 Source: The Guardian*



Research shows how black carbon affects bacteria in humans' nose, throat and lungs, possibly affecting their ability to beat the immune system

Black carbon found in air pollution can increase the resistance of bacteria that cause respiratory disease, research has found.

The discover could lead to a greater understanding of the effects of air pollution on human health, according to the lead scientist of the University of

Leicester study.

The four-year investigation focused on how pollution in the air, which is thought to be responsible for millions of deaths each year, affects bacteria in the nose, throat and lungs of humans.

It found black carbon, produced when diesel, biomass and biofuels are burned, changes the way bacteria grow, possibly affecting their ability to survive and beat human immune systems.

The study concluded that the resistance of communities of *Streptococcus pneumoniae* – a major cause of respiratory diseases – to penicillin was increased by black carbon. It also caused this pathogen to spread from the nose down the respiratory tract, allowing disease to develop.

Dr Julie Morrissey, the lead author of the paper, said: “This work increases our understanding of how air pollution affects human health. It shows that the bacteria which cause respiratory infections are affected by air pollution, possibly increasing the risk of infection and the effectiveness of antibiotic treatment of these illnesses.

“Our research could initiate an entirely new understanding of how air pollution affects human health. It will lead to enhancement of research to understand how air pollution leads to severe respiratory problems and perturbs the environmental cycles essential for life.”

The university's Prof Paul Monks, a leading expert on air pollution, said: "The lead investigators have brought together their expertise in genetics, microbiology and air pollution chemistry to provide truly multidisciplinary, ground-breaking insights.

"This research has significant potential to initiate a global research effort to understand a hitherto unknown effect of air pollution and provide significant additional impetus to the control of pollution."

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## **Pollution reduces antibiotic effectiveness**

*Date: 04-Mar-2017 Source: Health World*

Air pollution may increase the potential of bacteria to cause respiratory infections by reducing the effectiveness of antibiotics.

Air pollution may increase the potential of bacteria to cause respiratory infections by reducing the effectiveness of antibiotics, scientists have found.

The study by researchers at the University of Leicester has important implications for the treatment of infectious diseases, which abound in areas with high levels of air pollution. A major component of air pollution is black carbon. The research showed that this pollutant changed the way in which bacteria grew and formed community. A January photo shows a statue in Warsaw wearing a mask put on by environmental activists. Smog across coal-addicted Poland has hit crisis levels, which could affect how they survived on the lining of our respiratory tracts and how well they were able to hide from, and combat, our immune systems.

"Our research could initiate an entirely new understanding of how air pollution affects human health. It will lead to enhancement of research to understand how air pollution leads to severe respiratory problems and perturbs the environmental cycles essential for life," said professor Julie Morrissey.

The research focused on two human pathogens, *Staphylococcus aureus* and *Streptococcus pneumoniae*.

The team found that black carbon altered the antibiotic tolerance of *Staphylococcus aureus* communities and increased the resistance of communities of *Streptococcus pneumoniae* to penicillin, the front line treatment of bacterial pneumonia. It was also found that black carbon caused *Streptococcus pneumoniae* to spread from the nose to the lower respiratory tract, which is a key step in development of disease.

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## **Consequences of Air Pollution: Antibiotics Are Becoming Less Effective**

*Date: 04-Mar-2017 Source: Smart Cooky*

Talk about deadly diseases that are killing billions in the world, and we would immediately point out diabetes, obesity, cancer, heart attack and the like. In these list of deadly killers, we often miss out on one very potent contender from who there really is no escape unless something is done on a mass scale. We are referring to none other than air pollution. With air pollutants reaching shocking levels of toxicity



every passing year, it is causing various health hazards for people all around. The number of respiratory illnesses are on the rise, and so are lung and heart problems. According to a new study done by University of Leicester in Britain, air pollution may even increase the potential of bacteria that cause respiratory infections to tolerate antibiotic treatment. If one were to believe the reports to be true, this means a great threat to our lives and well-being.

The study, published in the journal *Environmental Microbiology*, looked into how air pollution affects the bacteria living in our bodies, specifically the respiratory tract -- the nose, throat and lungs. A major component of air pollution is black carbon, which is produced through the burning of fossil fuels such as diesel, biofuels, and biomass. The research showed that this pollutant changes the way bacteria grow and form communities, which could affect how they survive on the lining of our respiratory tracts and how well they are able to hide from, and combat, our immune systems.

"This work increases our understanding of how air pollution affects human health. It shows that the bacteria which cause respiratory infections are affected by air pollution, possibly increasing the risk of infection," said study lead author Julie Morrissey.

The research focused on two human pathogens, *Staphylococcus aureus* and *Streptococcus pneumoniae*, which are both major causes of respiratory diseases and exhibit high levels of resistance to antibiotics. The team found that black carbon alters the antibiotic tolerance of *Staphylococcus aureus* communities and importantly increases the resistance of communities of *Streptococcus pneumoniae* to penicillin, the front line treatment of bacterial pneumonia.

Furthermore, it was found that black carbon caused *Streptococcus pneumoniae* to spread from the nose to the lower respiratory tract, which is a key step in development of disease.

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## **Excess air pollution by Volkswagen could lead to premature deaths**

*Date: 05-Mar-2017 Source: Merinews*



A new research by published by Massachusetts Institute of Technology has said that excess air pollution produced by Volkswagen cars that were designed to cheat on emissions tests may lead to 1,200 premature deaths in Europe.

The researchers have also said that the company's home country, Germany, will be the hardest hit by the pollution with about 500 people losing almost a decade of their lives. It also said that in case the



company doesn't find a way to take the high-emission cars off road, the death toll could increase even more.

The research has also said that another 2,600 people could die prematurely in case Volkswagen doesn't recall all its defective cars including models from its brands VW, Audi, Skoda, and Seat. It was the same team of researchers that had previously determined that Volkswagen's emissions cheating was directly responsible for about 60 premature deaths in the US.

"Air pollution is very much trans-boundary," Steven Barrett, a professor at MIT and the study's coauthor, said. "A car in Germany can easily have significant impacts in neighboring countries."

In September 2015, the US Environmental Protection Agency (EPA) had accused the German company of violating the Clean Air Act. This came after the Agency found out that its cars emissions' reports varied dramatically between road performance and in tests.

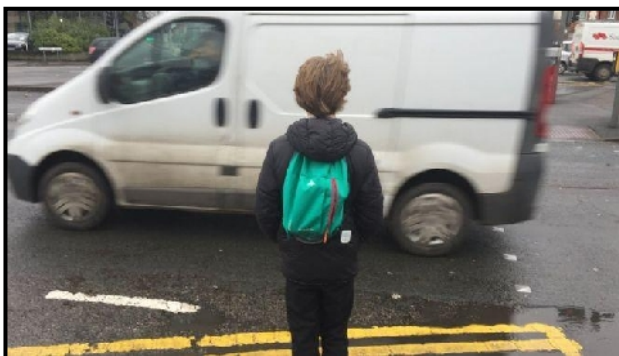
That same day, the German car company admitted a glitch in its software that would effectively make cars seem as if they are producing less pollution than they actually are.

The company, while pleading guilty to cheating emissions tests in the US, also admitted that it issued false statements and obstructed investigations. It agreed to pay \$4.3 billion in penalties in addition to the billions of dollars it had earlier promised to drivers and dealers. But the company continues to refuse to pay any compensation in Europe claiming that using such software is not illegal in Europe.

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## Is there a way to tackle air pollution?

*Date: 06-Mar-2017 Source: BBC World News*



The search for solutions to the threat of polluted air is generating ideas that range from the modest to the radical to the bizarre.

A London primary school may issue face-masks to its pupils. The council in Cornwall may take the extreme step of moving people out of houses beside the busiest roads.

Four major cities - Paris, Athens, Mexico City and

Madrid - plan to ban all diesels by 2025.

Stuttgart, in Germany, has already decided to block all but the most modern diesels on polluted days.

In India's capital, Delhi, often choked with dangerous air, a jet engine may be deployed in an experimental and desperate attempt to create an updraft to disperse dirty air.

The World Health Organization calculates that as many as 92% of the world's population are exposed to dirty air - but that disguises the fact that many different forms of pollution are involved.

For the rural poor, it is fumes from cooking on wood or dung indoors.

For shanty-dwellers in booming mega-cities, it is a combination of traffic exhaust, soot and construction dust.

In developed countries, it can be a mix of exhaust gas from vehicles and ammonia carried on the wind from the spraying of industrial-scale farms.

In European cities, where people have been encouraged to buy fuel-efficient diesels to help reduce carbon emissions, the hazard is from the harmful gas nitrogen dioxide and tiny specks of pollution known as particulates.

The first step is to understand exactly where the air is polluted and precisely how individuals are affected - and the results can be extremely revealing.

Personal data

Scientists at the University of Leicester are trialling a portable air monitor to gather precise data at a personal scale.

We watched as volunteer, Logan Eddy, 14, carried the device in a specially adapted backpack that recorded details of the air he was exposed to.

Exactly where he walked was then displayed as lines on an electronic map, the colour of those lines conveying how unhealthy the air was at different points.

It was much worse than WHO guidelines where he had waited to cross a busy junction, strikingly cleaner in a side-street but then almost off the scale in a sheltered spot beside an arcade of shops where a car was parked with its engine idling.

Seeing a graphic display of how pollution can vary so dramatically changed Logan's view of air, and his friends adjusted their behaviour immediately.

"The people who found out have stopped waiting right near the buses after school for their friends," he says.

"They've been waiting... further away from the buses.

"It's obviously had an impact on them."

The personal monitor is one of a range of devices being deployed in Leicester to build up a detailed picture of where pollution hotspots form - and when.

In many cases, they can be short-lived, appearing during rush-hours when traffic jams develop.

For Prof Roland Leigh, of Leicester University, understanding precisely where and when vehicles slow to a crawl or stop will help manage the flow of traffic in a way that minimises the impact on the most vulnerable people - the young and the elderly.

"One of the things we can all do is to improve our transport systems so that our congested traffic is not queued up outside of primary schools and old people's homes but instead is queued in other parts of the city where there's going to be less harm," he says.

Cleaning up the engine

But what about tackling one of the main sources of the problem in the first place, the vehicles spewing out the pollutants?

In Europe, under pressure from regulators, the manufacturers have progressively cleaned up their engines over the past few decades - first to trap carbon monoxide and unburned fuel, then particulates and most recently nitrogen dioxide.

The latest European standard, Euro 6, requires vehicles to emit far less pollution than older models, but trust has inevitably been eroded after the car giant VW was caught cheating - using software that activated the emissions controls only during tests.

At Bath University, engineers use a "rolling road" and a robotic "driver" to put cars through realistic simulations of how they are normally used, to find out exactly what's released from the exhaust pipe.

They are also working to understand the trade-offs involved in cleaning up an engine.

For example, adding more pollution-trapping devices can add to fuel consumption, which means increased emissions of carbon dioxide, undermining efforts to tackle climate change.

And however good the latest standards, they still leave vast numbers of older vehicles out on the roads.

Hence the idea of a national scrappage scheme - to provide incentives to drivers to switch to a cleaner model.

It's attracting growing support from an unlikely coalition including the Federation of Small Business, London First, Greenpeace and the Licensed Taxi Drivers' Association.

The challenge, as ever, is to find the money to make this happen and to agree who should pay - taxpayers through government incentives or the vehicle owners themselves.

Prof Chris Brace, an automotive engineer of Bath University, says; "Whichever way you approach it, you are asking people to spend more in taxation or more to buy new vehicles, and we need to decide whether that's something we're comfortable with as a society."

Some awkward choices lie ahead.

Will the parents of an asthmatic child dig deep in their pockets to switch to a cleaner car?

Will new housing developments include charging points for electric cars?

Will the money saved from a fuel-efficient diesel be seen as worth sacrificing for the sake of better air for everyone?

And bear in mind that these are "First World" questions.

In the rapidly growing cities of Africa, and many parts of Asia, there is hardly any monitoring of pollution at all, let alone political will or money to tackle it.

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## Air Pollution Kills More Children Globally Than Malaria

*Date: 07-Mar-2017 Source: IFL Science*



Over a quarter of all children's deaths under the age of five, globally, are due to the unhealthy environment in which they live. A new report issued by the World Health Organization has detailed how 1.7 million children are succumbing to environmental risks such as air pollution, second-hand smoke, and unsafe drinking water, many of which are easy factors to solve.

“A polluted environment is a deadly one – particularly for young children,” said Dr Margaret Chan, WHO Director-General, in a statement. “Their developing organs and immune systems, and smaller bodies and airways, make them especially vulnerable to dirty air and water.”

The single biggest environmental threat to children globally is one we've been hearing a lot about lately: Air pollution. Respiratory infections, such as pneumonia, that are attributable to breathing in dirty air, both indoors and outdoors, are estimated to kill 570,000 children under the age of five every year. That's more than any other single cause, including malaria and unsafe drinking water.

But the impacts of air pollution are not only limited to killing over half a million children. Millions of babies are born prematurely because their mothers have been inhaling pollution, while millions more will grow up with lifelong respiratory conditions such as asthma. Even more worryingly, breathing in polluted air even stunts the development of young and growing children. One study of children living in London found that by the age of nine, those being raised in the most polluted parts of the city had up to 10 percent less lung capacity than normal.

Sanitation and unsafe drinking water, something that is easily preventable, is still a major killer for children under five years old, with 361,000 thought to die each year due to diarrhoea alone. But there are more modern threats emerging. Recent advances in technology are also beginning to have a toll on the health of the youngest in the world, too.

Electronic waste, like computers and mobile phones, that is improperly recycled is already causing serious health issues. Around 18 to 45 million tonnes (20 to 50 million tons) of e-waste is generated worldwide, with much of it shipped to developing nations in East Asia. This is then crudely recycled, often by open burning or acid baths, in an attempt to remove the few materials of value. But the process

releases harmful smoke – full of toxins and heavy metals – which has been linked to cancer, cardiovascular disease, and even reduced intelligence in young children.

The World Health Organization has issued a list of ways in which governments could help to improve the health of their youngest citizens, from providing schools with safe and sanitary drinking water, to incorporating parks into urban planning.

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## Use buggy covers to combat air pollution danger, parents warned

*Date: 09-Mar-2017 Source: The Guardian*



Parents should use covers on their prams during the school run to protect their infants from air pollution, experts have warned.

Scientists tested the pollution levels inside prams to assess the exposure of infants taken on the school run with older siblings. The researchers found that the fine particle pollution from vehicle exhausts, which is particularly harmful, was higher during the morning journey.

“Young children are far more susceptible to pollution than adults, due to their immature and developing systems and lower body weight,” said Dr Prashant Kumar, at the University of Surrey and who led the new research. “These findings provide an insight for families who walk to and from nursery and primary schools with young children. Essentially, children could be at risk of breathing in some nasty and harmful chemical species.”

“One of the simplest ways to combat this is to use a barrier between the in-pram children and the exhaust emissions, especially at pollution hotspots such as traffic intersections, so parents should use pram covers if at all possible,” he said.

The new study, published in the journal *Environmental Pollution*, placed detectors for particulate pollution in prams and made 64 journeys to and from schools in Guildford at drop-off and pick-up times. They found that air pollution spiked at road junctions and by bus stands, and that fine particle pollution was higher in the mornings, when the roads are busiest.

“Fine particles show larger health impacts compared to their larger counterparts and at the young age children are more susceptible to particulate pollution, suggesting a clear need for precautionary measures to limit their exposure during their transport along the busy roadsides,” the researchers concluded.

Previous work on whether adults are exposed to less pollution than children, who are closer to the level of exhaust pipes, has produced conflicting results. One study showed children were exposed to twice as much particle pollution, while another found children in buggies were exposed to lower levels of fine particles. The new work found no significant differences.

Levels of particulate pollution in the UK are generally below legal limits, but 40 of the 51 air quality zones in the UK exceed the World Health Organization's (WHO) guideline limits for fine particulate matter, and the WHO has urged the UK to do more to cut pollution. Earlier this week, the WHO revealed that around the world 560,000 children under five years old die each year as a result of air pollution.

Particulate pollution is estimated to cause a total of 29,000 early deaths in adults each year in the UK. Levels of another key pollutant – nitrogen dioxide – are above legal levels in much of the UK. A recent study commissioned by the mayor of London, Sadiq Khan, showed over 800 schools, nurseries and colleges in the capital alone are in areas with illegally high NO2 levels.

On Thursday, Khan announced the first of 12 “low emission bus zones”, where only the cleanest buses will be allowed to run. The first is along Putney High Street, a notorious pollution blackspot, with others to follow including in Brixton.

Khan, who said the zones represent the most extensive network of clean buses of any major world city, commented: “London’s toxic air is an outrage. [This] will make a big difference to the pollution caused by our public transport system.”

Research published by Kumar’s team in February showed that drivers in London are the commuters least exposed to harmful particulate pollution, when compared with those taking the underground or the bus. “There is definitely an element of environmental injustice among those commuting in London, with those who create the most pollution having the least exposure to it,” he said.

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## Can city 'smellfies' stop air pollution?

*Date: 10-Mar-2017 Source: BBC News*



dog will sniff much faster."

In Regent's Park in central London I am down on the grass, sniffing the air like a dog.

"Flare your nostrils, and get closer to the sources of the odours," says artist and designer Kate McLean, as we seek out the subtle smell of snowdrops.

"Normally you'd breathe in for one and a half seconds, so we're quite slow like that, whereas a

Sniffing and flaring as we go, Kate is taking me on a "smell walk", a guided ramble around London's streets and green spaces to detect the dominant whiffs and odours.

There is some serious science behind our scented stroll. Kate is a part of a team that has published a research paper on the connections between smells and cities.

"When you are smell walking, you are often looking for the source of the odour, so the whole of our study was based on odour sources and what people actually noticed at and in specific environments," she explained.

"We then looked at the words and the descriptors that came from that and compared them to social media and with that we found that there were correlations between what people were actually describing in their photographs."

Armed with a "smell dictionary" that evolved from the city walks, Kate and the team analysed millions of images on Flickr and Instagram.

They then used the geographical information from these smell related images, dubbed "smellfies", to build the smell maps of London and Barcelona.

Clicking on a street on the London map allows you to zoom in and see how people have described the area, using terms related to emissions, nature, food, animals or waste.

So where people have tagged pictures with words including "cars" or "petrol" or "exhaust", these would be classified as emissions-related in the system and the map would show more red.

But can something built on people's subjective impressions of what they're smelling bear any relationship to objective data on air quality?

"Some people might say you're using social media, it's biased so you're just capturing most of the hipsters in East London," said Daniele Quercia, the computer scientist from Bell Labs who led the study.

"To double check we collected air quality indicators for each street sector for London and we looked at the relationship between these indicators and the profile from the smelly maps."

"We found that when there's a lot of nitrogen dioxide, then there are a lot of traffic emission related words. So, more or less the methodology works - there is a relationship between air pollution and the smelly maps."

Nasal gazing

There's growing scientific recognition of the power of our noses. A study in 2014 claimed that humans can discriminate at least 1 trillion olfactory stimuli.

While most of our nasal abilities are a bit more mundane, well trained noses can do important jobs in detecting air pollution.

In the Chinese city of Guangzhou, a team of "smell specialists" have been recruited to identify harmful pollutants in the air.

According to the People's Daily Online, air samples from different parts of the city are captured in sealed plastic bags. Sniffing the contents, the experts identify both the cause and scale of the dirty air.

So can the nasal-based information gleaned from smell walks also be put to practical uses?

Daniele Quercia says that the smelly maps could be used to change the way we work and play.

"If you go for a run next to a street full of traffic, it's the worst possible thing you can do - when you run your blood pressure goes up and your ability to absorb air pollution is far higher than if you were walking.

"But you could have technologies that would design a run for you next to nature based smells, and maybe smells that are more energising than calming. If you want to rest a bit you can do that on a public bench, where you have lavender which is a more calming smell."

A mobile phone app that would suggest walking or running routes for you based on smell based air quality information is in the works.

Other researchers are also building devices based on our nasal abilities.

When the Disney Corporation sent an exhibition of its archive material to China last year, officials were concerned about Beijing's notoriously dirty air.

Air pollution is bad for humans but it can also prove disastrous to works of art, causing damage at much lower levels.

So Disney turned to Professor Ken Suslick from the University of Illinois and his opto-electronic pollution detector, an array of carefully calibrated dyes that change colour when exposed to different odours.

"One shouldn't underestimate the importance of one's own nose, we do take it for granted but it is not a quantitative tool," said Prof Suslick,

"It's very difficult for human beings to accurately quantify what the concentration of different odorants are, and having a simple colour-o-metric based response allows us to do things in a quantitative fashion and that's an extremely useful tool."

Prof Suslick and his team discovered that the wooden crates in which the artworks were transported were at least as large a problem in terms of threat from the air as was the exhibition centre itself.

New devices to help in the fight against air pollution are coming on to the market all the time, including this portable air monitor being developed at the University of Leicester to help gather precise data at a personal scale.

But back in Regent's Park, smell walker Kate McLean says that relying on technology alone in big cities would be a big mistake. Common, nasal sense has a big role to play.

"The technical equipment is always going to be valuable for odour monitoring, for pollution control for large factories, but in terms of the moving, shifting smell-scape which most cities are, then the human nose can contribute just as much if we decide to contribute in the same way we do to traffic reports," Kate says.

"We can all become smell-meisters, there's nothing specialist about it, any single one of us can do it. Just get out there - go sniff!"



## Babies in prams are exposed to high levels of air pollution

Date: 10-Mar-2017 Source: New Scientist



By Sam Wong

Babies in prams are exposed to high levels of air pollution at hotspots next to busy roads, according to a study that measured particles on a typical daily route.

Prashant Kumar and colleagues at the University of Surrey recorded pollution levels along a 2.7 kilometre walk between the university and a primary school in Guildford, UK. They collected measurements twice a day, in the morning and

afternoon, on 32 days, measuring pollution levels both inside a pram and at adult head height to examine differences in exposure for babies and parents.

Pollution levels varied greatly along the route, with hotspots found at traffic intersections and a bus station. Small particles showed higher concentrations in the morning, reflecting heavier traffic, while coarse particles were heavier in the afternoon

The study found little difference between the pollution levels experienced by babies in prams and adults, in contrast to some earlier research.

### Asthma and pneumonia

Air pollution is strongly linked to a range of adverse effects on the respiratory system, with children particularly vulnerable. Children who live on main roads have a higher risk of asthma, pneumonia and reduced lung function. Metallic nanoparticles from pollution have been found in people's brains, and may contribute to Alzheimer's disease.

"One of the simplest ways to combat this is to use a barrier between the in-pram children and the exhaust emissions, especially at pollution hotspots such as traffic intersections, so parents could use pram covers if at all possible," Kumar said. "We are also working closely with our industrial partners to develop innovative methods to clean the air around the children in their in-pram microenvironments."

But pram covers won't keep all pollutants away from a child, and the longer they are outside, the more particles that will make it through the barrier.

Jonathan Grigg of Queen Mary University of London says it's difficult for parents to reduce their exposure by taking different routes. "People choose to move around a city by the most efficient routes. It's by no means clear whether you can choose routes that will reduce your exposure and be able to use them on a regular basis."

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*Date: 10-Mar-2017 Source: Discover*

When it rains, it pours in the Indian town of Cherrapunji, which since 1861 has held the world record for rainiest 12-month period.

2. But a 2015 study in *Nature Geoscience* concluded Earth's early rain was made of iron. More than 4.5 billion years ago, bits of space rock

3. Water-based rain dates back to at least the late Archaean Eon: Researchers have found fossilized raindrop imprints in 2.7 billion-year-old volcanic tuff in South Africa.

5. Normal rain, by the way, is still slightly acidic, with a pH of about 5.6. The pH value of rainfall varies slightly due to factors such as season and climate.

7. Unnatural acid rain poses larger environmental threats, such as deforestation. Since the Industrial Revolution, fossil fuel burning has released sulfate and nitrate ions — both acid rain precursors — into the atmosphere at unprecedented levels.

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9. Acid rain is bad enough, but on Saturn's moon Titan, the rain is made of methane. Nobody is singing in the rain there.
10. On Saturn itself, as well as Jupiter, droplets of helium rain may fall from the gas giants' outer layers toward the interior, according to research published in 2010 in Physical Review Letters.
11. But nowhere on Earth, Saturn or anywhere else has it rained cats and dogs. There's a flood of theories about the origin of the popular saying, which was first recorded in the mid-17th century.
12. Some etymologists think the phrase refers to dead animals washed into the streets after a downpour. But others see a possible corruption of the Old English word for waterfall, catadupe, which makes more sense than falling Fidos and Fluffys.
13. It rains some serious catadupe in Cherrapunji, India. The weather station there holds the world record for the heaviest 48-hour rainfall (more than 98 inches), set in 2014.
14. Cherrapunji also holds a long-standing record for highest rainfall in a 12-month period: 86 feet, 10 inches, set back in 1860-1861.
15. The folks in Cherrapunji might be tired of it, but many people enjoy petrichor, the scent that often follows rainfall. Two Australian researchers coined the term back in the 1960s.
16. A U.S.-based team working at about the same time identified geosmin, a byproduct of soil bacteria, as the source of earthy notes in the distinctive smell.
17. Researchers discovered the likely mechanism behind petrichor only in 2015: A study in Nature Communications found that the average raindrop hits a porous surface with enough force to trap air bubbles at point of impact. The bubbles then rise and pop, releasing aerosols, including geosmin.
18. Many people find the sound of rain as pleasant as its smell, but a 2016 study determined it's also possible to measure rainfall amounts over oceans by monitoring the sound of droplets hitting the waves.
19. And quantifying oceanic rainfall, notoriously difficult to do, is important: 80 percent of the planet's precipitation lands there.
20. Since Earth's water cycle is essentially evaporation from the surface, condensation in the upper atmosphere and precipitation (gravity sending that condensation back down), those little droplets are really just going home.

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## **Mumbai breathes 2017's cleanest air; 'good' AQI after 6 months**

*Date: 11-Mar-2017 Source: Hindustan Times*

On Friday, Mumbai enjoyed its cleanest air in the past six months.

The air quality index (AQI), a measure of air pollution in the city, was 75 — which falls in the 'good' category. A similar AQI has been predicted for Saturday, at 76, by the System of Air Quality Weather



Forecasting and Research (SAFAR). An AQI between 0-100 falls under the ‘good’ or ‘satisfactory’ category, which means the air we breathe poses little or no risk to health. AQI levels between 101-200 are ‘moderate’ and 201-300 are ‘poor’.

The last time the city breathed such clean air was soon after the monsoon in September, and the cleanest air day since June 2015 — when air

quality monitoring and forecasting began in Mumbai — was recorded on May 6, when the AQI level was 64.

Officials from SAFAR said the rise in temperatures and wind speed had dispersed pollutants over the last three days from Mumbai’s air. “The city was recording ‘moderate’ air for the past three days, but on Friday, sea breeze set in early and forced pollutants to get dispersed much faster from the surface. The rise in temperatures are not allowing pollutants to settle easily,” said Gufran Beig, SAFAR director. “We expect AQI levels to fluctuate between the ‘good’ and ‘moderate’ category through April.”

Eight of the 10 air quality monitoring stations on Friday recorded ‘good’ air quality. Colaba recorded the cleanest air at 58, while Mazgaon and Navi Mumbai recorded ‘moderate’ air, with AQI levels at 114 and 112.

Meanwhile, there were reports of light drizzle from Palghar district. In Mumbai, day temperature in the suburbs fell 2 degrees Celsius below normal. The Santacruz weather station recorded a maximum temperature at 30.1 degrees Celsius. Colaba recorded a day temperature closer to the normal mark at 31.2 degrees. A partly cloudy sky has been predicted for Saturday, with day and night temperatures expected to be 31° Celsius and 21° Celsius.

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## Rain effect: air quality improves in Delhi

*Date: 11-Mar-2017 Source: Hindustan Times*



The air quality in Delhi has improved significantly over the weekend, after two days of light rains.

According to SAFAR (System of Air Quality and Weather Forecasting and Research), an app instituted by the Ministry of Earth Science, the air quality levels in Delhi improved to ‘good’ on Saturday morning, which continued during the course of the day.

SAFAR records 24-hour rolling averages of PM 10 and PM 2.5 and uses this data to estimate the Air Quality Index (AQI). PM10 and PM2.5 are ultra-fine

particles that are the dominant pollutants in Delhi. The acceptable levels of PM10 and PM 2.5 are 100µg/m3 and 60µg/m3 respectively.

The larger particulate matter, measured by PM 10, docked at 83 µg/m3 in the morning, which dropped to 65 µg/m3 by 5 pm. PM 2.5, which measures the finer and more dangerous particulate matter, also hovered around 65 µg/m3 at 5 pm.

Experts say the rain in the national capital on Thursday and Friday was responsible for the improvement in air quality.

“Rain always has a washout effect on particulate matter. However, once the rains cease, as the sources of pollution are still continuous, we may see the levels rising again,” said Anumita Roychowdhury, executive director, Centre for Science and Environment.

With no rain being reported by IMD officials since Saturday morning, the air quality may further plummet. On Sunday, pollution levels in the city are expected to rise a little, though it will still be within the ‘good’ range. PM 10 and PM 2.5 levels are both expected to rise to 73 and 85 µg/m3 respectively by Sunday evening.

With winter almost over, and temperature is expected to rise, Roychowdhury also warns about other pollutants. “Gaseous pollutants like ozone, especially, will start posing a bigger threat,” she said.

With temperature dropping to 11.4°C and never rising above 23.6°C, Saturday was a cool day in the city. Sunday will be cooler, but sunny day in the national capital with temperature ranging between 9°C and 25°C, notches below the normal average temperature expected during this time of the year.

On Holi day, one may have to brace temperature as low as 9°C, so may be go easy on the pichkaris. However, you will be able to breathe some clean and fresh air.

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## **Air pollution is devastating UK's wild flowers turning countryside into 'monotonous green badlands'**

*Date: 13-Mar-2017 Source: INDEPENDENT*



Air pollution is having a devastating effect on Britain's wild flowers by helping nettles, hogweed and other “thuggish” species turn the countryside into “monotonous green badlands”, major environmental groups have warned.

A report by the Plant Link UK network, backed by organisations including Plantlife, the National Trust, Woodland Trust and Royal Society for the Protection of Birds, found that 90 per cent of heathlands, acid grasslands and other sensitive

habitats in England were suffering because of nitrogen emissions from fossil fuels and fertilisers. Across the whole of the UK, the figure was 63 per cent.

Nitrogen is a fertiliser, but plants fare differently depending on the amount present in the soil.

Some 37 per cent of Britain's flowering plants prefer low nutrient conditions, whereas nettles in particular thrive when there is a lot of nitrogen in the soil.

Dr Trevor Dines, botanical specialist at Plantlife, said: "It is hard to exaggerate what a destructive impact nitrogen deposition is having on our wild flowers and other flora, fungi and ecosystems more broadly.

"Put simply, this report reveals that nitrogen deposition may present a far more immediate threat to semi-natural habitats than even climate change."

He said as spring began to turn the countryside green again "all may seem as it should but look more closely and the truth is a little different".

"Nettles, hogweed and hemlock – 'thuggish' species that thrive in soil steeped in excess nitrogen – are drowning out rare and more vulnerable wild plants who can only survive in less nutrient-rich soil," Dr Dines said.

"We are force-feeding the natural world a diet of nutrient-rich junk food and it is having a devastating impact.

"Once diverse habitats are becoming monotonous green badlands where only the thugs survive and other more delicate plants are being bullied out of existence."

He added that air pollution's impact on human health was being "increasingly well documented". It is estimated that tens of thousands of people die prematurely every year because of fossil fuel emissions.

"And it is now incumbent on us to ring the alarm bell for nitrogen deposition," he said.

Nitrogen deposition takes place when emissions from transport, power stations, farming and industry – mainly in the form of nitrogen oxides and ammonia – are washed out of the air when it rains or if they simply drift down onto the land.

The report, called We Need to Talk About Nitrogen, said plants such as the harebell and bird's-foot trefoil were at risk.

Rare lichens – used for more than 100 years to gauge air quality – such as the beautiful eyelashes treebeard lichen (*Usnea florida*) are also suffering, along with mosses, hornworts and liverworts.

Soil fungi are believed to be particularly vulnerable. They provide valuable functions in the soil and plants like orchids could suffer if their numbers are reduced.

Plantlife said a meeting of scientists, conservation groups, farmers and government officials held earlier this year had concluded that there was a need to tackle "one of the key threats to our biodiversity, soils and ecosystems".



Dr Dines, who attended the meeting, said: “It is now vital that landowners, industry and politicians come together to urgently address this mounting problem.

“The very fabric of our countryside is changing under this rain of nitrogen and if the damage continues it will harm the ability of our most precious wildflower habitats to cope with other pressures such as climate change.”

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## **Pollution: The 'invisible killer' we must face now**

*Date: 13-Mar-2017 Source: The New Time*



The World Health Organisation (WHO) recently launched a campaign dubbed ‘BreatheLife’ to make people more aware about the fact that air pollution – which it calls the invisible killer – is a major health and climate risk.

Describing it as an ‘invisible killer and major health and climate risk, WHO says more than 80 per cent of people living in urban areas that monitor air pollution are exposed to air quality

levels that exceed the normal limits. They note that while all regions of the world are affected, populations in low-income cities are the most impacted.

This indicates that as urban air quality declines, the risk of stroke, heart disease, lung cancer and chronic and acute respiratory diseases, including asthma, increases for the people who live in these places.

In Rwanda, some measures have been put in place to ensure that people are protected from acquiring diseases that come along with pollution.

The Rwandan law on pollution determines modalities for preservation of air quality and prevention of air pollution. This, according to Remy Duhuze, director of environmental regulation and pollution control at Rwanda Environment Management Authority, is just among the measures that will ensure a safe environment for human health as well other living things in the ecosystem.

How pollution comes about

Lucie Uwiyesha, an environmental health officer at Kabarore Health Centre in Gatsibo District, says air pollution is when the air contains some pollutants, gases or fumes in amounts that are harmful to both human and animal health.

She notes that it comes about when burning fuels, from pesticide use, fumes from industries and automobiles, mining operation, as well as indoor pollutants.

“For instance, indoor pollution can be due to the result of air conditioners or equipment that we use in our houses such as refrigerators. Such gadgets can produce some gases in case there are leakages that are toxic to human health and can even lead to suffocation in extreme cases,” she says.

Uwihesha adds that some paints that are used inside houses can also produce volatile organic compounds that can be inhaled leading asthma and sinusitis.

“Also, carbon dioxide produced during the respiratory process is a pollutant gas and is harmful to human health. Besides, insect spraying in the house, if not done with precaution, can also result to side effects depending on the reaction of one’s body,” she says.

Rachna Pande, an internal medicine specialist, says pollution simply means contamination, adding that many forms of pollution prevail in the environment, all of which are detrimental to human health.

She says that air is polluted due to contaminants released by motor vehicles and industries. It has led to global warming.

“People become more prone to bronchial asthma, chronic bronchitis and allergic rhinitis due to air pollution. There is increased susceptibility to eczema. Incidence of skin cancers has increased due to excess exposure to ultraviolet rays, which is a result of pollution,” she says.

Research conducted by Disabled Go News, a UK-based agency, indicates that air pollution leads to more drug resistant bacteria.

The study goes further to point out how black carbon affects bacteria in the human’s nose, throat and lungs, possibly affecting their (bacteria) ability to beat the immune system.

Uwihesha also says air pollution can also result in skin cancers, heart diseases, blood cancers, lower and upper respiratory tract infections such as flue, asthma, as well as people developing watery eyes due to allergies.

There are also some pollutants that can attack the nervous system, leading to effects such as brain damage.

Who is at risk?

According to Uwihesha, pollution is harmful to any human being. However, children under the age of 14 years, those with non-communicable diseases such as diabetes, asthma, hypertension, heart problems, and pregnant women are more prone to the side effects of air pollution.

For children, she says this is because their lungs are still developing, which could lead to damage of their respiratory system.

On the other hand, those with non-communicable diseases are more vulnerable because of their health conditions that at times can’t tolerate the effects of pollution, while for the pregnant women, for instance, their organs including respiratory organs have to do double work to sustain both mother and baby.

“When exposed to such environments, such as inhaling the polluted smell with other toxins can even result into congenital malformation when the baby is born,” she says.



Iba Mayale, a gynecologist at Doctors Plaza Clinic Kimironko, Kigali, also points out that air pollution during pregnancy, especially in early stages can harm the unborn child.

“If a pregnant woman is exposed to poor air conditions, they are risking their pregnancy because depending on which kind of air pollution they are exposed to, they can suffer from intrauterine inflammation, a condition that can increase the risk of health problems for her child from birth and even proceed to later stages in their lives,” he says.

#### Other forms of pollution

Pande says water pollution is the least discussed about, yet it affects the entire water chain and deprives people of safe drinking water.

“Water borne infectious diseases like diarrhoea, viral hepatitis and worm infestation occur due to drinking contaminated water. Bathing in contaminated water can lead to diseases like schistosomiasis,” she says.

Pande adds that heavy metals, chemicals and even nuclear waste present in water cause sterility and cancers.

Noise pollution is yet another health hazard, she says, noting that it can lead to a ringing sensation in ears and dizziness.

Fatigue, irritability, headache and listlessness can occur due to sleep deprivation caused by loud noises, according to Pande.

Light pollution is not much discussed about but it does exist.

“Animals are affected as they rely on darkness for hunting and moving, while a human being needs a dark and calm atmosphere for sleeping and giving good rest to the mind and brain. Unfortunately due to both light and noise pollution this pattern is affected causing fatigue and complications,” she says.

#### How to stay safe

Duhuze says although preventing this kind of hazard is hard, considering specific remedies can be important in prevention of further complications.

“For instance, controlling pollutants from the sources, stopping burning of forests for charcoal which produces harmful gases to human health, as well as maintaining vehicles well so they produce less fumes is essential. Also people who are closer to sources that emit harmful gases should protect themselves by wearing masks,” he says.

Duhuze adds that since trees have that capacity of clearing the air, embracing the culture of planting more trees is essential as far as minimising the effects of carbon dioxide and maintaining good health are concerned.

However, Pande says prevention of air pollution has to be a collective effort by all concerned.

“At individual level, some simple measures can be undertaken. Use ear plugs to avoid noise pollution. Keep your own house and room dark at the time of sleeping, drink only safe, and swim in hygienic water. Most important, each person can decide not to contribute to pollution in any way possible,” she says.

#### Cause for worry

A recent study by Global Policy Forum indicated that Africa’s air pollution is causing more premature deaths than unsafe water or childhood malnutrition, and could develop into a health and climate crisis reminiscent of those seen in China and India.

The first major attempt to calculate both the human and financial cost of the continent’s pollution suggests dirty air could be killing 712,000 people a year prematurely, compared with approximately 542,000 from unsafe water, 275,000 from malnutrition and 391,000 from unsafe sanitation.

The study’s author, Rana Roy, is concerned by the pace at which outdoor air pollution is growing in Africa, bucking the downward trend in most countries. Used cars and trucks imported from rich countries are adding to urban pollution caused by household cooking on open fires.

“This mega trend is set to continue to unfold throughout this century. It suggests that current means of transportation and energy generation in African cities are not sustainable,” said Roy.

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## Woobi Play air-pollution mask is designed to appeal to children

*Date: 14-Mar-2017 Source: Dezeen*



Danish studio Kilo Design has created a mask to protect and educate children living in areas with very high levels of air pollution.

The device, which was created for technology startup Airmotion Laboratories, is designed for kids aged six and older.

It's intended to be both playful, featuring simple shapes and bright colours, and educational – the

mask arrives disassembled so children and parents can put it together themselves.

Woobi Play is aimed at areas with exceptionally high levels of pollution. UNICEF statistics report there are 300 million children inhabiting places with the most toxic levels ever recorded.

The mask's HEPA filter protects the wearer from 95 per cent of airborne particles.

"Woobi offers a solution to improve the living conditions of these kids around the world," said Kilo Design founder Lars Larsen. "This project is a bold shot at designing a simple, new typology that transforms a professional, protective mask to fit a child's universe."

The mask offers an alternative to more traditional protective wear, which often hides the face. Woobi uses translucent silicone over the mouth.

By colouring the different parts of the mask, the studio hopes to teach children about how it works. Interchangeable pieces also allow kids to customise it, hopefully introducing a greater sense of ownership.

Airmotion Laboratories plans to launch a pilot of the mask – which will retail for €36 (£31) – in China later this year.

As cities around the world suffer from rising levels of pollution, designers are creating new products in response – including a range of shirts that change colour to warn the wearer that they're being exposed to pollution.

Dutch designer Daan Roosegaarde is attempting to tackle the issue on a larger scale, creating giant smog vacuum cleaners that can purify the air in large sections of cities.

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## **Air pollution is ‘force-feeding the natural world a diet of nutrient-rich junk food’, says Plantlife report**

*Date: 14-Mar-2017 Source: Eastern Daily Press*



Air pollution is not just harming human health, it is having a “devastating impact” on UK wildflowers and landscapes, conservation experts have warned.

Nitrogen emissions from transport, power stations, farming and industry in the form of nitrogen oxides and ammonia are deposited back into the natural environment directly from the air, or in the rain, over-fertilising the soil.

The pollution creates nutrient-rich soils which allow “thuggish” plants such as nettles, hogweed

and hemlock, that thrive in the conditions, to overpower rare and endangered wildflowers, a report by nature charity Plantlife warned.

The charity says the problem, which is “force-feeding the natural world a diet of nutrient-rich junk food”, harms plants and the wider habitat, is in addition to the impact of nitrogen fertilisers being spread on the land.

Research shows 90pc of habitats across England and Wales that are sensitive to levels of nitrogen, such as heathlands, acid grasslands and sand dunes, are receiving pollution from the air and rain at higher levels than they can tolerate.

Across the UK, the figure is 63pc, according to the report backed by conservation organisations including the National Trust, the Woodland Trust, the RSPB, the Botanical Society of Britain and Ireland and Chester Zoo.

More than a third (37pc) of UK flowering plants prefer low-nutrient conditions and are under threat, declining while high nitrogen plants are on the rise.

Lichens, mosses and liverworts are particularly sensitive to nitrogen, while other plants at risk include harebell, which was recently classified as near-threatened in England, and bird's-foot trefoil, which supports 160 species of invertebrate.

Dr Trevor Dines, Plantlife's botanical specialist, said nitrogen being deposited from the air and rain could present a far more immediate threat to parts of the countryside than climate change.

"As the first flush of warm weather sees the countryside and waysides greening up, all may seem as it should, but look more closely and the truth is a little different.

"The negative impact of poor air quality on human health is, rightly, increasingly well-documented and it is now incumbent on us to ring the alarm bell for nitrogen deposition.

"We are force-feeding the natural world a diet of nutrient-rich junk food and it is having a devastating impact.

"Once diverse habitats are becoming monotonous green badlands where only the thugs survive and other more delicate plants are being bullied out of existence."

With the problem spreading across borders, and nitrogen pollution coming to Britain from the continent, Dr Dines called for European and international action.

Locally, habitats could be managed to reduce nitrogen levels, with grazing, hay meadow management and tree coppicing to remove vegetation.

And farmers, who are already taking action on nitrogen, could take practical steps to reduce ammonia pollution such as covering up slurry tanks and planting buffers of trees around chicken sheds, a particular problem, but need proper incentives to do so, he said.

Efforts to reduce nitrogen oxide from traffic and power stations, which improves health, will also have a "massive benefit" for the environment, he added.

## FARMING INDUSTRY RESPONSE

National Farmers' Union (NFU) vice president Guy Smith said farmers are working hard to reduce nitrogen emissions.

He said: "Farmers have made some real improvements to our wildlife, environment and our landscapes, particularly in the past 25-30 years. We see an improving picture, the indications are positive and we need to continue to build on this.

“Nitrogen emissions are down due in part to the fall in livestock numbers and in fertiliser use – application rates have been decreasing since the 1980s.

“Good practice and regulation have also been key. Support for innovation and new technologies that can help mitigate impacts but sustain growth in the agricultural sector is critical, but planning policy is also important, particularly if we would like more modern, efficient buildings and storage facilities for the food we produce.

“We are importing more and more of our food and if more constraints are placed on UK food production then the net effect is to increase a reliance on imports, which could lead to a net increase in nitrogen use globally. In England, we have high standards when it comes to mitigating environmental impact from food production.

“The agriculture sector has committed to further address emissions through industry-led initiatives such as the Greenhouse Gas Action Plan and Tried & Tested. In addition, the NFU, DairyUK and AHDB Dairy recently updated the ‘Dairy Roadmap’ to highlight the good environmental work that dairy farmers are undertaking.”

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## **Air pollution reduces effectiveness of antibiotics**

*Date: 14-Mar-2017 Source: Daily Nation*



Air pollution, a new study shows, can alter the effectiveness of antibiotics and increase the risk of contracting bacterial diseases.

Specifically, bacteria that cause respiratory infections are directly affected by air pollution, which increases the possibility of infections and hampers the effectiveness of antibiotic treatment.

Pollutants such as black carbon, a major air pollutant produced through the burning of fossil fuels such as diesel, biofuels, and biomass (wood, organic waste), change the way in which bacteria grow and form communities.

The research focused on two human pathogens, *Staphylococcus aureus* and *Streptococcus pneumoniae*, both of which cause respiratory diseases such as skin and soft tissue infections like boils, bloodstream infections, pneumonia, and bone and joint infections. Both bacteria exhibit high levels of resistance to antibiotics.

In particular, the pollutant affects the survival of bacteria in the lining of the respiratory tract, changing “how well they are able to hide from, and combat, our immune systems”, the study reveals.

**POLLUTED CITY**

The team of researchers found that black carbon alters the antibiotic tolerance of *Staphylococcus aureus* and increases the resistance of communities of *Streptococcus pneumoniae* to penicillin, the key treatment of bacterial pneumonia.

The black carbon also caused *Streptococcus pneumoniae* to spread from the nose to the lower respiratory tract, which occasioned subsequent infection.

Dr Julie Morrissey, Associate Professor in Microbial Genetics in the University of Leicester's Department of Genetics said: "This work increases our understanding of how air pollution affects human health."

The lead author of the paper added: "Our research could initiate an entirely new understanding of how air pollution affects human health. It will lead to enhancement of research to understand how air pollution leads to severe respiratory problems and perturbs the environmental cycles essential for life."

These findings come at a time when people worldwide are exposed to air pollution every time they take in a lungful of air due to rapid urbanisation. Already, about seven million people die prematurely each year from air pollution related infections. Of this, nearly a million are from Africa.

Kenya's transport sector, United Nations Environment Programme says, is a major contributor to air pollution, especially in Nairobi, due to a rapidly growing number of second-hand vehicles and poor road infrastructure that leads to traffic congestion and air pollution.

Babies born to mothers exposed to air pollution from traffic during pregnancy have an increased risk of developing asthma during their first five years, another study shows. It is worse in children born with a low birth weight as they are "more inclined to the respiratory effects of air pollution."

Because of these risks, the World Health Organisation has termed air pollution as the "largest single environmental health risk".

The four-year research at the University of Leicester analysed the impact of black carbon on bacteria in the nose, throat and lungs.

It was published in the journal *Environmental Microbiology*.

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## **'Disturbing' rise in air pollution on city's busiest roads**

*Date: 14-Mar-2017 Source: Salisbury Journal*

AIR quality is getting worse on some of Salisbury's busiest roads, according to the latest figures.

London Road, Exeter Street, Wilton Road, South Western Road and Devizes Road have all registered rises in nitrogen dioxide, a chemical linked to early death.

Salisbury area board chairman Richard Clewer told a meeting on Thursday that the initial data had yet to be finalised, but it was a "disturbing" increase.

"Litter is an eyesore but air quality, we don't see it, but it does take years off some people's lives and that makes it a pretty serious issue," he said.



Money to improve air quality in the city has been spent on planting trees in high-risk areas including Skew Bridge, South Wiltshire University Technical College and Fountain Way, all on Wilton Road, as well as near Waitrose.

There are also plans to plant more new trees at the Friary and Southampton Road roundabout.

Other measures for tackling air pollution that have been discussed by the Salisbury air quality management group this year include the development of a mobile app that will give real-time air quality readings; promotion of green tourism; reducing people's reliance on cars; improving walking and cycling routes; and Clean Bus technology for the city.

Cllr Clewer said the latest buses produced "miniscule" levels of emissions compared with previous models, and the group was in talks with Wilts and Dorset about upgrading some of its fleet.

"You are talking about a 90 per cent reduction," he said.

The group is also looking at securing a bus service to Five Rivers Health and Wellbeing Centre and has secured £7,500 in contributions from the new Asda supermarket towards developing green infrastructure.

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## Daily dose of vitamin B can help you fight air pollution

*Date: 15-Mar-2017 Source: Hindustan Times*

Taking a vitamin B supplement everyday can help mitigate the effects of the most dangerous type of air pollution, claims a new study.

Published on Monday, the research suggests that vitamin B supplement could potentially reduce the impact of the tiny particles on the human body, although they stressed that research was in its early stages and the sample size was small.

Particulate matter, or PM, is a type of air pollutant consisting of small particles of different sizes — from tiny molecular clusters to dust or pollen that we can see. PM2.5 has a diameter of fewer than 2.5 micrometers, about 30 times smaller than a human hair.

“These particles are so small they can go into our respiratory system. They can go deep into our lungs “ Chak K. Chan, professor of Atmospheric Environment at the School of Energy and Environment, at Hong Kong’s City University told CNN.

Once the particles are inhaled they can result in lung and systemic inflammation and stress, experts say. And scientists suspect exposure to PM2.5 can cause “epigenetic” changes to our cells — disturbances or mutations that can damage our health.

The study also involved researchers at Harvard’s TH Chan School of Public Health.

For this study published in the science journal PNAS, 10 volunteers were initially exposed to clean air and given a placebo to check their baseline responses.

The group then took another placebo for four weeks before being exposed to heavily polluted air from downtown Toronto, where an estimated 1,000 cars pass every hour. The bad air was delivered to the volunteers through an “oxygen type” face mask.

The experiment was then repeated, with each volunteer taking a B vitamin supplement daily — made up of 2.5 mg of folic acid, 50 mg of vitamin B6, and 1 mg of vitamin B12.

B6 can be found in liver, chicken and nuts, among other things, and B12 in fish, meat, eggs, milk and some cereals. The researchers found that four weeks of B vitamin supplements reduced the damage of PM2.5 exposure by 28-76%.

The results highlight how prevention at an individual level could be used to fight the adverse effects of PM2.5, the researchers said.

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## **Few steps to protect ourselves and our families from air pollution**

*Date: 23-Mar-2017 Source: News Medical Life Sciences*

The World Health Organization reported this month that pollution and environmental risks are responsible for 1.7 million child deaths per year. Around the world, pollution is constantly taking a toll on our health - and one pollution is especially problematic when the weather gets warmer.

While cities and states need to implement top-down measures to combat air pollution, those who live in particularly susceptible environments - like around major roadways - may not have the luxury of waiting for such changes to take place.

Yifang Zhu, professor of environmental health sciences at the UCLA Fielding School of Public Health, says there are steps we can take to protect ourselves and our families from air pollution, which has well-documented negative consequences for childhood asthma, birth outcomes, pregnancy risks, cardiovascular health, and other diseases.

Those steps include:

Understanding wind patterns. Wind changes throughout the day, helping to blow pollutants both toward and away from your home. In California, for example, the onshore and offshore sea breeze is predictable. Close windows when the wind is blowing from the freeway (or another pollutant source) toward your home. When the wind is blowing away from your home, you can open your windows.



## Workshops planned on sweeping Bay Area air pollution control proposals

*Date: 23-Mar-2017 Source: East Bay Times*



Long-debated rules proposed to reduce air pollution from Bay Area oil refineries, hospitals, gas stations, foundries and other industries will be aired in four public workshops next week as regulators move toward a May vote on the controls.

In the most controversial of three proposed rules, environmentalists want a hard cap limiting greenhouse gases and other emissions from five

oil refineries in the region.

An alternative rule would limit refineries' greenhouse gas emissions based on how much crude oil they refine, or how much finished products they make.

A third proposed rule could affect up to 1,000 Bay Area businesses such as hospitals, data centers, sewer plants, and crematoria by requiring them to analyze and reduce toxic air contaminants, including diesel soot from emergency power generators.

The Bay Area Air Quality Management District board is holding the public workshops on consecutive nights Monday through Thursday in Cupertino, Benicia, Hayward and Benicia.

Here are the times and places:

- Cupertino: 4:30 to 6 p.m. Monday, 10350 Torre Ave., Cupertino Community Hall.
- Benicia: 6 to 7:30 p.m. Tuesday, at the Benicia Public Library, Dona Room, 150 East L St.
- Hayward: 4:30 to 6 p.m. Wednesday, Weekes Community Center, 27182 Patrick Ave.
- Richmond: 6:30 to 8 p.m. Thursday, , Richmond Memorial Auditorium, Bermuda Room, 2533 Nevin Ave.

Environmentalists have complained for years that the district should set a hard limit on greenhouse gases and other refinery emissions to prevent pollution increases if refineries switch to dirtier crude oil such as from tar sand fields.

Oil refineries have objected, saying a hard cap could cut production from the region's five oil refineries and possibly drive business to other states with laxer emission controls. Overall refinery emissions have dropped substantially for decades, refiners say.

Air district officials say a draft of the rule proposals will be posted soon at <http://bit.ly/2n9eEGd> on the air district's website.

## **Delhi, Faridabad among 5 cities with worst air pollution: Govt**

*Date: 27-Mar-2017 Source: India Today*

New Delhi, Mar 27 (PTI) Delhi and Faridabad were among the top five cities with the worst air pollution in the country between 2015 and 2016, the Rajya Sabha was informed today.

"Cities can be ranked on the basis of different criteria pollutants with different results. Five cities where higher values of air quality index have been observed for the period between November 2015 to October 2016 are Delhi, Faridabad, Varanasi, Lucknow and Jaipur," Environment Minister Anil Madhav Dave said in a written reply.

He was asked which were the top five polluted cities in the country.

Replying to another question, he said the National Air Quality Index transforms complex air quality data of various pollutants into single number, nomenclature and colour for effective communication of air quality status to people in terms which are easy to understand.

There are six AQI categories - good, satisfactory, moderately polluted, poor, very poor and severe.

"In general, AQI values observed for a period of November 2015 to October 2016 indicate poor air quality in Delhi, Faridabad, Varanasi, Lucknow, Jaipur, Kanpur, Patna and Muzzaffarpur, moderately polluted air in Agra, Jodhpur, Gurgaon, Gaya, Pune Solapur, Chandrapur and Chennai," he said.

"Satisfactory air quality was in Aurangabad, Navi Mumbai, Ahmedabad, Mumbai, Vishakhapatnam, Bengaluru, Hyderabad, Panchkula, Nagpur, Thane, Haldia, Tirupathi, Rohtak, Howrah and Nashik," the minister added.

Replying to another question, Dave said out of 56 cities monitored for PM<sub>2.5</sub> (fine particulate matter) by Central Pollution Control Board, the data for 2015 indicates that PM<sub>2.5</sub> levels have exceeded permissible limits in Delhi, Bangalore, Bhopal, Gwalior, Singrauli, Angul, Balasore, Rourkela, Sambalpur, Talcher, Kalinga nagar, Tuticorin, Barrackpore, Durgapur, Howrah and Kolkata.

He said the analysis of monitored parameters of SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>10</sub> in 300 cities during 2011-2015 indicates that SO<sub>2</sub> levels were very low in Delhi, Faridabad, Pune, Ghaziabad, Barrackpore etc and ranged between 4ug/m<sup>3</sup> (micrograms per cubic meter air) to 31ug/m<sup>3</sup> against the National Annual Average Standard of 50ug/m<sup>3</sup>.

The NO<sub>2</sub> levels were within the prescribed National Ambient Air Quality Standards (NAAQS) in cities except Delhi, Pune and Barrackpore during most of the years and fluctuating trends of NO<sub>2</sub> in the range of 13ug/m<sup>3</sup> to 74ug/m<sup>3</sup> were observed in five years.

The PM<sub>10</sub> levels have shown a fluctuating trend in all cities, Dave said.

Dave had earlier said in Lok Sabha that data collected by a government agency shows that ozone levels have not exceeded the permissible levels in India and reports indicating ozone pollution deaths in the country need to be "scrutinised". PTI TDS AAR

## Groups Announce Plans To Sue Steel Plant For Air Pollution Violations

*Date: 27-Mar-2017 Source: The Allegheny Front*

Four environmental groups say they are planning to sue Allegheny County and a Pittsburgh-area steel plant for violating the Clean Air Act. The groups filed a notice of intent to sue over Allegheny Ludlum's Brackenridge plant, which makes specialty metals.



The suit centers on the plant's electric arc furnaces, which were installed in 2002. Since they were installed, they've never met pollution limits set by the Allegheny County Health Department. Then last fall, the county raised the amount of pollution allowed from the furnaces in a draft air quality permit.

"Instead of taking action to crack down and enforce these violations, the county proposed to just raise the permit limits," says Patton Dycus, an attorney with the Environmental Integrity Project, one of four groups suing the facility.

Dycus says the furnace emissions include particulates, sulfur oxides and nitrogen oxide — a chemical that contributes to smog. "That's a problem because Allegheny County has problems meeting federal attainment for smog," Dycus says.

The health department says that because electric arc furnaces are rare, it had limited data on how to estimate their emissions when it set the original permit. With more data, it set a higher limit for the furnaces and limits the amount of time the plant can run the furnaces to control emissions.

"These are electric arc furnaces. There aren't really any similar pieces of equipment in this country — and these pieces you can't put emissions controls on them," says Jim Kelly, deputy director of environmental health for the Allegheny County Health Department.

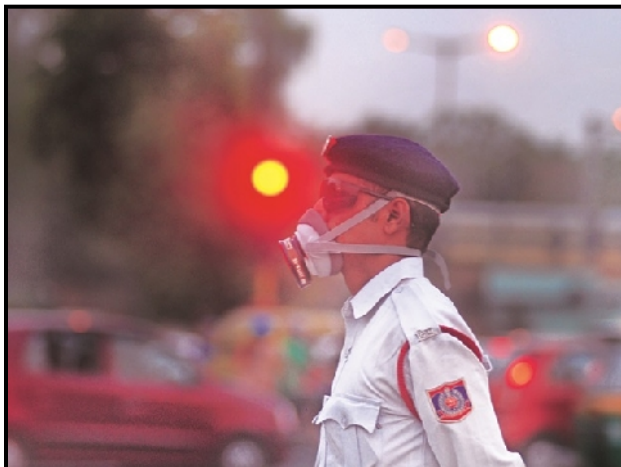
Allegheny Technologies, the plant's parent company, says it was working with the county to control emissions and replace old equipment. The company recently opened a \$1.2-billion steel rolling mill, replacing a decades-old plant.

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## Use the power of the Air Act to fight pollution

*Date: 28-Mar-2017 Source: Business Standard*

The mind-numbing results of a major global study released last week by the Health Effects Institute and the Institute for Health Metrics and Evaluation highlight once again the severity of the air Pollution crisis



in India.

The problem is not that India has made no effort to reduce air pollution. Air-quality monitoring across the country has been stepped up. Emission standards for power plants have been proposed although they are in danger of being diluted or delayed. Perhaps most important, the central government mandated that new passenger and transport vehicles meet BS VI emission standards by 2020, and lowered the limits on sulphur content of fuels. In the special case of the national capital region, a graded emergency action plan has now

been prepared.

Yet, these and other ongoing efforts are unlikely to improve the air quality situation to the point where pollutant levels meet the national ambient air quality standards (NAAQS). Why? A recent report from the Centre for Science and Environment has a few of the answers.

First, India has not set any self-imposed deadline for meeting the NAAQS. Nor does any city or state faces economic and legal consequences for missing the air-quality goals. Contrast that with the situation in the US, where each state must prepare an implementation plan for cities within the state that do not meet NAAQS pollution limits and face economic and legal consequences for missing the air quality goals. In India, state pollution control boards (SPCB) and cities have prepared such plans only in response to court orders, and without regular updates or oversight.

Second, the SPCBs rarely if ever exercise their powers to prevent usage of dirty fuels and equipment, burning of garbage and agricultural residues, or pollution from industrial plants.

Third, although the Environment Protection Act (EP Act) of 1986 gives the SPCBs power to regulate vehicular emissions within their jurisdictions, the SPCBs currently have no control over vehicle emission certification, in-use emissions testing, or enforcement — which renders that power illusory. In the future, SPCBs should get involved in carrying out in-use surveillance testing in collaboration with vehicle testing agencies to ensure that the on-road emissions of vehicles match the certification values.

One plausible solution is to consolidate all aspects of vehicle emissions and fuel quality regulations under the provisions of the Air Act of 1981 and the Environment Protection Act of 1986. Vehicular air pollution accounts for a quarter to a third of the pollution burden in cities across India. The Ministry of Environment, Forests and Climate Change (MoEFCC) and the SPCBs cannot be held responsible for not meeting the NAAQS if they cannot clamp down on one of the major sources of air pollution.

No changes would be needed in the Air Act or EP Act; indeed, India's first vehicular exhaust emission standards (in 1990) and fuel quality specifications (1996) were set under the EP Act. Nor do the provisions of the Motor Vehicles Act prevent the EP Act from creating an oversight body or from giving detailed instructions to any agency. The power to give directions and set rules to regulate environmental pollution under the EP Act are broad and consistent with the public health objectives of the clean air law.

Since the primary goal of vehicle emission standards is to improve public health, it makes more sense to regulate those emissions using the powers of the Air Act.

The courts have intervened aggressively in air-quality matters, much to the chagrin of some stakeholders. Such judicial intervention would become less necessary, however, if the air-quality management process in India were streamlined, and all sources of pollution monitored, regulated, and corresponding standards enforced under the detailed guidelines issued by the environment ministry.

As the dismal statistics from the Health Effects Institute and the Institute for Health Metrics and Evaluation on premature mortality caused by air pollution remind us that the fight against air pollution has only just begun. Whether India is able to win this war will depend on clear regulatory structure and responsibilities at the central, state, and local level, with clear targets, enforcement mechanisms including economic and other penalties for non-compliance.

It is within our power to see that all Indians are able to breathe clean air. What is necessary is the political will to wield existing legal authority, and to pursue that aim with sufficient determination.

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## **CAG: Air pollution rocketing in Bihar but check mechanism lacking**

*Date: 29-Mar-2017 Source: Hindustan Times*



The comptroller and auditor general (CAG) of India has asked the Bihar government and its transport department to maintain a database of pollution testing stations.

It has also asked them to ensure that the tests they conduct were authentic and due procedure was followed while issuing pollution under control (PUC) certificates.

This would enable the department to control vehicular pollution in Patna and other places in Bihar, read the CAG report for the year ending March 2016, which was tabled in the state legislature on Monday.

The report said a scrutiny of records revealed that the office of the state transport commissioner (STC) was not maintaining the database of pollution testing stations in Bihar.

The absence of any control by STC over functioning of pollution testing stations could be the reason for increased vehicular pollution level, it added.

The CAG report said more than 80% people living in urban areas of the state were “exposed to air quality levels that exceeded the limits specified by World Health Organization (WHO).”

It quoted the Guidelines for Ambient Air Quality Monitoring, issued by Central Pollution Control Board, as saying that vehicular emission was a major source of respirable suspended particulate matter (RSPM) at 280 against permissible limit of 60 micrograms per cubic metre in Patna.

The report observed that Patna witnessed a steep increase in number of vehicles from 2.34 lakh on April 1, 2011 to 6.74 lakh on March 31, 2016.

“This made it clear the exponential increase in number of vehicles in Patna played an important role in the rise in pollution level in Patna,” it said.

Scrutiny of records also revealed that gas analysers/smoke metres supplied by the centre, were issued to eight district transport officers (DTOs) and 22 MVIs to check if motor vehicles met emission and pollution control norms and to issue PUC certificates after charging a prescribed fee.

However, they were not utilised and kept idle.

“On being pointed out, the department stated (October 2016) that information was being sought from the officials concerned,” the report added.

The report also said licences of 106 pollution testing stations were not renewed as the STC did not maintain database of pollution testing stations.

“Consequently, renewal fee of Rs 11.30 lakh was not realised,” the report said, adding that the returns regarding the number of vehicles tested and revenue collected were not submitted by pollution testing stations.

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## Uber announces electric car expansion in London in effort to fight air pollution

*Date: 29-Mar-2017 Source: Mirror*



Uber will start expanding its electric car presence in London in order to fight the growing air pollution in the city.

The ride-sharing app already has a fleet of 50 electric Nissan Leaf cars on the roads that can be rented out by drivers. These will be joined by a further 100 manufactured at Nissan's plant in Sunderland.

Uber says it will also begin installing rapid charging points in central London that will be

dedicated for use by Uber drivers.

And finally, the app itself will be changed to allow any drivers piloting an electric car to get trips which take them near a charging point.

“Our vision is for mass adoption of fully electric cars as private hire vehicles but there are some really big challenges we need to overcome,” said Jo Bertram, the Regional General Manager of Uber in the UK.



"Charging cars can be costly for drivers and there's a serious lack of rapid charging points in central London.

"We hope the Mayor's forthcoming transport strategy will lead to more chargers which private hire drivers can use. In the meantime we're determined to make progress with a further 100 Nissan Leafs and plans for a network of chargers for drivers who use Uber."

The company's announcement came alongside a study from the Energy Saving Trust that looked at electric cars being used in the capital.

The trust found that drivers who were using fully electric vehicles saved more than half a metric tonne of NOx and 22 metric tonnes of CO2 during the course of the trial compared to a hybrid car.

"The study uncovered that there is real potential for many more private hire drivers to use electric vehicles in London, delivering improvements to air quality and reducing carbon emissions. The study shows that, in the main, electric vehicles are popular with both drivers and passengers," said Andrew Benfield, group director of transport at the Energy Saving Trust.

"We also found that drivers want to see more rapid-charging options in London, as well as residential charging infrastructure to be able to re-charge overnight at or near home – the most convenient and cost-effective way of running an electric vehicle," he said.

Air pollution in London is becoming increasingly problematic.

The first "very high" pollution alert has been issued for London by mayor Sadiq Khan, under a new system for warning people about poor air quality.

Warnings are being issued at bus stops, Tube stations and roadsides in the capital, and Mr Khan said everyone from the vulnerable to the physically fit may need to take protections to protect themselves from the "filthy air".

The warning comes as swathes of the UK are suffering from very high or high levels of air pollution from pollutants known as particulate matter or PMs, coming from sources including traffic emissions which are failing to disperse in the still weather.

It states adults with lung and heart problems and children with lung problems "should avoid strenuous physical activity".

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## **Vehicular pollution: What is BS and why should you care?**

*Date: 30-Mar-2017 Source: Hindustan Times*

The Supreme Court on Wednesday said the health of citizens was more important than commercial interests of auto makers as it banned the sale and registration of Bharat Stage (BS)-III emission norm-compliant vehicles from April 1.

Here is a low-down on vehicular emissions.



What are emission norms?

Bharat Stage or BS norms are standards for vehicular emissions. They lay down the permissible levels of pollutants that come out of the exhaust pipes of motor vehicles. The aim is to check air pollution and emissions that lead to global warming.

Why are we talking about it right now?

India is set to enforce a new generation of vehicular pollution norms on April 1 called BS IV. The norms are already in place in some cities but starting April only BS IV compliant vehicles can be manufactured, sold and registered, across the country.

What is the possible impact on air pollution?

Delhi-based policy think-tank, Centre for Science and Environment, estimates that the transition will lead to a significant decrease in PM emissions. Emissions can fall by as much as 80% from new trucks and by 50% from cars.

Reductions in Hydrocarbon and NOx emissions from may come down by 41-80 % depending on the engine size.

What is BS-IV? What is the difference between various emission norms?

The difference between BS III and BS IV is that the latter are stricter and permit lower quantities of pollutants to be emitted by vehicles.

For passenger vehicles this is how much the permissible levels for different pollutants have changed since emission norms were adopted in the country.

Why is the Supreme Court verdict important?

There has been a recent controversy surrounding the transition from BS III to BS IV because automakers want to be able to sell vehicles after the April 1 deadline. They argued that the transition meant a ban on only the production of BS III vehicles.

SIAM, an industry group representing 48 major automakers, estimated that a stock of about 8 lakh BS III vehicles worth almost Rs 12000 crore might remain unsold because of the transition.

What does it mean in terms of implementation?

BS IV vehicles are less polluting than BS III vehicles, but better technology means that the vehicles cost more than BS III vehicles.

The implementation happened in a staggered manner, with stricter norms being implemented in major cities before becoming nationwide. For 4-wheeler passenger cars stricter norms have been in place in 13 major cities like Delhi NCR since 2010.



Nationwide norms will help check air pollution because automakers and users will not be able to take advantage of lax norms in other parts of the country. For example, some owners purchase and register cheaper BS III vehicles outside Delhi NCR, but they ply on Delhi roads, contributing to air pollution in the capital.

What about the fuel?

To meet BS IV norms not only do the vehicles have to be better at utilising the fuel, the fuel itself has to be of better quality. The ministry of petroleum and natural gas has taken the responsibility of ensuring that all the fuel supplied across the country is BS IV compliant.

BS IV fuel being cleaner will run the BS III engines too. However, the other way round will damage the engine.

What can automakers do with their BS III inventory?

They'll have to rework only the engines and the exhaust systems in some vehicles. In stocks as old as 3 years or more with no scope of correction or alteration, scrapping would be the last resort.

How many vehicles in India?

Domestic Motor Vehicle Sales

- Passenger Vehicles: 2.79 million units
- Commercial Vehicles: 0.69 m
- Two-wheelers: 16.50 m
- Three-wheelers: 0.54 m
- Total: 20.47 million units

(Apr 2015 - Mar 2016)

Production of vehicles grew from around 5 million in 2000-01 to 14 million in 2009-10, and to 23.96 million in the fiscal 2015-16 (Source: SIAM/ ACMA data).

How deadly is vehicular pollution?

Data is not available for the whole country, but a 2015 IIT Kanpur study looking at air pollution in Delhi found.

Contribution of vehicles to PM 10 load: 9 %

Contribution of vehicles to PM 2.5 load: 20 %

Environmentalists argue that this is a conservative estimate. Though estimates vary, vehicles are recognised as a major source of air pollution.

If you took a look at the quantity of different kinds of pollutants found in the air that came from vehicles it would look something like this.

Why should you care?

Particulate Matter has been linked with rising incidence of cancer, especially lung cancer. Sustained exposure to high concentrations of small particulates can lead to premature deaths. More than 1 lakh premature deaths in India in 2015 can be attributed to PM 2.5 pollution, according to The State of Global Air report 2017.

The reaction of NO<sub>x</sub> gases in the atmosphere leads to smog and acid rain. They also contribute to Particulate Matter and surface-level ozone formation. India had the highest number of ozone-pollution related deaths.

Sulphur dioxide can combine with water and cause acid rain. Acid rain damages trees and can contaminate water bodies apart from degrading infrastructure. Even monuments like Taj Mahal are not immune to the effects of acid rain.

Nitrogen Oxides: Nitrogen dioxide and nitric oxide are referred to together as oxides of nitrogen (NO<sub>x</sub>). When nitrogen is released during fuel combustion it combines with oxygen atoms to create nitric oxide (NO). Nitric oxide is not considered to be hazardous to health.

But it can become harmful when it combines with oxygen to create nitrogen dioxide (NO<sub>2</sub>). Nitrogen dioxide causes irritation in the respiratory tracts and exposure to high concentrations of it can cause inflammation of the air passage.

Reaction of NO<sub>x</sub> gases leads to smog and acid rain. They are also key to the formation of Particulate Matter and surface-level ozone.

Surface level Ozone has been known to cause adverse health effects. The State of Global Air report 2017, released this February, reported that India had the highest number of ozone-pollution related deaths and the numbers have increased from 43,480 in 1990 to 107,770 in 2015.

Sulphur:

Sulphur dioxide can affect the respiratory system and the functions of the lungs and causes irritation of the eyes. It can combine with water and cause acid rain. Acid rain damages trees and can contaminate water bodies apart from degrading infrastructure. Even monuments like Taj Mahal are not immune to the effects of acid rain.

What would this cost you?

The average price hike of vehicles is expected to be around 10%. It will vary from company to company and model to model in different segments. Some models may be launched with revised engines to suit the norms and some automakers are also revealing BS IV specific models.

It will also nudge up the price of fuel marginally.

In the long run, healthcare costs associated with air pollution-related health will fall.

What next?

The government in January 2016 announced that India will be skipping BS V norms and enforcing BS VI norms starting 2020.

## Volunteers with Acid Rain Monitoring Project to sample lakes and streams across Massachusetts

*Date: 30-Mar-2017 Source: Mass Live*



AMHERST -- In the 1970s and 1980s, acid rain was in the news, as pollution from smokestacks in the midwest made its way east, resulting in rain and snow that acidified lakes, ponds, and streams in Massachusetts.

Acid rain was corroding metal pipes from the Quabbin Reservoir, diminishing lake trout populations, damaging forests on Mount Greylock, and eating away at historic statues and gravestones in Boston.

A 1990 amendment to the Clean Air Act cut back on sulfur dioxide and nitrogen oxide emissions, and now the rain and snow itself is less acidic, said Travis Drury, statewide coordinator of the Acid Rain Monitoring Project, based at the University of Massachusetts.

However, many water bodies are still in recovery.

"Some sites are improving, and others are about the same," said Drury. "We're interested in tracking that process."

On Sunday, April 2, dozens of volunteers will fan out across the state and collect water samples from 150 locations. The samples will be analyzed at laboratories and the data will be logged.

Data has been collected since 1983, when the monitoring project, affiliated with the Water Resources Research Center, first got its start.

Drury said that anyone who wants to volunteer in 2018 should contact him.

"Volunteering for this project is a great way to get out and enjoy the lakes and streams in our communities," he said. "Without the generous support of volunteer samplers, we would be unable to collect valuable data that show the effects of acid deposition and how our waters have improved since the 1990 Clean Air Act Amendment."

Drury can be reached at [tdury@umass.edu](mailto:tdury@umass.edu) or at (413) 545-5979.

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## No, pollution is not just a Delhi problem and is certainly not limited to outdoors

*Date: 30-Mar-2017 Source: Indian Express*



While Delhiites have been exposed to air pollution for many years, it is only recently that people have started taking cognizance of this problem due to heightened awareness, conversations and social debates around the subject.

Conversations around air pollution have so far been limited to Delhi-National Capital Region (NCR) owing to the alarming levels of smog that engulfed the city last year.

While Delhiites have been exposed to air pollution for many years, it is only recently that people have started taking cognizance of this problem due to heightened awareness, conversations and social debates around the subject.

Mumbai resident Sunil Nagpal recalls his experience and shares, “I’m an avid jogger and enjoy running on Marine Drive every morning. In early November last year, I was asked by my organization to travel to Delhi for a fortnight on a project. It was then that I came face-to-face with this problem.”

Unaware of this problem then, Sunil continued his morning jogging ritual even in Delhi, but soon realized that it was getting extremely uncomfortable for him to breathe while running. “Initially I did not pay much heed to this problem; however, suspected something wrong when the issues persisted. Even after a month after getting back from Delhi, there were no signs of improvement. A doctor suggested that I could be suffering from the ill-effects of air pollution. It is then that I realized the gravity of the situation”. Sunil was in for an eye-opener in this case as he believed that air pollution was the exclusive property of the capital.

His condition set him thinking about air pollution and ways he could fight it. He consulted his friends, family, and browsed the internet extensively for more information. He loved his jogging ritual and found out ways to combat it using options much as pollution masks.

He was so happy with his efforts that one evening when he was sitting with this friends, he started explaining his problem and how he reached the solution with some pride. Little did he know he was in for a surprise! It was then that a friend pointed out the problem of indoor pollution. Sunil was taken aback as he had focused on outdoor pollution only till now and didn’t have a hint of how harmful indoor pollution was as well. “After all our homes are clean and we maintain hygiene. How can our homes be polluted?” Instantly the thought of well-being of his wife and young children struck him and he set on a path of research again. “I didn’t want my family to face the problems that I did” said Sunil.

Few hours into the research Sunil found exactly what he was looking for. “I stumbled upon [honeywellsmarthomes.com](http://honeywellsmarthomes.com) and discovered how bad a problem indoor pollution was. The PM2.5 level in our homes are at times worse than the situation outside as we grapple with problems of dust and cooking

fumes,” he says, adding he finally decided to get a good indoor air purifier. “I can’t control the air outside, but I sure can make it breathable inside” he said. He found some vital inputs on the site about indoor pollution and the products that could solve this problem for him. He narrowed his choice to the Honeywell Air Touch™ air purifier for his home. “I chose this one as it was relatively silent while being powerful and perfect for the size of my rooms,” Nagpal explains, adding that the fact that filter replacement cost also played an important role in his decision making. The filter combination has many advantages, he found out from his research. The HiSiv™ filter removes formaldehyde, VOCs (Volatile Organic Compounds) and odour and the HEPA filter cleans indoor air of PM2.5 and other particulate pollutants. Along with the honeycomb design and molecular sieves with activating agents, the HiSiv™ technology adsorbs harmful gases, without taking away the moisture in the air.

Over the past few months, Nagpal has been breathing easy in more ways than one. He runs the air purifier in his and his kid’s bedroom and is already thinking of adding one for the living room where the family spends a considerable amount of time. Now he knows that pollution, both indoor and outdoor, is not something we can choose to ignore anymore. He just hopes more people take an informed decision about the air they breathe.

Life is, most of the times, a matter of choices that we make. While getting rid of air pollution in a city is a long-drawn process and needs contribution from every sphere, it is our homes- our safe zones, where we can address this problem immediately. The least that we can do is to ensure that the air that we and our family members breathe inside our homes is cleaner. Honeywell range of air purifiers does exactly that.

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## April 2017

### **Plying of diesel autos in Gurgaon should be stopped to reduce air pollution, say experts**

*Date: 02-Apr-2017 Source: Hindustan Times*



Air quality experts on Friday welcomed the Supreme Court order banning the plying and registration of BS-III vehicles in Delhi-NCR, saying the directive will go a long way in reducing air pollution in the region.

However, they also made a strong case for a blanket ban on the plying of diesel-run auto-rickshaws as they are primarily to blame for the untamed surge in air pollution levels in the city.

Presently, 22,162 registered auto-rickshaws ply on Gurgaon roads. Of these, 11,245 run on CNG (compressed natural gas) and 10,917 on diesel.

The exhaust pipes of the diesel-run autos spew pollutants that include Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>), Carbon Monoxide (CO), diesel particulates and sulphate particulates, polycyclic aromatic hydrocarbons (PAH) and volatile organic compounds like Benzene that pose serious health risks, the air quality experts said.

Anumita Roychowdhury, executive director, research and advocacy, and head of the air pollution and clean transportation programme, Centre for Science and Environment (CSE), said, “Air pollution levels in Gurgaon will be significantly reduced once the plying of BS-III vehicles go down by 80%. However, the polluting three-wheelers (auto-rickshaws) are chiefly to blame for the worsening air quality in the city. These vehicles emit toxic gases that are harmful for health.”

The city’s air quality has been marked as ‘poor’ by the Pollution Control Board and the grim assessment is unusual at this time of the year. On Friday, the particulate matter — (PM) 2.5 level — in the city was recorded at 307 micrograms per cubic metre (µg/m<sup>3</sup>) against the permissible limit of 60 (µg/m<sup>3</sup>).

PM 2.5, or suspended particulate matter, is 2.5 micrometres or less in diameter and is a major pollutant. These particles could settle in the lungs and cause respiratory problems.

An official of the Haryana State Pollution Control Board (HSPCB) said the Regional Transport Authority (RTA) could enforce a blanket ban on the plying of polluting auto-rickshaws. “We are aware that diesel-run autos are still plying on city roads despite a ban on them. We have already conveyed our concerns to the RTA and will soon take steps to stop the plying of these vehicles,” Bhupender Singh, regional officer, HSPCB, said.

Trilok Chand, secretary, RTA, said, “There will be no registration of BS-III vehicles from April 1 and we will soon crack down on diesel-run autos that drive air pollution levels in the city.”

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## **Air pollution might be invisible – but it can strip the skin from my face**

*Date: 02-Apr-2017 Source: INDEPENDENT*



My skin condition, partly caused by air pollution, disappeared in the clean air of the Himalayas, was controlled by moisturiser and medicated shampoo in Scotland but has broken out again since moving to London

For most people, air pollution is barely noticeable.

However, like up to 10 per cent of the population, I am something of a canary in the coal mine.

In the mid-1980s, the skin on my face began to flake off and turn red. A trip to a specialist in

Dundee brought the news that I had dermatitis.

The reason, I was told, was a combination of stress and air pollution; the treatment was a combination of a steroid cream, coal tar shampoo and industrial-strength moisturiser.

The specialist’s confident assertion that pollution was at least partly to blame was apparently controversial at the time, but 30 years later researchers writing in the journal *Nature Immunology* stated they had found “a direct mechanistic link between air pollutants” and atopic dermatitis.

Initially, I didn’t really blame the modern world for the hassle of having to slather myself in all this stuff to avoid my skin becoming so dry it would start to crack and bleed. I viewed it more as a personal defect.

And, to be honest, it wasn’t that bad. As a student in Aberdeen, it was completely under control and I found, to my relief, I didn’t need to use the steroid cream at all.

Two experiences changed my thinking. One was a three-month trip to the mountains of Nepal, where I celebrated my 21st birthday in a lodge in Namche Bazaar, a major stop for trekkers heading up to Everest base camp.

Before flying out to Nepal, I had secured a three-month supply of shampoo and emulsifying ointment.

I checked and double-checked at various points on the journey via Pakistan that I had them with me, but then left them behind in a Kathmandu hotel before the final leg, a flight to the “world’s most dangerous airstrip”, Lukla.

The thought of spending three months looking permanently embarrassed while littering the ground with pieces of skin from my flaking face entered my head.

I thought about going back. I couldn't afford it.

I needn't have worried.

Whatever the stresses associated with my first plane flights and living in a faraway land, it had no effect on my skin.

But replacing the apparently clean air of Scotland for the genuinely clean air of the Himalayas definitely did.

My skin was completely clear, as pristine as it had ever been. No redness, no flaking and no itch. I was cured!

I think I washed my hair – with ordinary shampoo for the first time in five years – all of once while I was in the mountains, ostensibly to study the culture of the Sherpas as part of my degree in social anthropology.

But my return to Scotland also saw my symptoms return. I was no longer cured.

Over the years, moving about between Aberdeen, Edinburgh and northern England seemed to make little difference to my skin.

But in 2008, I moved to London, the second meaningful experience in my attitudes towards air pollution and my skin condition.

Without any doubt, it has been much worse ever since.

I can see blotches on my skin, a patch over my left ear seems to be permanently flaking unless regularly smothered in ointment, I can feel the itch on my cheek and in my hair as I write. I now have beard-druff... beard-druff! Oh, the ignominy!

If this is the way my skin reacts, what effect is it having on my lungs? What effect is it having on your lungs? I have no idea. I have a tendency to ignore problems or pretend they don't exist. Probably not the best strategy.

It is very easy to do this when you can't see the problem or smell it or taste it, as one person who viewed film shot by a camera that makes invisible pollution from car exhausts visible told *The Independent*.

But the estimated 40,000 premature deaths in the UK from air pollution every year should not be ignored. This could be your child, your grandmother or you.

The Government has twice now failed to come up with a plan to improve air quality to the minimum safe standards within a reasonable time. It has twice been taken to court, twice tried to defend the indefensible and lost twice.

If ministers fail a third time – and, given the concentration on Brexit, they might – we must not let them off the hook.



## **Pollution in cities SHRINKS the brains of older men and damages their reasoning and language skills**

*Date: 03-Apr-2017 Source: Mail Online*



While you might associate air pollution with respiratory issues, a new study has shown that it could also have damaging effects on the brain.

The study indicates that air pollution can affect mental abilities by shrinking white matter in the brain.

Older men appear to be affected the worst, with results showing that loss of brain power for these men could be the equivalent to losing a year of education.

The findings come from a new study by researchers at Yale University and Peking University, Beijing.

Men living in cities with high pollution levels seem to lose their abilities in both logical and verbal reasoning, at a faster rate than women.

Researchers suggest that this difference between the sexes could be caused by structural differences in the brain that may leave men more vulnerable to shrinkage of white matter.

The researchers looked at the performance of 25,485 people in China on both maths and language exams in 2010 and 2014.

Results from the exams showed that young men and women did equally well up to the age of 30, while later in adulthood, men did notably better than women.

But in the most polluted cities, the scores of older men plummeted, especially on the language exams.

The Air Quality Index measures three different kinds of pollutants and runs from 0 to 500.

The results showed that for every extra 10 units on this index, the average man lost 2.1 per cent more of his cognitive ability than a woman of the same age in the area.

In their paper, published on EconStor, the researchers, led by Dr Xi Chen, said: 'Contemporaneous and cumulative exposure to air pollution significantly lowers both the verbal and math test scores of survey subjects.'

'In general, men perform worse than women when exposed to the same dose of air pollution.'

'The gender difference is more salient among the old and less educated in both tests.'

But not everyone is convinced by the results.

Professor Barbara Maher, a researcher at the Centre for Environmental Magnetism and Palaeomagnetism at Lancaster University, told The Times: 'This paper suggests some gender differences in the impacts of air pollution on brain white matter and grey matter, but the measures of air pollution exposure are very broad-brush.'

The researchers from Yale and Peking Universities note that further studies are needed to verify their findings.

In the paper, they added: 'We hypothesise that differences in brain composition may help explain why men appear more sensitive to the negative effects of air pollution.'

'It is beyond the scope of this paper to formally test this mechanism. We leave it as a future research topic.'

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## **'The car is ingrained into people here': West Midlands faces air pollution crisis**

*Date: 04-Apr-2017 Source: The Guardian*



The West Midlands is one of the worst hit areas outside the capital for illegal levels of nitrogen dioxide pollution but many don't seem to realise they and their children are breathing some of the UK's most polluted air.

The region is criss-crossed with motorways and dual carriageways churning out NO<sub>2</sub> from hundreds of thousands of diesel vehicles. The government's own figures show air pollution is responsible for almost 3,000 deaths a year in the

West Midlands and in 2015 Birmingham was one of five cities – alongside Leeds, Nottingham, Derby and Southampton – ordered to introduce a clean air zone by 2020.

Today's study shows that the region contains five of the top 10 pollution hotspots outside the capital in relation to the exposure of nursery children to NO<sub>2</sub>.

But despite this bleak picture there appears to be a lack of awareness among many of those living and working in some of the worst hit areas.

In Birmingham there are 38 nurseries and 30 schools within 150 metres of a road where emissions of NO<sub>2</sub> are above the legal limit. Of the 10 worst affected nurseries none were aware it was a problem when contacted by the Guardian. Proprietors and managers of the nurseries said air pollution was not something that they – or the parents – were aware of or discussed.

2,091 nurseries, schools, further education centres and after school clubs in England and Wales are within 150 metres of a road emitting illegal levels of nitrogen dioxide.

The highest pollution pockets are in London. 15 London boroughs had at least one in four nurseries in an illegal NO2 hotspot.

James Burn, the Green party candidate for West Midlands mayor, said a lack of investment in public transport had resulted in “terrible, hidden consequences” across the region – with the young and poor suffering the most.

“The West Midlands is facing an air pollution crisis – the shocking truth is that 3,000 people a year here die prematurely from breathing our dirty air,” said Burn.

He said the area had been the “poor relation” in terms of investment in public transport for decades.

“For us to tackle this problem we need a huge investment from government to enable us to build a world-class public transport system that gets people from A to B without contributing to air pollution and congestion. Until that happens, we’ll continue to see cars choking up our roads and our most vulnerable citizens choking on filthy air.”

Anne Shaw, Birmingham council’s lead officer on air quality, is one of those tasked with tackling the problem. She said a lot of work was underway, but admitted it was a challenge to change people’s attitudes to driving in a city that “grew up on the car industry”.

According to the council’s own figures 900 people die from poor air quality in the city each year, compared to 30 from road accidents.

“The car is ingrained into the people that live here and it is a challenge to change that.”

However she said the council had a range of measures, from encouraging low emission vehicles to a revamped cycle network to help tackle the issue.

“We are not anti-car, the car is still here, but there are 200,000 journeys of under a mile in this city each day – it is about removing some of those trips.”

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## **Noida, Ghaziabad get ambient air quality monitoring systems**

*Date: 06-Apr-2017 Source: The Times of India*

NOIDA/GHAZIABAD: The Uttar Pradesh Pollution Control Board (UPPCB) has installed real time ambient air quality monitoring systems at Noida and Ghaziabad. In Noida, the machine has been set up at the Amity University premises at Sector 126.

In Ghaziabad, it has been set up at Vasundhara. UPPCB will set up similar systems at four more locations, including Greater Noida over next six months.

The machines at Noida and Ghaziabad are presently being operated on a trial basis and may finally start displaying accurate results after a 10 days.

This is the first time the cities would have round-the-clock automated pollution control monitoring which would display measures of all parameters of air pollution and weather condition determinants. The PM2.5 levels of the city's air too would now be available for first time at any given time.

"A private firm has been handed over operation and maintenance of the system for a period of five years. At present, wiring work of the display board is in the final stage. The board will display various parameters as soon as the wiring work is completed," said senior UPPCB official Dr Sapna Srivastava, in Ghaziabad told TOI.

The systems have been installed by UPPCB with 50% funding support by Central Pollution Control Board (CPCB).

Parameters of pollution that will be displayed on the board include PM 10, PM 2.5, sulphur dioxide, nitrogen dioxide, ammonia and benzene-toulene-xylene.

Meteorological data including temperature, wind speed, wind direction and humidity levels will also be displayed in a real-time basis on the board.

Officials of the UPPCB said that 24-hour average of pollution and weather data is already being received by them manually after the installation of the system.

"Each of these gadgets are being imported at Rs1 Cr. We will install the same at Bulandshahar, Greater Noida, Baghpat and Muzaffarnagar," BB Awasthi, regional officer, UPPCB, Gautam Budh Nagar, said.

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## Environmental Group On Air Pollution – It's All About Climate Change

*Date: 06-Apr-2017 Source: KGVO*



The Environment Montana Research and Policy Center has released a city-by-city report on air pollution in Montana.

Director Skye Borden and Hardin, Montana pediatrician Lori Byron held a telephone press briefing on Thursday to discuss the causes and effects of air pollution in the state.

"Our message today is clear," Borden began. "Even one day with unhealthy air is too many. We think burning dirty fuels like coal, oil and gas threatens our health, and it's time to switch to 100

percent clean, renewable energy. Today's report on health at risk says that air pollution remains a major threat to our health in Montana."

Borden quoted from the report that targeted two of the valleys in western Montana.

“Some key findings in the report include that two counties in Montana, Ravalli and Lincoln, were among the 10 worst rural counties in the nation in terms of particulate matter pollution,” she said. “People here in Missoula experienced 112 days, that’s all at the start of the year, with elevation soot pollution in 2015.”

Hardin pediatrician Lori Byron echoed the warning about climate change.

“Major health societies have called air pollution climate change the greatest threat to be the greatest threat to public health in the 21st century,” Byron said. “Wildfires affect everyone in Montana, even when we’re hundreds of miles away. Children and pregnant woman are hurt more, as well as farmers and athletes and those who love the great outdoors are also more at risk.”

The solution, according to Borden and Byron, is for the public to wholeheartedly embrace climate change.

“The biggest solution is that we all need to stand up and defend climate change and to defend all actions to protect us against climate change,” Borden said. “I think we need to support the Clean Power Plan, and to fight back against budget cuts at the EPA.”

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## Mumbai highway project threatens new air pollution crisis

*Date: 07-Apr-2017 Source: Climate Home*



Mumbai risks becoming India’s new air pollution problem child with construction about begin on a new \$2.38bn coastal highway that will send exhaust fumes wafting across the island city and its suburbs.

If Mumbai has been spared the ignominy of New Delhi – listed by the World Health Organisation in 2014 as the most polluted city in the world, along with 13 of the 20 worst polluted figuring in India –

it is due to sea breezes that cool this megacity.

The coast road and sea link could put paid to that with some 200,000 cars estimated to use the route every day. Cars and taxis crossed the one million mark in Mumbai in the past year. The Brihanmumbai (Greater Mumbai) Municipal Corporation (BMC) will scrap tolls on the coast road, increasing the traffic flow.

“The coast road will increase air pollution as additional traffic is placed in an area where natural wind patterns carry pollutants into the city during some seasons,” said Sumaira Abdulali of the Awaaz Foundation, a Mumbai NGO. “Mumbai is already among the most polluted cities in the world and the health of its citizens demands that all efforts are made towards reducing air pollution, not creating additional sources in locations which will worsen the problem for the entire city.”

Asked about the increase in air pollution from the road, BMC chief engineer Mohan Machiwal told Climate Home: “We have conducted an environmental impact assessment: it will be beneficial to the environment. Since traffic will move smoothly, it will save fuel and reduce the carbon footprint.”

Ashok Datar, who heads the NGO Mumbai Environmental Social Network, said the detailed project report for the road was inconsistent in projecting future traffic volumes increasing by 5% per year. Mumbai’s central business district was shifting from the south to northern suburbs, which was why 50,000 fewer cars are using the existing sea link than estimated previously.

A recent study by the Indian Institute of Technology in Mumbai found air pollution caused 80,665 premature deaths in adults over 30 in Mumbai and Delhi in 2015, twice the number in 1995. Delhi recorded more such deaths due to vehicle exhausts, among other pollutants.

Work will soon begin on the 32-km route along the west coast of Mumbai, after many false starts. It was revived seven years ago as an extension of a 4.5-km sea link that was completed in 2009, both southwards towards the central business district and northwards to the western suburbs.

In his budget speech in February 2016, municipal commissioner Ajoy Mehta said that the coast road was “one of the most prestigious projects to be undertaken by the BMC... It is proposed to resolve the traffic congestion in Mumbai in addition to providing several environmental friendly features to the city.”

Despite not receiving final environmental clearances from the federal Ministry of Environment, Forests and Climate Change, the BMC is testing the soil along beaches as well as identifying consultants with international experience to complete the road up to Bandra, a suburb.

Environmentalists and public transport activists have made requests for a public hearing, which have been repeatedly turned down. They organised an independent people’s tribunal in October 2015, where two former municipal commissioners, scientists and experts unanimously called for the project to be scrapped.

Dr Rakesh Kumar, chief scientist of the Mumbai Center of the National Environment Engineering Research Institute, said that it would be more effective to transport commuters through multiple alternatives discussed in the tribunal report.

“Even if we spend a fraction of the money in the existing public transport system, we would have solved the problem to a greater extent,” he said. “The current neglect of public transport shows that the project is mainly to move cars and not people.

“Environmental impacts of the project have been very marginally addressed. The major issue is the impact on beaches and shores. More so, when we are looking at the climate change impacts which will comprise high/extreme events and sea level rise.”

The BMC’s own detailed project report [as it is officially known] for the road said: “Greater Mumbai’s environmental health is affected by increasing air pollution (caused by vehicular pollution and construction)...while its coastal location makes the city vulnerable to flooding and landslides, specially during the monsoon.”

According to a recent unpublished paper by R. Mani Murali from the National Institute of Oceanography, as much as 40% of Mumbai – a staggering 190 sq km – could be under water within a century.

“Going by previous studies by NIO researchers, we considered a 3 mm rise (annually) in sea levels along Mumbai’s coast. That, coupled with factors such as natural calamities and tidal changes, will result in an approximate increase of 3 metres,” Murali told the Hindustan Times newspaper.

Due to protests by environmentalists, the municipal corporation has abandoned the extension of the road from Bandra to Versova and replaced it with a sea link, 900 metres off the coast. The original alignment would have bisected some fishing villages, cutting off access to boats, and also destroy mangroves when 170 hectares of land were reclaimed.

This article was funded by CDKN as part of a series on climate change in South Asia and East Africa

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## **World Health Day - Air pollution could damage mental health and lead to depression**

*Date: 07-Apr-2017 Source: Health World*

Depression, anxiety, memory loss, poor academic performance – these are just some of the things that scientists have connected to air pollution in recent years.

Mumbai, April 6, 2017 – World Health Day, celebrated every year on April 7, provides us with an opportunity to organize action around a specific health topic of concern to people all over the world. The theme for this year’s campaign is one of the most commonly diagnosed mental disorders– ‘Depression’.

Depression, anxiety, memory loss, poor academic performance – these are just some of the things that scientists have connected to air pollution in recent years. While the connection between poor air quality and increasing risk of stroke, heart attack and lung disease is more apparent, air pollution could also have an adverse impact on our brains, ultimately leading to learning problems and even depression.

A team of Oxford University scientists discovered that tiny magnetic particles lodged in human brains as a result of air pollution could be a possible cause of Alzheimer's disease. Similarly, researchers at the Ohio State University carried out tests and showed that, in the long term, dirty air could cause actual physical changes to the brain.

Trying to bring people’s attention towards the indoor air pollution problem, Mr. Girish Bapat, Director - West and South Asia Region at Blueair, said, “Outdoor air pollution problems are already being addressed by the government of India. However, it is crucial to start talking more about indoor air pollution which is a more serious and potentially fatal problem and given that indoors is where we spend 90% of our time. According to the Environmental Protection Agency (EPA), indoor air can be two to four times, and occasionally up to hundred times, more polluted than outdoor air.”

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## **Ladies, do you live in areas with high levels of air pollution? You are at an increased risk of breast cancer**

*Date: 08-Apr-2017 Source: The Economic Times*



NEW YORK: Women who live in areas with a high level of air pollution may be at increased risk of developing dense breasts -- a well-established risk factor for breast cancer, a study of nearly 280,000 US women said.

The study, published in the journal *Breast Cancer Research*, revealed that for every one unit increase in fine particle concentration (PM2.5), a woman's chance of having dense breasts was increased by four per cent.

Women with dense breasts were around 20 per cent more likely to have been exposed to higher concentrations of PM2.5.

Conversely, women with less dense, or breasts with more fatty tissue, were 12 per cent less likely to have been exposed to

high concentrations of PM2.5.

Conversely, women with less dense, or breasts with more fatty tissue, were 12 per cent less likely to have been exposed to high concentrations of PM2.5.

"Our findings suggest that previously reported geographic variation in breast density could, in part, be explained by different air pollution patterns in urban and rural areas," said Lusine Yaghjian, lead author from the University of Florida, US.

Chemical constituents of PM2.5 air pollution are known to include pollutants that have endocrine disrupting properties.

These pollutants could potentially influence breast density by interfering with growth of cells in the breast and increasing the relative amount of fibroglandular tissue, the researchers said.

On the other hand, the researchers found that every one unit increase in ozone concentration was associated with a three per cent lower chance of having dense breasts.

"We found a positive association between fine particle concentration exposure and breast density but an inverse association between ozone exposure and breast density," Yaghjian explained.

"This is an intriguing result that warrants further investigation to unpick any possible biological mechanism that might cause ozone exposure to reduce a woman's chance of having dense breasts," he said.



## Is air pollution making those wrinkles worse?

*Date: 10-Apr-2017 Source: Express*



Levels are at an all-time high and while we know pollution is bad for our health, new research shows that it is taking an alarming toll on our skin too.

A recent study by skincare brand Vichy found that only 20 per cent of all signs of premature skin ageing is down to our genes.

The remaining 80 per cent is as a result of lifestyle choices and the environment we live in, including UV rays, smoke and, you guessed it, pollution.

“Being exposed to air pollution can age you prematurely by 10 years,” says dermatologist Dr Daniel Glass from The Dermatology Clinic in London.

So what exactly is it?

“Air pollution cannot be seen or smelled,” explains Julia Fussell, air pollution spokesperson for skincare brand Origins.

“In the UK it is predominantly composed of a mix of tiny particles, primarily from motor vehicles’ exhaust fumes, but also from power stations and factories.”

And the problem doesn’t stop when we step inside.

It is the size of the pollution particles that poses the real issue for our complexion.

At 30 times less than the width of human hair, they are much smaller than the pores of our skin.

Dr Glass explains how these miniscule particles can lead to premature signs of ageing.

“A recent study showed that living in an area with exposure to high levels of particulate matter was associated with 20 per cent more pigment spots on the forehead and cheeks.”

Those in areas with higher air pollution levels tend to develop wrinkles at an earlier age.

Although pollution levels vary throughout the country, recent research by the World Health Organisation puts Glasgow, Scunthorpe, Leeds and London all at the top of the list.

“Increased exposure can escalate the loss of the skin’s collagen and elasticity, thus leading to skin ageing,” says Dr Glass.

And the pollution problem only gets worse as we get older.

As skin ages, the number of cells which naturally produce repair enzymes drops, making the process less effective.

So what can we do to protect ourselves? New research shows that including more oily fish in our diets can help our bodies fight the effects of pollution.

Omega-3 fatty acids in flax, hemp and fish oils were found to prevent and treat the inflammation and oxidative stress caused by air pollution.

Help is also at hand as a new generation of beauty products has been created, specifically aimed at preventing or tackling the damage done by our environment.

Bases such as Chantecaille Just Skin Tinted Moisturiser (£61, [spacenk.com](http://spacenk.com)) and Bourjois City Radiance Foundation (£9.99, [feelunique.com](http://feelunique.com)) both contain powerful antioxidant ingredients which help to protect skin from pollution.

“Choosing antioxidant ingredients helps neutralise damage done by free radicals,” advises Dr Anjali Mahto, consultant dermatologist and spokesperson for the British Skin Foundation.

“And don’t forget an SPF 15 or above to protect you from UV rays.”

Cleansing skin every night removes dirt and environmental toxins from the surface.

“Exfoliate once weekly – less if you have dry or sensitive skin – to give your skin a deeper clean.

This will also improve the penetration of products,” says Dr Mahto.

“Moisturise daily, particularly if you have a tendency to dry skin.

“This will keep your skin hydrated, helping to maintain the integrity of its barrier function.”

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## **Diesel cars can improve air quality, claims motor industry group**

*Date: 10-Apr-2017 Source: The Guardian*



Car manufacturers have hit back at the recent spate of negative comments about diesel vehicles, saying that the latest incarnations are “the cleanest in history” and “light years away from their older counterparts”.

The Society of Motor Manufacturers and Traders (SMMT) said diesel cars could play an important role in helping improve air quality in towns and cities and in tackling climate change.

A government report published in April 2016 showed that diesel cars being sold in the UK emit an average of six times more nitrogen oxide in real-world driving than the legal limit used in official tests.

Since then, a number of schemes have been mooted to encourage drivers to give up diesel vehicles, including the possibility of a government-run scrappage scheme.

Last week, the London mayor, Sadiq Khan, announced a new charge on diesel cars driving into the city. Under the plans, drivers of diesel cars that are more than four years old in 2019 and petrol cars that are more than 13 years old will pay £12.50 a day on top of the congestion charge in an attempt to cut air pollution.

In a list entitled “10 facts you need to know about diesel”, the SMMT said that some recent reports had failed to differentiate between older diesel cars and those on sale today, which comply with Euro 6 emissions standards, adding: “This is unfair and dismissive of progress made.”

The organisation said the latest vehicles featured special filters and technology that converted most of the nitrogen oxide (NOx) from the engine into harmless nitrogen and water before it reached the exhaust. These cars will be exempt from the new London charges.

It added: “Contrary to recent reports, diesel cars are not the main source of urban NOx. In London, gas heating of homes and offices is the biggest contributor, responsible for 16%. While road transport as a whole is responsible for around half of London’s NOx, diesel cars produce just 11%, although concentrations will vary at different times depending on congestion.”

It said British car buyers registered almost 250,000 new diesel cars in March, more than in any month in history.

Mike Hawes, the SMMT’s chief executive, said: “Euro 6 diesel cars on sale today are the cleanest in history. Not only have they drastically reduced or banished particulates, sulphur and carbon monoxide but they also emit vastly lower NOx than their older counterparts – a fact recognised by London in their exemption from the Ultra Low Emission Zone that will come into force in 2019.”

He added: “In addition to their important contribution to improving air quality, diesel cars are also a key part of action to tackle climate change while allowing millions of people, particularly those who regularly travel long distances, to do so as affordably as possible.”

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## **9-year-old girl seeks clean air for her generation, sues Indian government over pollution**

*Date: 10-Apr-2017 Source: Mashable India*

Ridhima Pandey is living proof that no one's too young to fight climate change.

The nine-year-old girl recently filed a legal case against the Indian government for failing to curb greenhouse gas emissions from factories, vehicles, and agriculture. The petition accuses officials of neglecting their duty to protect Indians young and old from environmental harm.



"My government has failed to take steps to regulate and reduce greenhouse gas emissions, which are causing extreme climate conditions," Pandey said in a recent statement. "This will impact both me and future generations."

Pandey filed her petition with India's National Green Tribunal, a specialized court that handles environment-related cases. Her lawsuit targets the

Ministry of Environment, Forestry, and Climate, as well as the Central Pollution Control Board of India.

Late last week, the tribunal asked both agencies to respond to Pandey's petition within two weeks. A spokesman for the Ministry of Environment, Forestry, and Climate told the Thomson Reuters Foundation that they would respond as directed by the tribunal.

The nine-year-old's lawsuit bears similarities to a youth-led legal effort in the United States.

A group of 21 young people, ages 9 to 20, has accused the U.S. government and energy companies of violating the children's "constitutional rights to life, liberty, and property" by failing on global warming.

Pandey's petition is more "evidence of a global movement of youth rising up and taking their governments to court to seek protection of their fundamental rights to a stable climate system and demand science-based climate action," Julia Olson, lead counsel in the U.S. climate lawsuit and executive director of Our Children's Trust, said in an earlier statement.

India, a nation of 1.25 billion people, is already suffering the effects of a warming climate. In recent decades, a decline in monsoon rainfalls and a rise in extreme heat waves has resulted in severe droughts, lower agricultural yields, and reduced access to fresh water. Sea level rise, melting Himalayan glaciers, and extreme rains are causing dangerous floods.

"As a young person [Pandey] is part of a class that amongst all Indians is most vulnerable to changes in climate, yet are not part of the decision-making process," according to the 52-page petition.

Pandey, the daughter of an environmental activist, isn't the first young person to defend India's environment through legal channels. Last year, six Indian teenagers filed a separate lawsuit over air pollution in New Delhi, India's capital city, which has the worst air quality in the country.

India is home to four of the world's 10 worst-ranked cities for air pollution. It's also the world's third largest emitter of greenhouse gases, after China and the United States, although India's emissions represent only about 6 percent of the global total.

In her filing, Pandey asks the tribunal to order the government to prepare a carbon budget and a national climate recovery plan.

"Children in India are now aware about the issues of climate change and its impact," her attorney Rahul Choudary said in a statement. He added that Pandey "is simply asking her government to fulfill its own duty to protect the vital natural resources on which she and future generations depend on for survival."

## Mumbai saw 63% more complaints on air pollution in 2016 compared to 2015, says NGO

*Date: 12-Apr-2017 Source: Hindustan Times*



The average air quality index (AQI), a measure of air pollution in the city, was 170 in January and 103 in March in 2016. .

The Brihanmumbai Municipal Corporation (BMC) received 63% more complaints on air pollution in 2016 compared to 2015, data released by NGO Praja Foundation on Tuesday revealed. .

The average air quality index (AQI), a measure of air pollution in the city, was 170 in January and 103 in March in 2016. .

An AQI between 0 and 100 falls under the 'good' or 'satisfactory' category. AQI levels between 101 and 200 are 'moderate' and 201-300 are 'poor'. "The moderate AQI can be attributed to the constant fire incidents that broke out in the Deonar dumping ground," the report reveals. .

The city also recorded moderate air quality in the months of November and December in 2016 at 113 and 164. The BMC also got 16 complaints on nuisance owing to masala mills and 51 on pollution because of chemical effluents. .

Praja, an NGO working towards creating an accountable government, released its report on state of civic affairs in the city. The overall complaints registered by citizens on civic issues also dipped by 12% between 2012 and 2016. The NGO has collected data through the Right to Information (RTI) Act.

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## 52% of global air pollution deaths from India and China in 2015, finds Lancet study

*Date: 12-Apr-2017 Source: Hindustan Times*



India and China had the largest number of deaths owing to particulate matter (PM2.5) — small pollutant particles of 2.5 micron size that can easily enter the respiratory system and cause ailments — according to a Lancet study released on Monday. The study said 52% of the deaths that year were from these two countries.

China had the highest number of deaths in the world at 1108, followed by India that reported

1,090 deaths.

The annual safe limit for PM2.5 pollutant is 10 microgrammes per cubic metre ( $\mu\text{g}/\text{m}^3$ ), according to the World Health Organisation (WHO). The estimated average PM2.5 concentration for population-weighted exposure increased from 59 in 1990 to 73  $\mu\text{g}/\text{m}^3$  in 2015 in India, which is almost four times the safe limit. The highest average exposure to PM2.5 concentration globally was seen at Qatar at 107.3  $\mu\text{g}/\text{m}^3$ , the report said.

India, Pakistan and Bangladesh had the highest age-adjusted (a way to make fairer comparisons between groups with different age distributions) mortality rates, too — more than seven times higher than those of Japan and the USA, according to the study.

Global mortality owing to ambient PM2.5 pollution has also increased from 1990 to 2015. Globally, attributable deaths rose from 3.5 million in 1990 to 3.8 million in 2000, and 4.2 million in 2015.

India ranked the second-highest in the world — 133.5 deaths per 1,00,000 people in 2015. Pakistan, on the other hand, came in first with 136.3 deaths per 1,00,000 people in 2015.

“In India, China, Bangladesh, and Japan, an increase in PM2.5 exposure combined with an increase in population growth and ageing resulted in a net increase in attributable mortality,” read the study. “Exposure to ambient air pollution increases morbidity and mortality, and is a leading contributor to global disease burden. We explored spatial and temporal trends in mortality and burden of disease attributable to ambient air pollution from 1990 to 2015 at global, regional, and country levels.”

Additionally, the study found exposure to ozone-pollutants emitted by vehicles, power plants, industrial boilers, refineries, chemical plants that react chemically in the presence of sunlight, contributed to 2,54,000 deaths globally. In 2015, exposure to ozone contributed to an estimated 8% of global COPD mortality in 2015, with China, India, and the USA experiencing some of the highest mortality rates.

‘India needs to reduce air pollution exposure by 20% by 2030’

The Lancet study estimated that air pollution levels in 2030 in India would need to decline by 20%, to maintain per-person mortality (measure of number of deaths in the population) at 2010 levels

The study concluded that ambient air pollution contributed substantially to the global burden of disease in 2015, which increased over the past 25 years, due to population ageing, changes in non-communicable disease rates, and increasing air pollution in low-income and middle-income countries.

“Modest reductions in burden will occur in the most polluted countries unless PM2.5 values are decreased substantially, but there is potential for substantial health benefits from exposure reduction,” read the study.

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## **Air Pollution Might Make Dangerous Bacteria Harder to Kill**

*Date: 12-Apr-2017 Source: The Atlantic*

Air pollution—particulates tossed into the air from car exhaust, factory fumes, and power plants—is nasty stuff. Breathing it in causes damage to your lung tissue. It can trigger asthma attacks. It increases the risk





of heart attacks, strokes, and lung cancer. And now, researchers writing in *Environmental Microbiology* have found that in addition to these unpleasant effects, the common pollutant black carbon seems to do something even more insidious: It alters the behavior of pathogenic bacteria.

The idea for the study came from a casual conversation with an atmospheric chemist, says Julie Morrissey, a University of Leicester biologist who studies the effect of stress on

bacteria. The two scientists had dropped their respective children off at school and were walking back to the university, talking, when they realized no one had actually studied how bacteria respond to pollution.

“They’d looked at the effect [of air pollution] on the immune system, like human cells, but never on the actual bacteria themselves,” Morrissey says.

“We thought, well, this is really relevant.”

Respiratory-disease rates are known to climb with air pollution. To what extent that’s a result of tissue damage from the particulates, alterations in the immune system, or some other factor—like a shift in bacterial behavior—is not yet clear. Bacteria that form communities in the lungs and skin are exposed to pollution, too.

To investigate what happens in these situations, Morrissey’s graduate student Shane Hussey applied black carbon, a major component of air pollution, to colonies of *Streptococcus pneumoniae* and *Staphylococcus aureus*. These microbes often live quite peacefully in and on humans, but can also go rogue: They are known for their roles in bacterial pneumonia and dangerous skin infections, respectively.

Hussey added the carbon while the bacteria were in the process of assembling into fortress-like slabs called biofilms. He soon observed that the biofilms made under the influence of carbon looked quite different from biofilms that had no treatment or simply had harmless quartz crystals added: They were significantly thicker, and *S. pneumoniae* showed large channels or holes, while *S. aureus* had numerous lumps or protrusions. Because biofilms are known to help bacteria avoid antibiotics, changes in their structure can have an effect on the bacterium’s ability to cause disease.

When the team added antibiotics to the equation, they found that with black carbon, *S. pneumoniae* had increased resistance to penicillin, which is used to treat pneumonia. Some *S. aureus* strains also showed slightly decreased sensitivity to antibiotics. “We think it makes them more protected,” Morrissey says of the alterations to the biofilm structure. And when the team mixed black carbon and *S. pneumoniae* and placed them in the noses of mice, they saw that over the course of the study the bacteria spread down to the lungs, often a harbinger of serious infection. In control mice, without the black carbon, this did not happen.

The nature of these experiments—in dishes and mice, not in people or models of human infection—means that their true significance has not really been established, Morrissey warns. Some of the data

indicate that black carbon could be damaging to at least some strains of *S. aureus*, rather than provoking them to greater feats of self-protection. Some strains became more sensitive to antibiotics.

Still, at least in the snapshots this work provides, “we think what’s happening is we’re increasing their ability to colonize ... and making them able to protect themselves better,” Morrissey says. That’s troubling, and bears further investigation. More than 90 percent of the world’s population lives in regions where air-pollution levels, calculated in part from the concentration of black carbon and similar particulates, are over the WHO’s recommendations for health.

And a larger question looms: Could it be that air pollution disrupts people’s existing microbiomes in the nose and other tissues? Could this make them more vulnerable to infection? “Where this is really important is the microbiota,” says Morrissey, who is planning studies on the subject. If the native bacteria’s numbers or biology are altered by pollution, they could make space for newcomers with more malevolent tendencies—or even, in the end, turn against us themselves.

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## Enough evidence from India linking air pollution to health impacts: experts

*Date: 13-Apr-2017 Source: Hindustan Times*



The Indian government’s stance on air pollution and relation to health impact is at odds with Indian experts’ views on the subject. On Wednesday a panel including scientists from the IITs and an expert from WHO debunked the idea that there is no direct link between air pollution and diseases.

In parliament, this week environment ministry reiterated its stand that foreign studies that attribute deaths happening in India to air pollution are not correct because they rely on extrapolated

data. The environment minister has in the past insisted that the media and public should rely on data generated in India.

“We should stop being in denial there is plenty of evidence from India,” Sagnik Dey, a scientist at IIT Delhi, said. He went on to list studies done by Indian authors that capture the health impacts of air pollution. There is, in fact, a 2015 Ministry of Health steering committee report on air pollution and health-related issues.

“Actions don’t need to wait for more and more evidence, there is sufficient evidence,” Manjeet Saluja from World Health Organisation said. He added that WHO figures for the disease burden attributable to air pollution are conservative estimates suggesting that the real numbers might be larger.

“WHO in its studies only focuses on health impacts that have the strongest impact and linkage that is available,” he said. “These studies are very conservative, whenever we talk about health impacts like mortality figures and disability-adjusted life years.”



There is enough data relating air pollution to acute lower respiratory disorders, Chronic Obstructive Pulmonary Disease, lung cancers and cardiovascular diseases. There is a longer list of other impacts that are still being studied like low birth weight and other cancers.

“Air pollution can cause cancer,” emerging research has shown, according to Dr Sachidanand Tripathi from IIT Kanpur.

The Global Burden of Disease 2015 report estimated that PM 2.5 contribute to 4.2 million deaths globally, a majority of which occur in India and China.

“These numbers are often criticised, but why this is relevant, even if you say there is some uncertainty in the calculated numbers, the most important thing is that qualitatively it can tell you how important is the pollution problem,” Dey said of the Global Burden of Disease data.

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## **Air pollution may lower good cholesterol, raise risk of heart disease: Study**

*Date: 14-Apr-2017 Source: Hindustan Times*



Exposure to higher levels of air pollution may increase cardiovascular disease risk by lowering levels of high-density lipoprotein (HDL), commonly known as “good” cholesterol, says a study.

Higher exposure to black carbon, a marker of traffic-related pollution, is significantly associated with a lower “good” cholesterol level, showed the findings published in the journal *Arteriosclerosis, Thrombosis, and Vascular Biology*.

The lower levels of HDL observed with high levels of air pollution “may put individuals at a higher risk for cardiovascular disease down the line,” said lead author Griffith Bell from the University of Washington School of Public Health in Seattle.

In the study of 6,654 middle-aged and older US adults from diverse ethnic backgrounds, participants living in areas with high levels of traffic-related air pollution tended to have lower HDL levels.

Higher particulate matter exposure over three months was associated with a lower HDL particle number, the researchers said. Changes in HDL levels may already appear after brief and medium-length exposures to air pollution, the authors noted.

Men and women responded to air pollutants differently. While HDL was lower at higher pollution exposure for both sexes, but the magnitude was greater in women. The findings are part of the Multi-Ethnic Study of Atherosclerosis, an ongoing US study examining the lifestyle factors that predict development of cardiovascular disease.

## Vitamin B cocktail could diminish toxic effects of air pollution, study finds

Date: 15-Apr-2017 Source: The Malaymail Online



NEW YORK, April 15 — B-vitamin supplements could diminish the toxic effects of air pollution on the immune and cardiovascular systems, according to an American study published in Scientific Reports.

Researchers studying the impact of air pollution in moderately polluted urban areas from July 2013 to February 2014 found that a cocktail of B vitamins (50mg of B6, 2.5mg of B9 and 1mg of B12) taken for four weeks reduced the harmful impact of fine particle pollution (PM2.5 pollution) by 150 per

cent on heart rate, 139 per cent on total white blood count and 106 per cent on lymphocyte count.

Scientists recruited a panel of 10 healthy non-smokers aged between 18 and 60 years old. The recruits were not taking any form of B vitamin supplement or other medications. Participants took a placebo for four weeks prior to two hours of exposure to concentrated ambient PM2.5 levels — 250 micrograms/m<sup>3</sup> compared to WHO guideline limits of 10 micrograms/m<sup>3</sup>.

Next, participants were administered B-vitamin supplements for four weeks before undergoing a further two-hour exposure to PM2.5.

“Our results showed that a two-hour exposure to concentrated ambient PM2.5 had substantial physiologic impacts on heart rate, heart rate variability, and white blood counts. Further, we demonstrated that these effects are nearly reversed with four-week B-vitamin supplementation,” explained Andrea Baccarelli, MD, PhD, of Columbia University’s Mailman School of Public Health.

The researchers caution that it may not be possible to generalize the beneficial effects of B vitamins to populations at higher risk of pollution-induced cardiovascular effects, such as children, older people, individuals with pre-existing cardiovascular disease or those living in heavily polluted areas.

According to the WHO, 92 per cent of the world’s population lives in places where air pollution levels exceed 10 micrograms/m<sup>3</sup> of fine particles (particulate matter with a diameter of less than 2.5 micrometres, or PM2.5).

Fine particle pollution is responsible for 3.7 million premature deaths worldwide, mainly due to toxic effects on the cardiovascular system, and could be linked to 18 million premature births, according to a study published in Environmental International in February. — AFP-Relaxnews

## High levels of 'cancer causing' chemical in Oxford air

*Date: 16-Apr-2017 Source: The Oxford Times*



Air pollution levels in Oxford at the start of this year breached international health rules, it has been revealed.

The city's nitrogen dioxide levels exceeded the limits set by the European Union and World Health Organisation guidelines, an investigation by The Times found.

Levels of nitrogen dioxide, which is linked to breathing problems and cancer, are supposed to be kept below 40 micrograms per cubic metre of air.

But in Oxford the average level of nitrogen dioxide recorded by a Government-run monitoring station between January and the end of March was 48 micrograms per cubic metre.

Diesel cars are among the leading producers of nitrogen dioxide, prompting demands for a crackdown.

The city is one of 26 areas out of 146 that had nitrogen dioxide levels that breached EU legislation and World Health Organisation guidelines.

This is the highest number in breach of guidelines in the past decade, according to figures from the Department for Environment, Food & Rural Affairs (DEFRA).

The Oxford Mail revealed in November that air pollution had gone up in some parts of the city.

The measurements showed the amount of harmful nitrogen dioxide in the most polluted part of the city - St Clements - rose three per cent between 2014 and 2015, from 65 micrograms per cubic metre to 67.

Levels were also on the rise in other parts of the city centre including George Street, High Street and Magdalen Street.

But overall in Oxford roadside levels of nitrogen dioxide have dropped by an average of 35 per cent across the city in the last 10 years.

It comes as the Government is preparing to publish its plans to improve air quality. The High Court ruled last year that the current plan was inadequate — ordering a replacement to be produced by April 24.

A spokeswoman for Defra said: "Improving air quality is a priority for this government and we are determined to cut harmful emissions. Our plans have always followed the best available evidence — we have been clear that we are ready to update them if necessary."

## Air pollution can lead to chronic sinus problems

Date: 19-Apr-2017 Source: The Indian Express



People living in places like New Delhi or Beijing may be at greater risk of developing chronic sinus problems due to high levels of air pollution in these cities, say researchers.

In the study, published in the American Journal of Respiratory Cell and Molecular Biology, the researchers found evidence that breathing in dirty air directly causes a breakdown in the integrity of the sinus and nasal air passages in mice.

“In the US, regulations have kept a lot of air pollution in check, but in places like New Delhi, Cairo or Beijing, where people heat their houses with wood-burning stoves, and factories release pollutants into the air, our study suggests people are at higher risk of developing chronic sinus problems,” said Murray Ramanathan, Associate Professor at the Johns Hopkins University School of Medicine.

Researchers have long known that smog, ash and other particulates from industrial smokestacks and other sources that pollute air quality exacerbate and raise rates of asthma symptoms, but had little evidence of similar damage from those pollutants to the upper respiratory system.

To see how pollution may directly affect the biology of the upper airways, the researchers exposed mice to either filtered air or polluted air.

The aerosolised particles, although concentrated, were 30 to 60 percent lower than the average concentrations of particles of a similar size in cities like New Delhi, Cairo and Beijing, the researchers said.

Nineteen mice breathed in filtered air, and 19 breathed polluted air for six hours per day, five days a week for 16 weeks.

The researchers used water to flush out the noses and sinuses of the mice, and then looked at the inflammatory and other cells in the flushed-out fluid under a microscope.

They saw many more white blood cells that signal inflammation, including macrophages, neutrophils and eosinophils, in the mice that breathed in the polluted air compared with those that breathed in filtered air.

When the researchers examined layers of cells along the nasal passages and sinuses under a microscope, they found that the surface layer – or epithelium – was, notably, 30 to 40 per cent thicker in mice that breathed in polluted air than in those that breathed filtered air.

A thicker epithelium is another sign of inflammation in humans and other animals, Ramanathan said.

“We’ve identified a lot of evidence that breathing in dirty air directly causes a breakdown in the integrity of the sinus and nasal air passages in mice,” Ramanathan said.

“Keeping this barrier intact is essential for protecting the cells in the tissues from irritation or infection from other sources, including pollen or germs,” he explained.

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## Your city could be exporting deadly air pollution – here’s why

*Date: 19-Apr-2017 Source: The Conversation*



Air pollution is often seen as a local problem requiring local and regional solutions. Karachi, London, Lagos, Mexico City and Paris are just a few of the world’s cities grappling with poor air quality. With city-dwellers increasingly being asked to ditch the car – especially if it’s diesel – and use greener modes of transport, it’s easy to forget that air is also mobile. As a result, there’s very little attention being paid to the impact of cross-border air pollution on human health and well-being.

Globally, air pollution caused by microscopic fine particles (PM<sub>2.5</sub>) kills 3.5m people each year. These particles can easily enter the respiratory tract. They rank fifth worldwide among all risks to health after high blood pressure, smoking and diet. Breathing filthy air can increase the risk of heart disease, lung cancer, stroke and affect mental health. And it is the vulnerable in society who suffer the most, with 300m children currently breathing in toxic air. Indoor and outdoor air pollution, together with second-hand smoke, causes 570,000 deaths in children under five years of age each year, due to respiratory infections such as pneumonia.

The movement of air pollutants from transport and agricultural activities in one country can affect the air quality in another. Such as the smoke from Indonesian forest fires which has caused a toxic haze to descend over parts of Malaysia and Singapore. Another example is the atmospheric brown cloud – a transnational air pollution phenomenon which contains aerosols such as soot and dust that poses risks to human health and food security, especially in Asia.

### Exporting emissions

Cross-border air pollution has been an issue for some time: in the 1970-80s, the UK was nicknamed the “dirty man of Europe” for belching out industrial sulphur emissions, which contributed to acid rain in Europe – a reputation that the Greens fear will be regained after Brexit.

But it’s only recently that the scale of the air pollution effects of international trade has been assessed, with one study suggesting that around 400,000 premature deaths occurred in 2007 in a different region of the world than the one in which the air pollutants were emitted.

Goods and services produced in one region for use by another region are responsible for 22% (762,400) of air pollution-related deaths worldwide. In particular, Chinese particle emissions were responsible for

64,800 premature deaths in other regions, including over 3,000 deaths in Western Europe and the US. By contrast, Chinese products bought in Western Europe and the US are linked to over 100,000 deaths in China in one year.

International trade has seen many developed countries transferring their manufacturing abroad, in order to take advantage of cheap labour and lax environmental standards in often less wealthy nations. As a result, air pollution, including greenhouse gas emissions, has effectively been exported to developing countries.

### Making the switch

So, while murky grey images of smog smothered Beijing or New Delhi may prompt others to ask why they don't clean up their act, it's important to remember that these cities are shouldering an enormous manufacturing burden, as much of the world's goods and services are outsourced to China and India.

There is now a need for governments to switch from calculating greenhouse gas emissions based on production to one based on consumption of goods and services. This has important implications for global climate and air mitigation policies because as much as 20% to 25% of overall carbon dioxide emissions come from the production of goods and services which are traded internationally.

Although there has been success in achieving better air quality over the past the six decades, this doesn't erase the need to face up to big global environment challenges. Cities are responsible for around 70% of global greenhouse gases. While carbon dioxide has warming influences on the climate in the long term, short-lived climate pollutants such as black carbon (a primary part of particulate matter), methane and ozone have warming influences on the climate in the near-term. Local action, such as banning diesel cars, addresses both air and climate pollutants. This can achieve immediate effects by reducing near-term warming and improving air quality levels.

There are several international conventions to regulate air pollution and related issues. But for now, there's no coherent legal framework which aims to protect the atmosphere. This has led to calls for a new Law of the Atmosphere to provide effective cooperation on air pollution and climate change at regional and global scales. As it stands, the likelihood of such a law gaining support is low, given the climate change scepticism exhibited by powerful world leaders such as presidents Trump and Putin.

Everyone has the right to clean air. But air pollution requires no visas, and its devastating impact can be felt far from the source. No longer can the leaders of developed nations shy away from the fact that their citizens' consumption and lifestyle choices have a significant impact on people in others part of the world. As consumers, we have the power and the responsibility to demand better environmental and social standards – so we can all breathe life, wherever we live.



## Paris launches global urban air-pollution watchdog

*Date: 21-Apr-2017 Source: Eco-Business*



Last year, as Paris briefly earned the ignominious title of world's worst city for air quality, Mayor Anne Hidalgo pledged that she would start a global observatory to tackle urban pollution. Now, she has delivered.

Last month, Hidalgo formally presented the Global Urban Air Pollution Observatory, or GUAPO for short, to the Paris city council. Already, Abidjan, London, Mexico and Rotterdam have committed to joining, while Athens, Montréal, New York City, Peking and Tokyo are in discussions to join.

The new observatory will not be a scientific institute that collects data on air quality. Rather, it will serve as a clearinghouse for best practices around air quality in cities, including techniques for accurately measuring particulate matter, public policies that get rid of smog and more.

The aim is to help cities across the globe get on the same page when it comes to assessing and solving the problem of dangerous air.

"For years, the WHO [World Health Organization] has sounded the alarm on air pollution, and it seems opportune for us to work closely with big-city mayors," said Maria Neira, director of the WHO's public-health department. "The creation of an observatory to evaluate the impact of different public interventions on health, whether positive or negative, is very useful."

The WHO, which supports the observatory but does not contribute financially, estimates that air pollution kills 3 million people in cities annually. In December, Paris and three other cities announced that they would phase out the use of diesel vehicles over the coming decade, in addition to other climate and air-pollution actions.

The observatory will operate under an estimated EUR 500,000 annual budget, according to City of Paris spokesperson Simon Le Boulaire. Member cities will contribute to fund the observatory.

In the next few months, an advisory council consisting of representatives from the WHO, United Nations Environmental Programme and Organization for Economic Cooperation and Development will join the GUAPO's charter cities to outline exactly how the new center can be most effective within that budget, Le Boulaire said.

"The challenge is to put cities, especially their air quality monitoring mechanisms, into an effective network along with civil society actors, research institutions and all the organizations that work on this topic," Le Boulaire told Citiscope via e-mail.

Hidalgo first announced the idea last June at the “Cities for Air” conference in Paris. At the time, she floated the GUAPO proposal as part of the run-up to the U.N.’s Habitat III summit on urbanization, which was held in October.

However, Le Boulaire did not view last month’s announcement as making good on a specific commitment ahead of Habitat III but rather as a step in the general movement of cities tackling climate issues.

While Hidalgo is also the president of the C40 Cities Climate Leadership Group, the observatory is being described more as an attempt to recalibrate the balance between climate activism and general concerns over public health.

“For example, installing chimney filters is good for fighting climate change, but it also helps block particulate matter that is harmful when inhaled,” said Elsa Martayan, Paris City Hall’s point person for GUAPO.

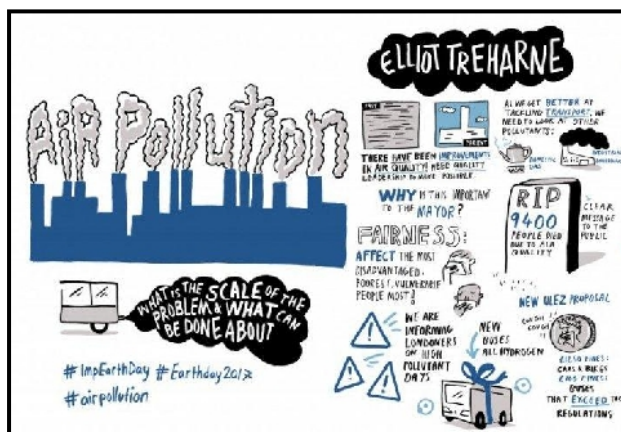
The observatory is expected to commence its work following a June public unveiling in Rotterdam.

This story was published with permission from Citiscope, a nonprofit news outlet that covers innovations in cities around the world. More at [Citiscope.org](http://Citiscope.org).

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## Earth day: Imperial event brings together experts to tackle air pollution

*Date: 21-Apr-2017 Source: Imperial College London*



Air pollution is a problem of energy, health and climate change, and has implications for people around the world.

Residents in cities like London breathe some of the dirtiest air in the world. Levels of pollution exceeded European Union recommendations in the first few days of January this year - incurring the threat of heavy fines for the UK.

Air pollution has a serious impact on the environment and people’s health, but the causes

are multiple and complex. A new policy briefing from the Grantham Institute identifies some of the key pollutants for global and regional climate change, and aims to set new standards for tools to measure the impact of emissions worldwide.

Grantham Institute – Climate Change and the Environment has joined forces with fellow Global Challenge Institutes at Imperial College London, Energy Futures Lab and Institute of Global Health Innovation, to launch the new paper at a networking event as part of Earth Day, with a keynote speaker on air quality from the Mayor of London’s Office.



The paper's author, Dr Apostolos Voulgarakis, Lecturer in Global Climate & Environmental Change at Imperial, has examined which pollutants are key in changing climate and weather, and how much emissions from different global regions affect air pollution levels for everyone.

Dr Voulgarakis recommends new standards for comparing the environmental impact of pollutants such as sulfur dioxide, black carbon and tropospheric ozone from fossil fuels used in transport, industry and heating.

The briefing paper also aims to highlight the complexities of tackling pollutants on a global level. For example, sulfate aerosols can cool the atmosphere, which offsets some global warming, but they also degrade air quality and in many regions they are a contributing cause of drought. This means 'one size fits all' policies are not appropriate, and tackling health and environment problems caused by emissions requires bespoke solutions at regional level.

"The world's attention is focused on the adverse health effects of air pollution from diesel engines, coal burning power stations and gas powered heating. There is now a golden opportunity for new evidence-based policies to tackle air pollution at the same time as meeting obligations to reduce greenhouse gas emissions under the Paris Agreement," said Dr Voulgarakis.

"At times of political uncertainty, such as in the United Kingdom, European Union and United States, policymakers should not be distracted and must act swiftly to improve the health and living conditions for people around the world."

The launch event, "Air pollution: what is the scale of the problem and what can be done about it?", on 21 April 2017, raised awareness of the severity of air pollutant health and environment issues, and showcased Imperial's world class research designed to tackle the problems by informing decision-makers and shaping policy.

The event was hosted by Professor Nick Jennings, Imperial's Vice Provost (Research), who oversees the work of the Global Challenge Institutes. He introduced the briefing paper's author Dr Voulgarakis alongside a panel of other Imperial College London experts including Dr Marc Stettler, Lecturer on Transport and the Environment who discussed the impact of diesel emissions on air quality.

The keynote speaker was Elliot Treharne, Air Quality and Hydrogen Manager at the Mayor of London's Office. Mr Treharne is responsible for London's air quality and green transport projects and programmes, and spoke about the role of research in tackling dangerous levels of air pollution in London and beyond.

Other speakers at the event were Professor Peter Burney, Professor of Respiratory Epidemiology & Public Health; and Dr Audrey de Nazelle, Lecturer in Air Pollution Management and head of Imperial's Air Quality Network.

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## **Government has failed to act on air pollution, says Labour**

*Date: 22-Apr-2017 Source: BBC News*

Labour has accused the government of failing to act on air pollution, which it says is a "public health



emergency".

The party said millions of people in the UK were living in areas with illegal levels of nitrogen dioxide (NO<sub>2</sub>) and called air pollution levels a "national scandal".

It has vowed to bring in a new Clean Air Act, including a network of "clean air zones" if it is elected.

The government says it is committed to improving the UK's air quality.

Jeremy Corbyn said there were "terrible levels" of air pollution in certain parts of the country which had to be "dealt with".

The Labour leader suggested there needed to be a policy on the "phasing-out of diesel" but it would have to be done in a way that ensured "you don't punish people".

It comes after ministers sought to delay the release of a key report on its plans to meet EU air pollution standards - regularly broken in many parts of the UK - which it had been ordered to publish by Monday.

The Department for Environment, Food and Rural Affairs went to court on Friday seeking leave to delay it until after the 8 June general election, saying it was necessary "to comply with pre-election propriety rules".

Shadow environment secretary Sue Hayman accused the government of "attempting to use the general election as cover for their failure to act on air quality".

She said it was "unacceptable" for the government to apply for the delay "less than one working day before it is due".

Ms Hayman continued: "The UK air pollution crisis under Theresa May's government is a national scandal and public health emergency."

She told the Guardian that Labour would not allow the Conservatives to use the general election or Brexit to "kick this issue into the long grass or water down standards".

Labour says almost 40 million people are living in areas with illegal levels of NO<sub>2</sub>.

This figure was based on data released in 2015 which identified 169 local authorities as exceeding the limit.

Outdoor air pollution contributes to some 40,000 early deaths a year in the UK, say the Royal Colleges of Physicians and of Paediatrics and Child Health.

NO<sub>2</sub> comes from sources including factories and vehicles, particularly diesel engines.

'Final warning'

The government was told to take immediate action by the High Court in April 2015 to cut air pollution after it was found the UK had breached EU limits for NO<sub>2</sub> in the air.

Campaigners ClientEarth, an environmental law firm, took the case back to court last November saying the government's plans did not go far enough.

Judges ruled in their favour saying the government's proposals to improve air quality were "woefully inadequate" and ordered it to publish an updated draft plan by Monday.

The UK was sent a "final warning" over air pollution by the European Commission in February.

It said limits had been repeatedly exceeded in 16 areas including London, Birmingham, Leeds, and Glasgow.

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## Mitigating air pollution reduces CVD burden: Sushil

*Date: 24-Apr-2017 Source: State Times*



JAMMU: Continuing to identify factors that are critically important for the onset of Cardiovascular Diseases (CVD), Dr Sushil Sharma today held a day long camp at Shri Vishwakarma Mandir, New Plot in the heart of the Jammu city to sensitise the common populace about the ill effects of growing pollution in our cities on heart environs so that those who are most vulnerable can be protected. He particularly stressed the strong note of caution for elderly and children. More than 500 patients were screened, evaluated and advised for

prevention of Cardiovascular Diseases during the camp.

Dr Sushil recognised increase in air pollution as an important and modifiable determinant of cardiovascular disease in urban communities. Even brief exposures to air pollution have been associated with marked increases in cardiovascular-related morbidity and deaths from myocardial ischemia, arrhythmia, and heart failure. Long-term exposure increases an individual's lifetime risk of death from coronary heart disease.

The main arbiter of these adverse health effects seems to be combustion-derived nanoparticles that incorporate reactive organic and transition metal components. Inhalation of this particulate matter leads to pulmonary inflammation with secondary systemic effects or, after translocation from the lung into the circulation, to direct toxic cardiovascular effects. Through the induction of cellular oxidative stress and pro inflammatory pathways, particulate matter adds to the development and progression of atherosclerosis via detrimental effects on platelets, vascular tissue and the myocardium.

In developed nations, major improvements in air quality have occurred over the last 50 years, yet the association between air pollution and mortality is still evident, even when pollution levels are below current national and international targets for air quality. But ironically no major stride has been made in the developing countries to control the incidence of air pollution. Still the major cause of concern in the city like Jammu is traffic-derived pollution intensifying CVD load. So to start with an increased understanding of the mediators and mechanisms of these processes is necessary if we are to develop strategies to protect individuals at risk and reduce the effect of air pollution on cardiovascular disease, he added.

Management committee of the Pardesh Vishwakarma Sabha (J and K) Shashi Verma President, Charanjeet Chadgotra, Raman Chalotra, Joginder Pal, Lal Chand and Puran Chadgotra appreciated the commendable social service of Dr Sushil and his team for conducting cardiac awareness camp and hoped that the team will extend same cooperation in the future also. The team of doctors and volunteers who contributed in this effort include Dr Dhaneshwar Kapoor, Dr Anitpal Singh and Dr Chakshu Mahajan and Volunteers comprising Vikas Kumar, Kamal Kishore, Kashmiri Lal, Raghav Rajput, Vikas Sabharwal, Ankush Kohli, Harvinder Singh, Rajinder Singh, Rahul Tickoo, Akshay Kumar, Rajeev Vohra, Gorav Sharma, Rajkumar and Suresh Sharma.

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## **Tories 'on very dodgy ground' over delay of air pollution plan, say experts**

*Date: 25-Apr-2017 Source: The Guardian*



The government's attempt to delay publishing its air pollution strategy because of the election is "dishonest" and leaves ministers on "very dodgy ground", according to constitutional experts.

The government had been under a court direction to produce tougher draft measures to tackle illegal levels of nitrogen dioxide pollution, which is responsible for thousands of premature deaths each year, by 4pm on Monday. The original plans had been dismissed by judges as so poor as to be

unlawful.

But after Theresa May called a general election for 8 June, ministers lodged a lengthy application to the court late on Friday. It asked judges to allow them to breach the Monday deadline to "comply with pre-election propriety rules".

Politicians and environmental groups reacted with anger, claiming ministers were "hiding behind the election" and running scared to the diesel lobby. Health experts warned the persistent lack of government action had potentially put thousands of lives at risk.

The environment minister, Andrea Leadsom, defended the decision during an emergency debate on Monday, saying she was "personally deeply committed to the importance of ensuring clean air", but had

been told by officials in the Cabinet Office that it would breach purdah rules to publish the plans in the run-up to the election.

However, constitutional experts dismissed that claim on Tuesday, saying it was a political choice.

Dr Catherine Haddon, a constitutional expert at the Institute for Government, said purdah should not have prevented the publication of the report or the subsequent consultation. “There is nothing in their own purdah guidance that prevents them publishing this if they had wanted to.”

She said the government had started the purdah period – which normally only kicks in once parliament has been dissolved – unusually early. And even then, she added, there was an exemption once purdah is active for issues that are deemed to be safeguarding public health.

“In the end it was a political choice to implement purdah early and interpret the guidance in this way,” she said.

Colin Talbot, professor of government at Manchester University, said the government was on “very dodgy ground”.

“Purdah rules normally only come into effect when parliament is dissolved, not as soon as an election is called. In this case it is quite clear they have stretched the definition considerably.”

He said the move seemed to be overtly political. “They have stretched the time limit, it has no legal standing and it seems to be completely selective – they are settling other bits of legislation and government announcements – so I think it is pretty clear they are just using this as an excuse not to put out this particular policy statement.”

Dr Jo Murkens, an expert in constitutional law at the London School of Economics, said citing purdah not only went “against the spirit of this court judgment, it is also dishonest.”

He also believed the government was on shaky legal ground. He cited the black spider memo case when the government tried to get round a judicial decision to release Prince Charles’s letters.

“The supreme court said in no uncertain terms that a governmental veto was impermissible – a judicial decision, even one from a lowly tribunal, is binding on the government.

“If you apply that here you have on the one hand a political convention with no legal weight regulating restrictions during the purdah period, and on the other hand a legally binding decision of the high court. The government should not be able to use purdah to thwart an order from the high court.”

The scale of the air pollution crisis, which is responsible for 40,000 premature deaths a year, was revealed in a joint Guardian-Greenpeace investigation this month. It showed hundreds of thousands of children were being educated within 150 metres of a road where levels of nitrogen dioxide from diesel traffic breached legal limits.

Last week figures obtained by Labour showed that more than 38 million people, representing 59.3% of the UK population, were living in areas where levels of nitrogen dioxide pollution were above legal limits.

The government has now been ordered back to the high court on Thursday to defend its application to delay its air quality plan.

James Thornton, CEO of the environmental lawyers ClientEarth, who brought the original case against the government, said its lawyers would present their response at the hearing.

“This is a matter for the court to decide once the government has made its arguments because it is the government which has not met, and instead seeks to extend, the court’s deadline for the clean air plan, to clean up our air.”

Leadsom, who also revealed that it was the second application to delay publication that her department had submitted to the courts, insisted the move would not postpone the rollout of the proposals.

She said it showed the government was “safeguarding” democracy by not using the machinery of government for electoral advantage, and that the plan was now to issue the draft proposals on 30 June, followed by the full policy in September.

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## 50 students hit streets to study Delhi air quality

*Date: 25-Apr-2017 Source: The Asian Age*



The data collected will be used by them to prepare an action plan in each of these areas.

A group of 50 students took to the streets last weekend to assess the city’s air quality. Under the project, they visited at least 15 locations with air quality sensors to record the pollution levels in these areas and to analyse the causes.

The students also undertook “perception surveys,” a study of the perceptions of people on the air quality in their neighborhood and awareness among them about the issue. Youth from different backgrounds like technology, social sciences, and MBA visited various locations across Delhi on Saturday and Sunday to monitor particulate matter (PM) 2.5 in these areas. Under the project, titled Youth Clean Air Network (YCan), they interviewed more than 1,500 people and took readings of PM 2.5. The data collected will be used by them to prepare an action plan in each of these areas. “We are all very excited about getting our action plans together and starting our work across Delhi. In my zone here in North Delhi, we have done surveys and monitored the air quality in Haiderpur Badli, Hudson Lane, and Rohini. The other zones have also selected their locations strategically, covering areas with different sources of air pollution like garbage burning, construction, vehicular emissions and industrial emissions,” said Preeti

Gupta, a fourth-year student involved in the exercise. The group visited locations like Haiderpur Badli, GTB Nagar, and Rohini in North Delhi; Satya Niketan, Okhla, and South Extension Flyover in South

Delhi; Laxmi Nagar, Nirman Vihar, and Mayur Vihar in East Delhi; Punjabi Bagh, Peera Garhi, and Kirti Nagar in West Delhi; Mandi House, and ITO in Central Delhi.

The campaign was initiated by a not-for-profit organisation, Clean Air Asia. It was also attended by representatives from many embassies.

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## **Pune: Data shows rise in particulate air pollution**

*Date: 26-Apr-2017 Source: The Indian Express*

ENVIRONMENTALISTS with the National Air Quality Monitoring Programme (NAMP) in the city have been facing a huge dilemma for the last three years. In mid-2014, the only dust sampler to monitor very fine particles that can reduce visibility and are two-and-a-half microns or less in width — known as PM 2.5 — had broken down.

PM 2.5 is a hazardous air pollutant that can travel deep into the respiratory tract and enter the lungs. Known to aggravate medical problems in those suffering from asthma and cardiac ailments, this pollutant, however, has not been monitored as part of the NAMP in Pune for three years now.

Despite a broken machine and six other old ones that require maintenance, data from NAMP — one of the agencies that monitors air quality in the city — showed that between 1999 and 2004 — sulphur dioxide levels had decreased, nitrogen dioxide levels had increased (due to emissions from vehicles) and PM 10 (coarse particles up to 10 micrometres in diameter, mainly from dust stirred by vehicles on roads and crushing or grinding operations) ranged from unhealthy to critical.

As per the latest data from 2008-2016, sulphur dioxide levels had been arrested while increasing vehicles on the road had led to rising nitrogen dioxide levels. Respirable Suspended Particulate Matter (RSPM) remained above permissible limits throughout the last few years, according to the data.

Particulate air pollution is an air suspended mixture of both solid and liquid particles and PM 10 and PM 2.5 levels have been going up, according to researchers with NAMP.

Here, it may be recalled that the Central Pollution Control Board had started National Ambient Air Quality Monitoring (NAAQM) Network during 1984 -85 at the national level. The programme was later renamed as National Air Quality Monitoring Programme (NAMP) and is among the oldest agencies to monitor air pollution. In each district, NAMP has appointed one agency to monitor air pollution.

In Pune, experts from the environment science department at Pune University had been appointed in 1994. Dr Alka Gadgil, director of NAMP for Pune, when contacted, told The Indian Express that one station was allocated then, but the project became fully functional from 1999 onwards.

According to Prof Nitin Karmalkar, Head of the Department of Environment Science at Pune University, presently six machines are being used to monitor RSPM at three stations — Nal Stop, Bhosari and Swargate and one at Pimpri-Chinchwad.



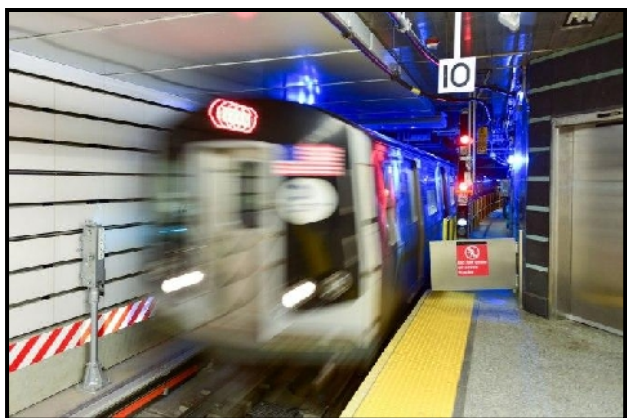
Shashikant Nehul, research scholar at the department who is involved with the air quality monitoring under NAMP, said that there was a need for two more machines as all six machines are old and require maintenance.

According to NAMP-Pune coordinators, there is also a need for more funds as only Rs 7.5 lakh is allocated every six months for the total team of six field assistants, two research assistants and one director under the NAMP. The project coordinators have been appealing for more funds for nine years now. According to Dr Gadgil, monitoring air quality at just three stations in Pune does not represent the entire city.

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## Air pollution in subways is worse than you think

*Date: 26-Apr-2017 Source: New York Post*



Looks like there's more unfortunate subway news approaching the platform.

A new study revealed that the Toronto Transit Commission has air pollution levels 10 times greater than the levels above ground.

And that's just in Canada.

"We don't really know the health risks of riding subways," Greg Evans, lead author of the study, told Gizmodo. "It's an understudied area."

The air quality in Toronto's subway was three times worse than Montreal's, with Vancouver currently ranking as the country's cleanest. Underground pollution levels in Toronto were as high as 100 micrograms of pollutants per cubic meter – which is as bad as the air in notoriously smoggy Beijing. Outside Toronto's subway, pollution levels are only about 10 micrograms per cubic meter of air. The US State Department warns that levels above 101 micrograms can be unhealthy.

Evans believes the poor air quality is caused by the wheels and brakes of the subway trains.

"When the train comes into the station, it causes dust and particles to become airborne," said Evans. "Subways are primarily underground, so there's nowhere for the particles to go."

The study suggests that subways look into improving their ventilation systems. Subway conductors could also slow down before entering the station, so dust and other particles aren't blown into a massive cloud of pollutants.

Evans also encourages cities to test the air quality of their subways if they haven't – and most haven't. Apart from Barcelona, Spain and Seoul, South Korea, subway passengers of the world have no idea what they're breathing in.

## **Britain loses case to delay submission of air pollution plan**

*Date: 27-Apr-2017 Source: Business Insider*

LONDON (Reuters) - The British government has failed in a legal bid to delay the publication of its plan to tackle air pollution until after the general election on June 8.

The government had gone to the High Court to extend an April 24 deadline to submit its plan to improve air quality and comply with nitrogen dioxide limits set by the European Union (EU).

But the court ruled on Thursday against any extension, ordering a draft plan to be submitted by May 9 and a full report by July 31, British media reported.

The government is obliged to draw up a new plan after the High Court ruled in November that a calculation of future vehicle emissions was too optimistic.

It was not immediately clear whether the government would appeal Thursday's ruling.

The Department for Environment, Food and Rural Affairs said it was considering the judgment.

Concern over air quality has grown since the Volkswagen emissions scandal broke and reports that real-world emissions exceed those recorded during laboratory tests have put pollution high on the political agenda.

"Air pollution is an election issue with or without publication of this plan, and we clearly need robust commitments from all parties on tackling the UK's toxic air," said Areeba Hamid, a clean air campaigner at environmental group Greenpeace.

Nitrogen oxides reduce air quality and EU member states have been flouting limits on a range of pollutants associated with respiratory and other illnesses and more than 400,000 premature deaths per year, according to European Commission data.

Under the EU's Air Quality Directive, member states were supposed to comply with nitrogen dioxide limits in 2010 - or by 2015 if they delivered plans to deal with high levels of the gas, which is produced mainly by diesel engines.

(Reporting by Karolin Schaps; editing by David Clarke)

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## **Do you live in an area with high air pollution? You are more susceptible to a heart attack**

*Date: 28-Apr-2017 Source: The Economic Times*

LONDON: Tiny particles in polluted air can travel from the lungs into our bloodstream and increase the risk of a heart attack or stroke, a new study warns.

Nanoparticles in air pollution have been associated with cardiovascular disease, which can lead to premature death. However, how particles inhaled into the lungs can affect blood vessels and the heart has remained a mystery.

Scientists, including those from University of Edinburgh in the UK and the National Institute for Public Health and the Environment in the Netherlands, have found that inhaled nanoparticles can travel from the lungs into the bloodstream, potentially explaining the link between air pollution and cardiovascular disease.

The World Health Organisation (WHO) estimates that in 2012, about 72 per cent of premature deaths related to outdoor air pollution were due to ischemic heart disease and strokes. Pulmonary disease, respiratory infections and lung cancer were linked to the other 28 per cent.

Many scientists have suspected that fine particles travel from the lungs into the bloodstream, but evidence supporting this assumption in humans has been challenging to collect.

Researchers used a selection of specialised techniques to track the fate of inhaled gold nanoparticles.

In the study, 14 healthy volunteers, 12 surgical patients and several mouse models inhaled gold nanoparticles, which have been safely used in medical imaging and drug delivery.

Soon after exposure, the nanoparticles were detected in blood and urine.

Importantly, the nanoparticles appeared to preferentially accumulate at inflamed vascular sites, including artery plaques in patients at risk of a stroke.

The findings suggest that nanoparticles can travel from the lungs into the bloodstream and reach susceptible areas of the cardiovascular system where they could possibly increase the likelihood of a heart attack or stroke, the researchers said.

The study was published in the journal ACS Nano.

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## **Liverpool's doctors demand urgent action to tackle city's "lethal" air quality**

*Date: 29-Apr-2017 Source: ECHO*



Top doctors and medical experts from around Liverpool are demanding urgent action to tackle the region's "lethal" air pollution crisis.

The doctors from the Royal Liverpool University Hospital, Alder Hey Children's Hospital and Liverpool School of Tropical Medicine (LSTM), among other institutions, have sent a letter to candidates taking part in next week's Metro Mayor

election urging whoever wins to use their new powers to make sure the Liverpool City Region meets legal limits for air pollution as soon as possible.

In the letter, the medics warn: “From Wirral to St Helens, legal limits of air pollution are broken in every single local authority in the Liverpool City Region. But, it doesn’t have to be like this. We have the technology and the tools to clean our air. Now we need our leaders to act.”

One of the signatories, Dr Jamie Rylance, senior clinical lecturer in respiratory medicine at LSTM, told the ECHO: “Everyone is exposed to the potentially lethal effects on their hearts and lungs, especially the most vulnerable: young children, the elderly and people with chronic health problems. But it doesn’t have to be this way, and action at a local level must be taken to protect our communities.”

The letter cites official figures that estimate almost 270,000 people on Merseyside suffer from chronic health conditions that put them at increased risk when pollution levels are high.

The letter comes in the wake of a recent High Court ruling that will force the Government to publish an action plan to tackle the deadly levels of pollution in Britain’s major cities. The Government had wanted to put off the publication of its Air Quality Plan until after the election, but the High Court has ruled that the Government must now publish its draft plan by May 9.

The Government’s Air Quality Plan is being drawn up by the Department for Environment, Food and Rural Affairs (DEFRA). However, DEFRA has only the one monitoring station located in the Liverpool local authority area which is situated in the heart of the Speke council estate well away from the heaviest traffic. Readings from this station regularly record low levels of pollution, causing DEFRA to advise that all local residents can “enjoy” their “usual outdoor activities”, advice that seems at odds with the doctors’ concerns.

DEFRA’s figures are also at odds with those previously collected by Liverpool City Council which showed that the city centre and many arterial roads suffer from high levels of pollution.

One of the principal causes of concern is nitrogen dioxide emitted from diesel vehicles.

Metro Mayor candidate for the Green Party and Liverpool city councillor Tom Crone told the ECHO: “It’s a poor situation. There is not enough monitoring and that’s something that should be improved. It’s not in keeping with the most transparent forms of government where releasing data is generally seen as a good thing.”

Referring to DEFRA’s figures, Cllr Crone added: “It paints a very misleading picture. Speke is a long way from the city centre where the vast majority of heavy traffic occurs.

“Around 40,000 people nationally people die young because of air pollution. In Liverpool City Region it’s around 1,000.”

Cllr Crone continued: “This is located in a place that can record low results. I don’t understand why they have put it there.”

In contrast to Liverpool, DEFRA has placed pollution monitoring equipment in other city centres, including Manchester, Oxford and London.

A spokeswoman for DEFRA was unable to provide any explanation as to why no monitoring equipment has been placed in Liverpool city centre. However, she provided a statement that did say: "Monitoring stations are sited in accordance with criteria set out in the EU Air Quality Directive."

Katie Merrick, North West service development manager for the British Lung Foundation, said: "Unless we tackle this public health crisis, we are storing up huge unknowns for the future of children's lung health across Merseyside."

"Dirty air is an invisible danger. The new mayor must put in place ambitious policies to lower traffic emissions in polluted areas. Everyone across Liverpool has a right to breathe clean air with healthy lungs."

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## **Pollution: AAP Govt Asks Schools to Install Air Purifiers**

*Date: 30-Apr-2017 Source: NEWS 18*



New Delhi: Concerned over the quality of air in the national capital, the Aam Aadmi Party government has directed city schools to install air purifiers so as to ensure students don't face health hazards due to air pollution.

The Director of Education (DoE) has also asked schools to create awareness among students about adverse impact of indiscriminate burning of firecrackers on public health.

"The ambient air quality of Delhi needs to be improved. In view of the gravity of harm to human health due to inferior ambient air quality, schools should take action to install air filters as per need," a communication sent to schools on Friday reads.

It also asks schools to take "proper steps" to educate students on the need for improvement of air quality. "The cooperation of the young generation should be encouraged through co-curricular activities," it adds.

The DoE communication further asks schools to create awareness about the disadvantage and adverse impact "on public health of indiscriminate burning of crackers on different festive occasions".

The schools have been asked to submit a compliance report within 15 days. The Delhi government had last year announced a three-tier air treatment system which includes setting up of wind purification units, mist fountains and virtual chimney at five major traffic intersections on trial basis to deal with rising air pollution level.

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## Charges On Diesel Cars In 2019? What About Today?

*Date: 30-Apr-2017 Source: HUFFPOST*

It's been widely reported that the government has requested to delay the publication of its plan to tackle air pollution until after the General Election.

More recently, the London Mayor, Sadiq Khan made the news with a proposed charge on diesel cars, coaches, buses and taxis, something that has continued to be reported across the media. It is our view that this alone will not change the headlines on air pollution in the long term. The changes proposed do not go far enough, soon enough, to address the serious health impacts of air pollution.

In London, air pollution is double the legal limit in many areas and it is harming health. Recent research suggests that prolonged exposure to nitrous oxide or particulate pollution in the city reduces life expectancy by around 16 months. Action needs to be taken, but the London Mayor's proposals tackle only a fraction of the problem: diesel cars account for just 5% of nitrogen dioxide emissions in central London, a key cause of pollution in the city. Commercial vehicles, the bigger culprit, won't be tackled for another four years. With the government potentially stepping in to protect those drivers who bought diesel cars on the government's instruction, the impact will be minimal.

What happens in the meantime? What about the pregnant women who are walking to work today, worried about the World Health Organisation's recent warning that air pollution can impact the development of unborn children? Or the thousands of children at hundreds of schools, nurseries and colleges in London, who are being exposed to illegal levels of air pollution that could cause lifelong health problems?

The good news is there are solutions - driven by the technology sector - that can tackle our exposure to air pollution today. The bad news is that this industry, which I am a part of, still has a job to do to convince transport organisers, government, and local councils that they need to be considered part of a comprehensive approach to tackle air pollution.

Broadly speaking, there are two 'types' of technology currently available that are aimed at cleaning the air we breathe - 'active' and 'passive'. In my view, active solutions need to be the focus to create a noticeable difference to people today.

Let me explain why. Active solutions use fans or blowers to move air over the cleaning element. It directs the airflow towards where it's needed, removing significant amounts of air pollution, and thereby decreasing exposure. The benefit of active technology is that it can be positioned in air pollution hotspots, such as bus shelters, hospitals and schools that are used every day. Independent tests have shown they can reduce exposure to pollution by up to 90%.

Passive solutions meanwhile, rely on wind to move polluted air to the technology. These include green walls, for example, or painted walls or sheets that act as filters. They can seem like the Holy Grail because they do not need electricity and can often be placed anywhere. However in reality, passive solutions have not been proven to materially improve air quality in outdoor conditions. This is because it is questionable if enough air will pass over the filter material to make a difference.

While we wait for policy changes to take effect, it's important that all options that help reduce exposure to air pollution for Londoners and other city dwellers are considered. These solutions can't clean an entire atmosphere (nor do they claim to) and some work better than others, but there are places where they can make a huge difference in the immediate term. It would be short-sighted to sweep them aside.

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**May 2017**

## **Delhi's air quality may improve as UP, Haryana, Punjab take steps to discourage stubble burning**

*Date: 01-May-2017 Source: The Economic Times*



NEW DELHI: Northern states are working on concrete steps to prevent large-scale crop burning that shrouds Delhi in a pall of black smoke and raises air pollution to a level that creates a health emergency and prompts people to wear surgical masks.

Punjab, Haryana and Uttar Pradesh — which have the country's most fertile fields — have initiated steps to discourage the low-cost but polluting farm practice and discussed the matter in a recent meeting between farm ministers of states and the Centre where strategies for the summer-sown

kharif crop were discussed.

The situation was so bad late last year that the Capital was referred to as a gas chamber by health experts, forcing authorities to declare holidays for schools and ask people to stay indoors. For farmers, burning the remnants from the previous crop is an easy and cheap option while preparing the fields to plant wheat, rice, pulses and sugarcane. With no alternatives to offer, authorities had mostly failed to convince them from stopping the age-old practice.

The states have now sought subsidies from the Centre to procure machinery to gather crop remnants, as well as financial support to incentivise farmers to adopt modern residue management systems.

Officials have also vowed to create awareness among farmers and enforce rules that prevent open burning of farm waste.

"Stubble burning is a big challenge that we can overcome, by using it for cattle fodder, incorporate it in soil and compost it or use it as fuel in industrial units," said Jasbir Singh Bains, director at Punjab's agriculture department.

"We have sought an assistance of Rs 1,600 crore from the Centre to buy machineries for farmers. Also, we have requested for Rs 350 crore to compensate farmers whose cost of cultivation increases in case of manual stubble harvest and another Rs 500 crore for diversification of crops." Punjab will also focus on strict enforcement of rules.

The state's pollution control board will take action against farmers who don't follow rules against burning of waste. The penalty will be Rs 2,500 for two acres of land, Bains said. "The transport department will

not register new Combine harvesters — which harvest both wheat and rice — till it has an attachment of super straw management system to uniformly keep the loose straw," he added.

In Punjab, more than half of the 37 million tonnes of the rice and wheat residues it produces every year are burnt, according to the agriculture ministry. In Uttar Pradesh, the agriculture department is preparing a proposal seeking enhanced subsidy to procure machines that will help reduce farm wastes. "We will submit our proposal to the Centre by first week of May," said AK Bihnoi, director at the state's agriculture department.

With a limited window between harvesting and planting of crops, open field burning of rice, pulses, sugarcane and wheat stubble was the norm, but it is changing because of increasing awareness about pollution, he said. Haryana, too, is seeking similar subsidies.

"Collectively, various departments are working to ensure that farmers do not burn stubble. We will have to incentivise farmers for adoption of various residue management operations," said Suresh Gahlawat, additional director of Haryana's agriculture department. Devinder Sharma, an independent food and trade analyst based in Chandigarh, doesn't see any need for a central subsidy for such steps.

"The only solution is that combine harvester manufacturers should make farm machines which enable chopping the plant stem from the base, and bundle the straw like a bailer does," he said.

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## Delhi Air Pollution: Schools to have 'Air Purifiers' soon

*Date: 01-May-2017 Source: India Today*



As many as 1.2 million deaths take place every year due to air pollution in India.

With the growing air pollution in the city, the Aam Aadmi Party (AAP) government has recently directed all the schools to install air purifiers. This direction from the government comes in to ensure students don't face health hazards due to air pollution.

Moreover, the Director of Education (DoE) has also asked all the schools in the national capital to create awareness among kids about the adverse impact of indiscriminate burning of firecrackers on public health.

Here's what the notification read:

- "The ambient air quality of Delhi needs to be improved. In view of the gravity of harm to human health due to inferior ambient air quality, schools should take action to install air filters as per need."

- It also asks schools to take "proper steps" to educate students on the need for improvement of air quality. "The cooperation of the young generation should be encouraged through co-curricular activities," the notification adds

Meanwhile, according to a Greenpeace India report published in earlier this year, as many as 1.2 million deaths take place every year due to air pollution in India. Greenpeace's report, titled 'Airpocalypse,' says Delhi is India's most polluted city as compared to other states.

In addition to this, last year, the Delhi government had announced a three-tier air treatment system which includes setting up of wind purification units, mist fountains and virtual chimney at five major traffic intersections on trial basis to deal with rising air pollution level, a recent PTI report said.

Moreover, the DoE communication asked schools to create awareness about the disadvantage and adverse impact "on public health of indiscriminate burning of crackers on different festive occasions," the notice read.

Now, as per AAP directions, the schools have been asked to submit a compliance report within 15 days.

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## **APD Foundation to assess impact of air pollution on auto drivers' health**

*Date: 01-May-2017 Source: The Times of India*

MANGALURU: After conducting a pulmonary function test (PFT) on the traffic police of Mangaluru city, the Anti-Pollution Drive Foundation has initiated a programme to assess the impact of air pollution on the health of auto rickshaw drivers in the city.

The project was initiated with the student interns of IFIM Business School, who were interning with the foundation. The testing is done at the various auto stands across the city.

Abdullah A Rehman, founder, APD Foundation, told TOI that the study is being conducted under the guidance of a pulmonologist, Dr Don Gregory, at Father Muller Hospital. "Auto rickshaw drivers are continuously exposed to air pollution and are vulnerable to its ill effects. Sujith Kumar of Lupin Pharmaceuticals is collecting the data vide the spirometer. This study will further enable us to understand an integrated assessment of the impact of air pollution on Mangaluru city," Abdullah said.

Although 250 rickshaw drivers have been screened, the foundation aims to cover 500 drivers and collect data such as their age, years of service, tobacco use, asthmatic history, family respiratory history and weight during the drive. Recently, the foundation has assessed the air quality levels of Mangaluru under a project, where it found reduced air quality levels in the city, he said.

"Air pollution is a rising concern in the country and there are no data available to showcase the impact it had on the environment and people. We are hoping our data and numbers will fill the gap in the system and help our policy makers to provide appropriate solutions or enforce existing laws to mitigate the air pollution and its rising impact on our city," Abdullah said.

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## Unmasking Our Cities From Air Pollution Will Require Local, State, and Federal Climate Solutions

*Date: 02-May-2017 Source: Common Dream*



clean air and a healthy climate.

With its pristine landscapes and world-class skiing, you might not expect to see Salt Lake City spotlighted in a global campaign on dirty air. Yet winter conditions trap pollution from vehicle emissions, buildings, homes and industries, intermittently earning Salt Lake City the dubious distinction of having the worst air quality in the nation. That's why Salt Lake is featured in the new "Unmask My City" campaign—a global call for

The Unmask My City campaign launches on May 2nd—World Asthma Day—in ten cities around the world. A partnership of the Global Climate and Health Alliance, the US Climate and Health Alliance, Utah Physicians for a Healthy Environment and many others, the campaign uses LED-equipped face masks that allow people to see whether the air around them is polluted with high levels of dangerous particulate matter. The data and images produced from the campaign will be used to raise awareness about air pollution's threat to human health and our climate.

Salt Lake City represents the US in the global campaign, but it is hardly the only US city with serious air pollution problems. According to the American Lung Association's annual State of the Air Report, 125 million Americans are exposed to unhealthy levels of ozone and particle pollution, resulting in 200,000 premature deaths each year. More than 24 million Americans suffer from asthma, which can be caused or exacerbated by air pollution. Unfortunately, communities of color and low-income communities are more likely to experience these impacts. While the report notes that 2017 marks a continuation in air quality improvement across the nation, these gains are far from enough.

And those gains are threatened by the changing climate. Driven by greenhouse gas emissions—often from the same sources as toxic air pollution—climate change results in higher temperatures, which lead to more ozone and smog. Drought conditions from climate change also mean drier, dustier conditions and more particle pollution from wildfires. Climate change is even strengthening and lengthening our pollen seasons. All of these changes negatively impact air quality.

That's why now, more than ever, we need to maintain and improve policies that curb air pollution and halt climate change. Those policies are under attack: members of Congress want to dismantle the federal Clean Air Act, which is responsible for many of the air quality gains of the past 30 years. But Americans across the political spectrum support these regulations by a 2-to-1 margin.

In the face of political gridlock and possible rollback of federal regulations, states and cities need to step up on climate and air pollution. States can require that energy production within their borders transitions from dirty fossil fuels to clean, renewable energy. Twenty-nine states and Washington, DC have passed

requirements to do so, while eight states, including Utah, have set voluntary goals. States and cities can also work to improve their transportation systems to reduce reliance on gas-powered automobiles.

Salt Lake City's participation in the Unmask My City campaign is an important step. But "unmasking" all of our cities—and ensuring clean air for all—will require renewed commitment at the local, state and federal levels.

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## Forming a 'Chakr' around air pollution to help Delhi breathe

*Date: 03-May-2017 Source: DNA*



One hot summer afternoon two years ago, as they sipped on sugarcane juice, observing closely the motor of juice machine, came their eureka moment. The wall where the kiosk was parked had turned jet black because of the soot produced by the machine, inspiring three IIT engineers to conceptualise Chakr Innovation, a start-up that "creates solution from pollution".

For a city that is choked on alarmingly high air pollution levels, Chakr, founded by Arpit Dhupar, Kushagra Srivastav and Prateek Sanchan, which is a sustainable development model to combat air pollution, may just be the answer. Turning pollutants into useful products like inkjet cartridges, paints etc, these three IITians along with a team of 15 members, are everyday contributing towards a cleaner air for the capital to breathe in. "We saw that the juice vendor had attached a pipe at the exhaust of the genset which had turned the wall completely black. So we thought 'what if there is some technology that utilises this soot in a similar and broader way," shared Srivastva, CEO of the enterprise.

The trio then set sailing on endless hours of research, trying to find some know-how that supported their idea. After spending half of 2015 on the extensive study and hitting a dead end, they decided to formulate their how mechanism and Chakr Shield was born. The shield, when attached to the exhaust system of diesel generators, captures around 75 to 90 per cent of particulate matter, a kind of air pollutant, which is also one of the main constituents of soot.

Particulate matter is also the main health hazard compared to other polluting components. "A team of chemical, mechanical and textile engineers from our institute brainstormed for months because we were fixed on the idea to improve our environment by manufacturing a value added product from pollutants," said Anmol Khandelwal, a team member. The soot is then collected and processed into ink, called POINK, which is then supplied to textile companies, printing presses, paint companies etc.

Without any capital to support their idea, all the members chipped in from their pockets to launch Chakr in 2016. Meanwhile, the company won a grant of Rs 2 crore from University of Chicago in January this year.



They have till now installed around 30 shields in different sectors including telecom towers, FMCG players among others. "We plan to expand our operations and make equipments that can be installed on furnaces and chimneys in big industries. It is not an easy path because one, this kind of technology is unheard of," Khandelwal stated.

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## Buddha's birthplace faces serious air pollution threat

*Date: 10-May-2017 Source: BCC News*



The historic site of Buddha's birthplace in Nepal faces a serious threat from air pollution, scientists and officials have warned.

Recent data collected from air quality monitoring stations in five places across the country show Lumbini is highly polluted.

The warnings have come amid expanding industrialisation near the sacred site.

It is already located in a pollution hotspot on the Gangetic plains.

For the month of January, fine particulate matter (PM2.5) in Lumbini, in southwest Nepal, was measured at 173.035 micrograms per cubic metre.

The reading for the neighbouring town of Chitwan was 113.32 and the capital, Kathmandu, which is known for its high pollution levels, was at 109.82.

The World Health Organization (WHO) safe limit for the pollutant is 25 micrograms per cubic metre and the Nepal government has set the national standard at 40.

Scientific studies have also highlighted the increasing levels of pollution in and around the historic site.

"The combined effect of trans-boundary transport from the pollution rich Indo-Gangetic Plain region and trapped local industrial pollution due to temperature inversion is responsible for severe winter pollution," says a study done by the Indian Institute of Tropical Meteorology in collaboration with the WHO.

"For other seasons, local emissions are largely responsible for bad air quality."

It found that levels of PM 2.5 fine particles, which can enter human blood vessels, were more than 10 times above the WHO safe limit.

Another study conducted by the IUCN and Unesco found that the pollution had begun to threaten the Lumbini World Heritage site.

"The expansion of the carbon emission industries within the Lumbini Protected Zone has caused several problems such as threats to biodiversity, health hazards to local residents, archaeological properties, social and cultural values."

An IUCN study on three monuments of the historic site concluded that the sacred garden - the core place - was polluted by air dispersed gaseous and solid compounds.

"On the samples of the Ashoka pillar (that was established in 249 BC by Emperor Ashoka to mark the birthplace of Buddha) gypsum, calcite, dolomite and magnesite are present in the form of fine powder that deposits on the surface," says the report authored by Italian archaeologist Constantino Meucci of the University of Rome.

"All compounds are part of the cement production cycle."

A government body had designated 15km aerial distance from the north east and west boundary of the historic site as the Lumbini Protected Zone.

Adjoining the LPZ is an expanding industrial corridor that has cement, steel, paper and noodle factories and brick kilns.

Several of these factories are well within the LPZ and environmentalists say that is in clear violation of the government regulation.

Tourists and monks visiting the site have told the BBC they felt uneasy while breathing in the air.

"At times I have difficulty in breathing properly and I have to cough," said Monk Vivekananda who runs an international meditation centre in Lumbini.

He and a few others were meditating with their face masks on near the Mayadevi temple that marks the exact spot where Gautam Buddha was born more than 2,600 years ago.

"We had at our meditation centre certain [people] who have had asthma conditions and during their stay here in Lumbini, it has badly affected them," he told the BBC.

"In at least three cases, [they] had to cut their retreat short and go back because they could not tolerate the conditions here any more."

Health workers in the area said the conditions were getting worse.

"When the wind brings more pollution, we see many monks meditating here with their masks on," said Shankar Gautam, who has just retired after working as a health official for 30 years.

"Studies have shown that in the past 10 years the number of people with lung related diseases has gone up.

"The dust coming in here has also led to a huge increase in skin-related diseases."

A major pilgrimage for Buddhists, Lumbini is also a major tourist destination.



Last year it saw one million visitors and the government plans to develop it as a global tourism destination.

"My feeling at this time is that it is more polluted than seven or eight years ago," said Nguyen Duy Nhan, a Vietnamese tourist.

"I can see a lot of dust on the leaves and trees on the way we were coming in here."

His friend Victor Vlodovych nodded in agreement and said: "Maybe if I stay longer it will affect [me] a lot, I can feel that there is a lot of construction and manufacturing around [this place]."

Factory operators say they are reasonably far away from the sacred site.

"Yes certainly this is very near to the birthplace of Lord Gautam Buddha," admitted Ajay Ajad, a manager with the biggest cement factory in the area.

"Obviously cement factories emit some dust but we are at a reasonably safe distance and therefore the deposition of our dust particles on the sacred site is minimised.

He says dust is not a problem confined to Lumbini: "It is all over Nepal and even at places where there are no cement factories."

Government officials are aware of the problem.

"Based on recent data, we know that Lumbini is more polluted than Kathmandu," said Shankar Prasad Poudel, chief of the air pollution measurement section at the environment department.

"We plan to detect the sources of the pollution using a drone in the near future and hopefully this will help minimise the problem."

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## **Neighborhoods subjected to deadly air quality can finally fight back**

*Date: 12-May-2017 Source: Popular Science*

Last summer, about a dozen high school and college students fanned out across the South Bronx and Brooklyn into four neighborhoods heavily trafficked by waste-hauling trucks. They counted the trucks and used special wearable monitors to test air quality. Not surprisingly, the more trucks, the dirtier the air.

"These are communities that bear the brunt of manufacturing and industry and waste handling," says Michael Heimbinder, executive director of Habitatmap, which works with community-based organizations and schools to create education and advocacy maps promoting important health and environmental issues. "Poor communities of color get all the environmental burdens and none of the amenities, like parks, recreation centers—and clean air."

The young people, who came from organizations in each of the neighborhoods, were gathering data for a report aimed at supporting changes in waste zoning policies that would ease the load on traffic-intensive

intersections. They represent a growing number of citizen scientists all over the world who are using new technology to improve the quality of life in their own communities—and to help the planet.

In this case, the new technology is an instrument called the AirBeam. Supported by foundation grants, government agencies, and crowdfunding, the device was designed, programmed and tested by high school STEM (science, technology, engineering, and math education) students in Queens and is manufactured and sold by Habitatmap.

The monitor uses a light-scattering method to measure fine particulate matter, or PM2.5, which can be dangerous to human health and also contributes to global warming. Together, automobiles and trucks account for nearly one-fifth of all U.S. emissions, spewing out about 24 pounds of carbon dioxide and other gases for each gallon of fuel.

Moreover, PM2.5 particles can travel deeply into the respiratory tract, causing short-term health effects—irritation to the eyes, nose and throat, coughing and sneezing—as well as long-term damage to lungs and worsening such conditions as asthma and heart disease.

One study estimated that, in New York, chronic PM2.5 exposure from on-road vehicle emissions contributes to 260 deaths from respiratory and cardiovascular disease, and 720 emergency room visits and hospital admissions annually. Among these, fumes from buses and trucks account for the largest share of the city-wide burden, contributing to 170 deaths each year, according to the study.

“You don’t have to be above the [safety] threshold to have an impact,” Heimbinder says. “If you can lower exposure by two micrograms, you can reduce the number of hospitalizations by hundreds and the number of deaths by dozens.”

The AirBeam device works by sending air through a sensing chamber, where light from an LED bulb scatters off particles in the air stream. This light scatter is registered by a detector and converted into an estimation of the number of particles in the air.

The measurements are sent once every second via Bluetooth to a smartphone Android app, which maps and graphs the data in real time. When the monitoring session is over, the data are sent to Habitatmap’s AirCasting website, where the information is “crowdsourced” with data from other AirBeam users. The statistics then collectively generate heat maps indicating where PM2.5 concentrations are the highest and lowest.

In the last three years, Habitatmap has sold 1,500 AirBeams (at \$249 each) to regulatory agencies, community based groups, academic groups and teachers, and individuals all over the world. “In Washington, D.C. we’ve got a group using it in high schools as part of environmental studies,” Heimbinder says. “Some community-based organizations use them for special advocacy campaigns.”

Earlier this month, the Global Climate and Health Alliance, a coalition of physicians, health professionals, and public health officials, launched Unmask My City, a global initiative to fight for cleaner air in ten urban areas, including Sao Paulo (Brazil), Chennai (India), Warsaw (Poland), Belgrade (Serbia), Emalahleni (South Africa), Adana, Hatay, and Istanbul (Turkey), London (England), and Salt Lake City (U.S.).

They are using AirBeams (some groups use other monitors, too) but have added one additional feature: an LED light mask that changes into one of four colors in real time, depending on the measurements, including green (good air quality, little risk), yellow (moderate risks for those sensitive to air pollution), orange (unhealthy for sensitive groups) and red (unhealthy for everyone.)

“Citizen scientists” in India have been testing air quality since 2012, although they have been using a different device. In Ennore in north Chennai, for example, Community Environmental Monitoring (CEM), a project of The Other Media, has been sampling various toxic hotspots to measure PM2.5 and harmful metal pollution in dust. Testing they conducted in April revealed levels high enough to be deemed “unhealthy” or “very unhealthy,” according to the organization’s 2016 report. A second, similar report followed two months later.

“We see the value of low-cost air monitoring devices, like the AirBeam, especially in the Indian context, where there is hardly any data on air pollution in the public,” says Shweta Narayan, CEM’s coordinator. “The regulatory agencies in charge of generating and disseminating the data have failed to do that task. They often use a lack of data as an excuse not to take action on erring industries or the polluters.”

Low-cost monitors like the AirBeam enable pollution-impacted communities “to generate their own data based on their experience of—and knowledge of—pollution in their vicinity,” she adds. “It empowers the communities with technical information, often the missing piece in fighting pollution, and assists them in holding regulatory agencies and polluters accountable.”

This certainly proved true in the aftermath of the New York City findings. There, students counted as many as 304 trucks per hour at intersections in the South Bronx, and measured particulate concentrations up to seven times higher than those tallied by the nearest state Department of Environmental Conservation monitoring station, according to the report.

In fact, the South Bronx recorded the highest number of trucks per hour, most of them carrying trash. The area also had the highest concentration of asthma-inducing pollutants in six heavily trafficked areas.

North Brooklyn showed up to 203 trucks per hour on weekdays, about a third of them commercial waste trucks. Pollutants were up to five times higher than the average for that area, according to the report. In Southwest Brooklyn, they found four times greater concentration of pollutants than the average for the area.

Their report highlighted the inequities in heavily industrialized, low-income communities whose residents often suffer health disparities compared to other neighborhoods.

“If you are going to implement policies to clean up the air, you need to make sure you address the inequitable distribution of air pollution, which is strongly related to the distribution of noxious industries, and waste transfer stations,” Heimbinder says.

The work of the students documented the need for a plan recently announced by the city to implement a “zoned” waste collection system. By dividing the city into zones, and having commercial hauling companies bid for service contracts (rather than requiring private companies to hire their own waste-hauling services) a city study found the number of miles traveled by private collection vehicles would drop by an estimated 49 to 68 percent due to the reduced number of trucks on the road.

“The city has committed to doing it as a result of these groups doing what they did,” Heimbinder says.

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## High pollution is reducing house prices by 15pc as buyers reject 'unhealthy' homes

*Date: 13-May-2017 Source: Telegraph*



Property listings will include traffic light-style pollution warnings in the near future, experts have predicted as they said poor air quality can knock up to 15 per cent off house prices.

Pollution has become a top concern among potential buyers, who are snubbing “unhealthy homes” and have started using sophisticated pollution websites to track air quality.

The trend has prompted calls for new rules which force estate agents to publish traffic light style pollution warnings alongside energy efficiency ratings in property adverts.

A toxic air alert was issued for the first time in London over “very high” pollution levels, sparking major public concern over the health impacts of living in congested areas.

Nearly 9,500 people died early in a single year as a result of long-term exposure to air pollution in London, a Kings College London report claimed.

It is the first time in modern history that air quality has become so important to home buyers that it is significantly affecting the price they are prepared to pay, property professionals told The Telegraph.

Concerned buyers have started actively researching granular data through websites which let them track air quality at individual postcodes, they said.

Henry Pryor, a professional home buyer and property agent, said: “Home buyers used to have a blasé attitude to air pollution but now this has completely changed. People are very concerned and they are suddenly discovering that they can look at two homes at different ends of a street, and one will be more polluted than another.

“I get asked about pollution levels so regularly that I now check it as standard before suggesting a property to clients. If a house is in a highly polluted area, such as near a train line, it might go for a 15 per cent less than a similar property in a less polluted zone.”

In a national effort to reduce pollution in urban areas local councils are introducing penal charges to drive and park diesel cars in high pollution areas.

Meanwhile, the Conservative manifesto is expected to include a “targeted” diesel scrappage scheme to get older, more polluting vehicles off the roads.

Mark Hayward, director at the National Association of Estate Agents, which represents estate agents, said air quality was now “at least as important” as energy efficiency ratings, which are compulsory in residential property listings.

He added: “I don’t think it will be very long before it becomes compulsory to display pollution information on listings. This is already at the forefront of buyers’ minds, particularly if they have children or health problems, and it would be a logical next step. High levels of pollution could depreciate the value of a home by at least 10 per cent.”

Paula Higgins, chief executive of the Homeowners’ Alliance, said: “Giving buyers information about pollution would help them think with their head and not with their heart. People need to look at pollution levels in a prospective area just as they would when they look at crime rates.”

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## Maharashtra pollution board high on funds, low on staff, equipment

*Date: 14-May-2017 Source: Hindustan Times*



For two years now, Maharashtra’s pollution control agency did not use 80% of the funds given to it to reduce air, water and noise pollution, HT has found.

The agency is also grossly understaffed and poorly equipped to study the rising pollution levels and come up with solutions, responses to a Right To Information plea filed by an activist have revealed.

In 2015-16, the Maharashtra Pollution Control Board (MPCB) got Rs393.8 crore from the government; it spent only Rs68.26 crore. In 2016-17, of the Rs350 crore it got, only Rs80 crore was spent. For 2017-18, the department has set a budget of Rs150 crore. While the MPCB has funds at its disposal, Mumbai continues to face a number of pollution problems, including overflowing dumping grounds, increasing pollution in the air we breathe, rising noise levels and heavily polluted water along our coast.

Many recent studies have pointed out just how big Mumbai’s pollution problem is.

One study found untreated sewage was being released into the sea along Mumbai, and that the water at the mouth of the Mithi river had pollution levels 13 times the safe limit laid out by the Central Pollution Control Board.

Another study said untreated industrial waste was pumped from the Taloja industrial area into the Kasadi river.

This has raised pollution levels to 13 times the safe limit.

A similar situation was observed at the Ulhas river, in which industrial waste from the Ambarnath industrial area is dumped.

MPCB officials maintained that sizeable funds have been allocated for different projects in 2017.

“Earlier, money was being spent on projects such as the National Water and Air Quality Monitoring programmes. Now, we have prepared an action plan to rejuvenate 10 polluted rivers in the state, develop air quality monitoring stations and map noise in 27 cities. Money was spent on procuring equipment for all these studies. We will also carry out a state-wide pollution-related health study. Each of these projects will cost us roughly Rs60 crore,” said P Anbalagan, member secretary, MPCB.

Environmentalists, however, said the MPCB was being casual with the environment and the people’s health.

“The state has intentionally kept the department understaffed, so that illegal money from violating laws can come in. This is to encourage illegal activities, as it will generate money under the table and people in vital posts cannot refute this activity,” said Stalin D, director, NGO Vanashakti.

Pollution watchdogs from Pune also had similar views. “Despite being the top pollution abatement authority, MPCB is one of the most lethargic government departments. As far as river or air pollution is concerned, they have not understood the definition of pollution or they pretend to do so,” said Sarang Yadwadkar, an architect and environmentalist who has filed a number of applications with the National Green Tribunal, Pune.

Not only is the MPCB not using funds allotted to it, it is also struggling to fill vacant posts, especially that of scientific officers. So what is troubling the agency? A response from MPCB to a Right To Information (RTI) application filed by an activist who requested not to be named revealed

The RTI response said there were 249 vacant posts. Of a total of 840 openings, 591 were filled. Fifteen posts of regional officer across the state lay vacant, 36 of sub-regional officers and 32 of regional inspectors are also empty.

The department has few scientific officers to analyse environmental issues being faced by Mumbai and Maharashtra. While there is a principal scientific officer, the posts of the senior scientific officer, junior scientific officers and junior scientific assistants all lay vacant.

Officials said the figures released through RTI were slightly dated, as they recently approved 702 applications. “We are short of officials for technical posts. There are approvals pending with the government regarding the posts of hundreds of field officers. This work is underway and is likely to be completed soon,” said Anbalagan.

Apart from employees, the MPCB is also running short of devices. To monitor air pollution in a large city like Mumbai that plagued by very poor air quality every winter, the department has only two air quality monitoring stations – one at Sion and the other at Bandra.

All the 10 noise monitoring stations in one the loudest cities in the country were installed by the Central pollution board.

Ten laboratories to record pollution levels and test water samples are there across the state, but only five – central laboratory at Navi Mumbai, regional labs at Pune, Nagpur, Aurangabad and Nasik — are authorised by the Union environment ministry under the Environment Protection Act, 1986.

“We sent proposals for all 10 labs to the Centre a long time ago, but since it is a continuous process, it takes time to receive responses. This does not mean the labs are unauthorised as work is going on there. The sanctioning process will be completed soon,” said Anbalagan.

‘We have an action plan ready’

P Anbalagan, member secretary of Maharashtra Pollution Control Board (MPCB) spoke to Hindustan Times and cleared the air on the current condition of the state pollution board, the problems being faced by them and the future plans to mitigate air, noise and water pollution.

There is a large sum of money not used by MPCB every year. Where is this money being used?

Earlier money was being spent on various projects like National Water and Air Quality Monitoring programmes. Now, we have prepared an action plan for rejuvenation of 10 polluted rivers in the state, developing several air quality monitoring stations and noise mapping for 27 cities. Money was spent on procuring equipment for all these studies. Additionally, we will be carrying out a state-wide pollution related health study. Each of the projects will cost us roughly Rs 60 crore each. We have increased our efficiency over the past two years by 50%, which is why the income has been good. The cost of establishing units across the state is very high amounting to Rs 60-70 crore for each unit.

There are a lot of vacant posts in MPCB, is there a staff crunch your department is facing?

The figures released through RTI are slightly dated as we changed the approved posts for the department to 702 recently. We are short of officials for technical posts. There are approvals pending with the government regarding the posts of hundreds of field officers.

This work is underway and is likely to be completed soon. We started the recruitment process for sub-regional officers (SROs) and 12 SROs will be recruited for the state. Once this is complete, other posts will be filled. The plan is to go up to 900 posts.

Why are only five MPCB labs authorised by the central government?

We have sent proposals for all 10 labs to them a long time ago but since it is a continuous process, it takes time to receive responses from the central government. But this does not mean the labs are unauthorised as work is going on there. The sanctioning process will be completed soon.

There are only two air quality monitoring stations in Mumbai. Are there plans to widen this network?

The work order has been issued for 11 air quality monitoring stations for Mumbai – all the way from Colaba to Dahisar. They will be set up over the next six months. We are also setting similar air quality monitoring stations at Pune, Navi Mumbai and we are getting additional seven air quality monitoring



stations from the central government at various areas in the Mumbai Metropolitan Region including Vasai, Virar, Palghar, Dombivali etc. By next year, we will have 30 monitoring stations across the state.

What are the plans for water quality analysis in the state and why are figures not published on real-time basis?

Maharashtra is the only state which has come up with a water quality index to identify an exact figure of pollution at water bodies and a monthly bulletin is published. Yes, there is a lacuna for the data being published but we will ensure real-time data projection is done in coming months.

Overburdened landfills are plaguing the city's air quality and residents living close to these areas are irked because of this. What steps has MPCB taken to ensure that pollution is curtailed?

While Kanjurmarg dumping ground is complying with our standards even after 3,000 metric tons is being dumped daily. For Mulund, there is the problem of stench but the civic body has already got an extension from the Bombay high court to rectify problems. When it comes to Deonar, we had told the civic body to cap the area and carry out methane venting. Our team will be visiting the site next week and taking stock of what developments have taken place. If waste is processed, garbage is crunched and there is more space, then there is no need to shut down the dumping ground.

With number of people complaining about noise pollution, including celebrities, is MPCB tightening norms to reduce noise levels?

As per noise rules, we are limited to issue directions to the police as they are the enforcement authority. We had couple of meetings with senior officials from the Mumbai police, including the commissioner. There have been logistical issues but noise is being taken as serious issue and it will be curtailed for traffic and construction in Mumbai.

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## **An unexpected culprit is making China's air pollution worse**

*Date: 14-May-2017 Source: The Weather Network*



When it comes to pollution in China, new research suggests an unexpected factor that is contributing to country's often-plummeting air quality levels. Though airborne dust is typically an environmental problem, a study from the Pacific Northwest National Laboratory in the State of Washington finds that the lack of dust in China's air is making pollution across the country considerably worse.

When there's less dust, the study suggests that there's more solar radiation hitting the land's surface, in turn reducing wind speed. It's the lack of wind speed that then leads to a build up of air

pollution over densely populated parts of China.

Models that simulate the region's wind and dust patterns over 150 years show that dust deflects substantial amounts of sunlight. Remove the dust, and more heat from the sun will hit the land.

"Less dust in the atmosphere causes more solar radiation to reach the surface," the study's lead author, Yang Yang, told BBC News. "It weakens the temperature difference between the land and the sea and impacts the circulation of the winds and causes a stagnation over eastern China and that causes an accumulation of air pollution."

Factories and coal-powered plants have impacted air pollution for hundreds of millions of people across the country, with research suggesting that poor air quality levels contribute to 1.6 million deaths per year.

But this new study says that pollution caused by humans is being made either better or worse due to naturally occurring dust blowing in from the Gobi desert, BBC reports.

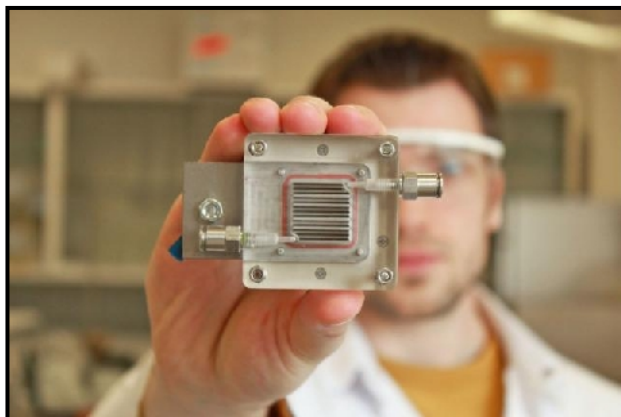
"There are two dust sources. One is the Gobi and the other is the highlands of north-west China, but we found the Gobi had much more influence," Yang Yang told the publication.

The full study can be found in the journal Nature Communications.

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## A Tiny Device Can Transform Air Pollution Into Usable Fuel

*Date: 15-May-2017 Source: Fururism*



### HYDROGEN FUEL

Scientists from the University of Antwerp and University of Leuven (KU Leuven) in Belgium have an innovative new solution to pollution (rhyme intended). They have developed a device that filters polluted air and, through that process, produces energy.

The device is a two-roomed photoelectrochemical cell. In one room of the cell, air is filtered in and purified using a photoanode. The process produces hydrogen, which is collected by a cathode behind the membrane that separates the two rooms. This hydrogen can be stored and later used as fuel.

"In the past, these cells were mostly used to extract hydrogen from water. We have now discovered that this is also possible, and even more efficient, with polluted air," explained Professor Sammy Verbruggen, an author of the study, in a university news release.

As it stands, the device is just a proof-of-concept design. It only measures a few square centimeters, so it couldn't begin to take on our massive existing pollution problem. However, the idea behind the device is incredibly promising.

## A POLLUTION-FREE FUTURE

While the researchers' tiny device is still a long way from being useful against pollution, this type of thinking and innovation is the key to progress. Clean energy production and pollution are both massive and worsening environmental, financial, and medical issues. Climate change is not slowing down, and so our efforts to combat it should only be intensifying.

Thankfully, many of the world's governments are doing just that. China, for instance, is a leading contributor of greenhouse gasses and air pollution. The toxins in the country's air pose an immediate and serious health risk for its citizens. In response, the nation has been heavily investing in renewable energy sources and aims to improve emissions standards. Recently in Rhode Island, the first offshore wind farm in the U.S. was installed, shutting down a nearby diesel plant, and countries like Germany, Costa Rica, and Canada are all making huge strides toward the elimination of fossil fuels.

Innovation and creative solutions like this air-cleaning fuel cell are part of the answer. Change is possible — we just have to be willing to embrace it.

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## South Korea's new president cracks down on air pollution

*Date: 15-May-2017 Source: Financial Times*

South Korea's new president has taken aim at the country's choking pollution problem, ordering the shutdown of ageing coal power plants in an attempt to stem growing public anger.

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Moon Jae-in on Monday declared that 10 of the country's coal plants, aged 30 years or older, be shuttered temporarily next year and then altogether before the end of his five-year term.

The moves comes as citizens of the east Asian nation suffer prolonged bouts of toxic fine dust — tiny particles also known as PM2.5 — that penetrate deep into the respiratory system and can cause a variety of illnesses, including cancer.

So far this year, authorities have issued 92 fine dust warnings — up from 64 advisories in the same period last year.

The soaring levels of pollution have sparked growing public consternation, with the issue becoming a hot topic ahead of the election of Mr Moon last week.

“President Moon’s order to suspend the coal-fired power plants’ operation shows his strong will to come up with fundamental solutions to the fine dust problem by putting it on the national agenda,” said a spokesperson for the presidential Blue House.

Mr Moon also ordered the creation of a special fine dust task force, which he will personally oversee, the spokesman added.

Many in South Korea blame fine dust wafting in from China’s industrial and desert regions for their country’s pollution woes.

But burning coal is another key source of emissions and the previous government had pledged to build 20 additional coal power plants to bolster the 59 in operation.

Burning of the fossil fuel accounts for about 40 per cent of South Korea’s energy generation.

Nuclear power’s share, meanwhile, has slipped to 30 per cent today from 40 per cent in 2005 amid safety concerns and following a series of scandals.

Mr Moon has also promised to shut a number of ageing nuclear reactors in a move which, combined with the coal plant closures, could raise questions about the country’s energy generation plans.

Kim Su-hyun, a presidential aide, said the shutdown of the 10 coal-fired power plants could decrease fine dust levels by up to 2 per cent, according to the state-run Yonhap news agency.

The move is likely to be welcomed by many South Koreans.

However, Kim Dong-sool, a professor of environmental studies at Kyung Hee University, criticised the government for rushing the process.

“Even though the new government’s plan to shut down the coal-fired power plants is encouraging, I doubt whether it has thoughtfully considered the economic costs,” he said.

“I also wonder how the government is going to tackle the energy supply and demand after shutting down the coal-fired power plants.”

Additional reporting by Kang Buseong

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## **Cities need to 'green up' to reduce the impact of air pollution**

*Date: 16-May-2017 Source: Eurek Alert*

The harmful impact of urban air pollution could be combated by strategically placing low hedges along roads in a built-up environment of cities instead of taller trees, a new study has found.

The study, just published in the journal *Atmospheric Environment*, points out that low hedges reduce the impact of pollution from vehicles in cityscapes where there are large buildings close to roads, far more

effectively than taller trees. In some environments, trees actually make the pollution more concentrated depending on prevailing wind conditions and built-up configurations.

The study is a collaborative effort by partners from the UK, Europe and USA, led by the University of Surrey's Professor Prashant Kumar, under the umbrella of H2020 funded project, iSCAPE: Improving Smart Control of Air Pollution in Europe.

Higher trees only have more of an impact in reducing air pollution in areas which are more open and are less densely populated by taller buildings.

Urban air quality continues to be a primary health concern as most of the world's population currently lives in urban areas (54% in 2014), and percentage is projected to rise to 66% by 2050; this is coupled with the fact that one of the main global sources of air pollution in cities is traffic emissions.

Professor Prashant Kumar, who is Chair in Air Quality & Health at the University of Surrey, said future urban planning need to consider designing and implementing more "green infrastructure", such as trees or hedges in the built environment to create a more healthy urban lifestyle.

Green infrastructure in cities is an urban planning solution for improving air quality as well as enhancing the sustainability of cities for growing urban populations. These green solutions include street trees, vegetation barriers (including hedges), green (or living) walls, and green roofs. They act as porous bodies which influence local dispersion of pollution and aid the deposition and removal of airborne pollutants, making the air cleaner.

Professor Kumar said: "We all know air pollution is a major factor of everyday urban life. This comprehensive review highlights that trees and hedges, as well as other green infrastructure, must be used strategically to help create healthier, less polluted cities that are also more pleasant for everyone to live and work in.

"Our other research study into London's air quality, published this week in *Atmospheric Environment*, investigated the underlining factors responsible for the air pollution exposure in urban environments. The other aspects, such as time of day and wind speed, emerged as important predictors of air pollution exposure for the above-ground modes (car, bus, walk) compared with openable/non-openable windows for the underground trains.

"Our earlier study showed the weathering impact of air pollution on the building materials such as limestone, sandstone and carbon steel, used in many heritage buildings and built infrastructure. This is why we need to protect buildings as well as humans in cities in future urban planning, so the strategic placing of hedges, trees and other green infrastructure can have a direct benefit as an air pollution control measure in cities."

The study also highlighted that green infrastructure has both positive and negative impacts on air quality at street levels, depending on the urban location it is in as well as its vegetation characteristics.

In a "street canyon" environment, where buildings like skyscrapers are close together on either side of the street, high-level green infrastructure (such as trees) generally have a negative impact on air quality.

Instead, low-level hedges reduce air pollution exposure in such places. In a similar way, green walls and roofs act as a sink to effectively reduce pollution.

In open road conditions, thick, dense and tall vegetation barriers restrict the freshly emitted vehicle emissions from reaching roadsides in high concentrations where people walk, cycle or live nearby.

Apart from air pollution reduction, other benefits of urban green infrastructure include urban heat island mitigation, the potential reduction in energy consumption, better stormwater management, and climate change mitigation.

Professor Kumar added: "Under the framework of the iSCAPE project, we are currently performing targeted field investigations to quantify the effects of different types of green barriers along the busy open-road sides. This will help to develop evidence-based guidelines to support future urban planning and the public to make informed choices to "green up" their surrounding environments."

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## Dust May Help, Not Harm, Air Pollution in China

*Date: 16-May-2017 Source: Smithsonian*



China's huge cities are infamous—not just for their 50-lane traffic jams, but for the air pollution that clogs city skies, endangering health, provoking red alerts and even obscuring the view of Beijing from space. So you'd think that a reduction in one of the things that fuels air pollution—dust—would ease pollution problems. But you'd be wrong: As the BBC's Matt McGrath reports, it turns out that less dust actually worsens air pollution in China.

In a new study in the journal *Nature Communications*, researchers reveal that a lack of

airborne dust makes China's air quality even worse. It's long been known that dust from the Gobi desert can flood Chinese skies and worsen pollution, as in April when air pollution monitors in Beijing went off the charts. But when researchers simulated how dust and wind has moved across Eastern China over the last 150 years, they learned that it actually improves air quality in the region.

Blame the sun for the counterintuitive finding. Dust influences air temperature, which in turn influences winds by causing temperature differentials between Earth and sea. And a bigger temperature differential means more wind.

When there's a lot of dust in the air, the sun can't reach Earth's surface, so it stays cool. That kicks up wind that helps circulate out the dust and other pollutants. But when there's less dust, Earth heats up more and the wind weakens, causing stagnation. Pollutants build up—and China's air quality suffers.

These wind speed changes seem tiny. In wintertime, there's 29 percent less dust, translating to a reduction of just over a tenth of a mile per hour in wind speed. But when you look at the change over an entire region, it adds up. Just that tiny change in wind speed increases air pollution by 13 percent during the winter months, researchers learned.

That doesn't mean that dust doesn't affect air pollution in China. But researchers say that they largely affect visibility, not breathability—and that during less dusty years, people breathe in more human-caused pollutants.

"This is not the result we expected," says Lynn Russell, who co-authored the paper, in a press release. And her team warns that even though dust makes a difference in pollution levels, the majority of China's pollution is caused by humans. But the more information about how those pollutants interact with natural ones like dust, the better.

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## **Madhya Pradesh bans burning of wheat and paddy chaff**

*Date: 17-May-2017 Source: The Times of India*

**BHOPAL:** The state government has banned the burning of paddy and wheat chaff with immediate effect in a bid to prevent air pollution.

Farmers in the state will be penalised for the burning of wheat and paddy chaff from now on. The Shivraj Singh Chouhan government on Tuesday issued a notification prohibiting the "indiscriminate burning of left-over paddy and wheat straw/stubble" in the whole state.

A notification issued by the environment department said, "Any person or body that is found offending this direction would be liable to pay environmental compensation as per the directives of the honourable National Green Tribunal." Small landholders having an area of less than two acres will pay a penalty of Rs 2,500 per offence. Farmers having more than two acres of land but less than five acres will pay a compensation of Rs 5,000. The burnt chaff is an environmental hazard and creates fly ash which adversely affects the pulmonary system of human beings.

"Land holders having an area of more than five acres shall pay an environmental compensation of Rs 15,000," the notification said. "The district magistrates of the concerned districts shall be responsible for executing these orders."

According to the notification, the state government has imposed the ban in consultation with the state Pollution Control Board which considered the step with the purpose of controlling air pollution under various sections of the Air (Prevention and Control of Pollution) Act of 1981. Government acknowledged in the notification that widespread pollution has occurred throughout the state from the indiscriminate burning of chaff.

"Air pollution is caused by the burning of chaff that leads to eye irritation, respiratory diseases such as bronchitis and asthma and also affects one's working capacity. In addition, the open burning also affects



the life of animals, birds and other insects below and above the earth and causes poor visibility and increases incidents of road accidents," the notification said.

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## City trees may worsen air pollution in hot weather

*Date: 18-May-2017 Source: COSMOS*



Volatile organic compounds given off by plants in the heat can react with car exhaust to produce ozone and airborne particulates, but experts say this downside is outweighed by the many benefits of urban greening. Tim Wallace reports.

Hotter summers and more frequent heatwaves due to global warming are likely to worsen urban air pollution from the greenest of all city features: trees and other vegetation.

While many studies have highlighted the multiple benefits of urban greening – it reduces temperatures, controls storm water, sequesters carbon, and improves physical and mental wellbeing – a team of German researchers suggest that future greening programs need to more fully account for the exposure of vegetation in urban areas to the urban heat-island effect as well as human sources of air, soil, and water pollution.

In particular, the researchers, led by Galina Churkina of the Institute for Advanced Sustainability Studies, in Potsdam, warn of pollution stemming from the higher quantities of volatile organic compounds (VOC) released by vegetation during hotter weather.

When these VOCs interact with human-caused nitrogen oxides – such as the nitrogen dioxide (NO<sub>2</sub>) emitted by the combustion of fossil fuels in motor vehicle engines – the chemical reactions can lead to ozone and particulate matter, both associated with breathing difficulties and aggravating conditions such as asthma and bronchitis.

The research team's warning is based on studies of air pollutant concentrations in the Berlin area. The German capital is one of the greenest cities in Europe, with forests, parks and agriculture covering a third of its area.

Using computer modelling to compare pollutant concentrations between heatwave conditions in the summer of 2006 and more typical summer temperatures in 2014, the team's simulations show VOCs from urban greenery contributed to between 6% and 20% of all ozone formation, spiking to 60% during the 2006 heatwave.

While plants release hundreds of different VOCs, the researchers note in their study, published in *Environmental Science & Technology*, that only a few have a substantial effect on air quality.

“The most important reactive biogenic VOCs are isoprene, monoterpenes, and sesquiterpenes. Emissions of isoprene mostly contribute to the formation of ground level ozone, while monoterpenes and sesquiterpenes can lead to an increase in particle number and mass.”

The paper also notes that while the new results align with other studies (covering Asia, Europe, and North America) pointing to the potential of urban trees worsening air pollution through VOC emissions, “other studies of the same phenomenon complicate the picture”.

The results don’t amount to a call to cut down trees, or indeed to halt urban-greening initiatives. Rather, the researchers note that tree-planting campaigns simply need to be accompanied by traffic reduction in order to truly benefit urban dwellers.

Sarah Bekessy, of the Centre for Urban Research at RMIT University, in Melbourne, reinforces the need for caution.

“When it comes to sustainability strategies there are rarely any simple solutions that have no downside, but in this instance urban greening has so many benefits that dwelling on the negatives would be utterly ridiculous,” says Bekessy, who is also a member of the Australian Research Council’s Centre of Excellence for Environmental Decisions.

“Planting trees in cities is one of the best ways of to lower urban temperatures. Trees within cities can sequester as much carbon from the atmosphere as a tropical forest; and numerous studies have shown the benefit of urban greening as a public health intervention.

The sensible options, Bekessy counsels, are to look at the types of vegetation used in urban environments, and at the types of city design more susceptible to air pollution: “Careful planning and regulation for urban design, and guidance around the right type of trees and vegetation to plant could mitigate the problem.”

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## Goa: Sonshi mines may face GSPCB action over high air pollution

*Date: 18-May-2017 Source: Indian Express*



It may be the end of the road for 12 iron-ore mines in Sonshi village of North Goa, if they fail to furnish a bank guarantee here tomorrow before the Goa State Pollution Control Board (GSPCB), which has deferred renewal of their leases for this mining season over rising air pollution.

Mining operations in Sonshi have been suspended since April 28 after these mine lease holders were found to be involved in violation of environmental

norms.

Also, the GSPCB has kept on hold the renewal of leases of these mines under the Air and Water Pollution (control) Act, following protests by locals complaining about severe air pollution in the village.

The Board, in its last meeting, had asked the mining firms to furnish a bank guarantee which would be forfeited if they indulge in polluting the air during their operations.

The next meeting is scheduled Friday.

“If the mining firms fail to furnish the bank guarantee in the meeting scheduled tomorrow, they will not be allowed to operate (this season),” a senior GSPCB official told PTI.

“Since the mining season ends on May 31, we will have to then take up their matter only after monsoon when the new season begins,” he added.

The official said the guarantee amount will be based on the area of the lease.

“It is most likely to be Rs 50 lakh for mining leases that have area above 100 hectares; Rs 25 lakh for mining lease with area between 50 and 100 hectares, and Rs 12.5 lakh for mining lease area below 50 hectares,” he said.

“If lease holder fails to control the air and water pollution in the vicinity, the bank guarantee will be forfeited by the Board,” he said.

Meanwhile, Goa Mineral Ore Exporters Association (GMOEA) has rubbished media reports that air quality monitoring equipment have been manipulated by the mining companies.

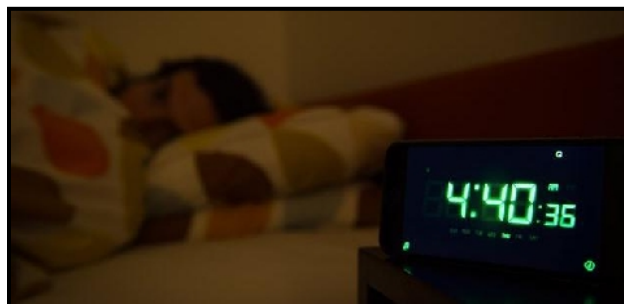
“As an industry body we wish to clarify that all the equipment used by the mining companies are compliant and strictly meet the guidelines as mentioned by the various regulatory authorities,” GMOEA said in a press note here.

In addition, it may also be noted that the mining companies have allowed access to the GSPCB to assess and monitor all the equipment that have been installed for checks on environmental norms, the press note added.

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## Air pollution linked to poor sleep, study finds

*Date: 21-May-2017 Source: The Guardian*



Air pollution might be linked to poor sleep, say researchers looking into the impact of toxic air on our slumbers.

The study explored the proportion of time participants spent asleep in bed at night compared with being awake – a measure known as sleep efficiency.

The results reveal that greater exposure to nitrogen dioxide and small particulates known as PM 2.5s are linked with a greater chance of having low sleep efficiency. That, researchers say, could be down to the impact of air pollution on the body.

“Your nose, your sinuses and the back of your throat can all be irritated by those pollutants so that can cause some sleep disruption as well as from breathing issues,” said Martha Billings, assistant professor of medicine at the University of Washington and co-author of the research. Billings added that pollutants entering the blood could have an effect on the brain and hence the regulation of breathing.

The study, presented at the American Thoracic Society’s annual international conference, drew on air pollution data captured for nitrogen dioxide and PM2.5 levels over a five-year period in six US cities, including data captured near the homes of the 1,863 participants. The data was then used to provide estimates of pollution levels in the home.

Researchers then captured data from medical-grade wearable devices worn by the participants on their wrists over a period of seven consecutive days to monitor fine movements while they slept – an approach that offers insights into how long each participant spent asleep or awake.

From the results, the team grouped the participants according to their sleep efficiency, finding that the top quarter of the participants had a sleep efficiency of about 93% or higher, while the bottom quarter had a sleep efficiency of 88% or less.

The team then took all of the participants and split them into four groups based on their exposure to air pollution.

After taking into account a host of factors including age, smoking status and conditions such as obstructive sleep apnea, the team found that those who were exposed to the highest levels of air pollution over five years were more likely to be in the bottom group for sleep efficiency than those exposed to the lowest levels.

More specifically, high levels of nitrogen dioxide increased the odds of having low sleep efficiency by almost 60%, while high levels of PM2.5s increased the odds by almost 50%. Higher levels of pollution were also linked to greater periods of time spent awake after going to sleep.

However, it is not clear whether the pollution itself was affecting the participants’ sleep or whether the poorer sleep quality might be down to other factors linked to pollution, such as the noise generated by traffic. In addition, data from one week’s sleep might not reflect an individual’s typical sleep pattern.

Scott Weichenthal, an epidemiologist from McGill University in Canada who was not involved in the study, said the research did not prove that air pollution caused poor sleep, but he added: “There is certainly increasing evidence that air pollution affects our body in ways that we didn’t appreciate before.”

Roy Harrison, professor of environmental health at the University of Birmingham, said a link between pollution and sleep was not unexpected. “Previous research has shown associations between nitrogen dioxide exposures and effects upon various physiological and biochemical functions in the body, as well as hospital admissions and mortality,” he said. “It should therefore come as no surprise that such exposures also affect sleep patterns.”

## **Air purifiers among over 10 new products for India this year: LG**

*Date: 21-May-2017 Source: The New Indian Express*

SEOUL: As metropolitan cities continue to grapple with pollution in India, South Korean consumer electronics major LG sees an opportunity to foray into air purifiers along with a range of products developed on its global concept for India.

The air purifiers, fitted with specialised filters to clean emission from vehicles and fossil fuels, are among over 10 products that the company has lined up for India this year.

LG is looking to take on established players like Eureka Forbes, Kent RO, Panasonic, Sharp and Godrej in the fast growing air purifiers market in India that is estimated to be at around Rs 150 crore.

The market grew around 30 per cent in the last two years.

LG Electronics President and CTO Skott Ahn told PTI in an interview here that the company's strategy is to introduce new technologies in all the products that it planned to launch in India.

"We will be launching more than 10 products in India in 2017. These will be new types of refrigerators, air purifiers, water purifiers and new types of OLED televisions, including the Signature brand," he said.

LG has taken into account causes of air pollution while developing special filters for its products, Ahn said.

Characteristic of air pollution varies from region to region. In urban cities, including India, a lot of emission comes from vehicles and fossil fuels, he added.

"Filters in our air purifiers will focus on addressing such specific components rather than general filters," Ahn said.

The company has recently unveiled its 'LG Signature' premium brand of products which it plans to launch in India in July.

Ahn said that going forward, the nature of competition will no longer be restricted to conventional rivals, as startups or IT companies come into the picture as technology develops.

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## **Reduced US air pollution will boost rainfall in Africa's Sahel, says study**

*Date: 22-May-2017 Source: PHYS ORG*

Falling sulfur dioxide emissions in the United States are expected to substantially increase rainfall in Africa's semi-arid Sahel, while bringing slightly more rain to much of the U.S., according to a new study in the Journal of Geophysical Research: Atmospheres.



Pollution filters placed on coal-fired power plants in the United States starting in the 1970s have dramatically cut emissions of sulfur dioxide, a toxic gas that contributes to acid rain and premature deaths from respiratory and cardiovascular diseases. If U.S. sulfur dioxide emissions are cut to zero by 2100, as some researchers have projected, rainfall over the Sahel could increase up to 10 percent from 2000 levels, computer simulations published in the study

suggest.

"Reducing emissions in one region can influence rainfall far away because our global atmosphere is interconnected," said the study's lead author, Dan Westervelt, an atmospheric scientist at Columbia University's Lamont-Doherty Earth Observatory. "We show that the health and environmental benefits of U.S. clean air policies extend to global climate as well."

Sulfur dioxide simultaneously cools and dries earth's climate by reflecting sunlight back to space and suppressing heat-driven evaporation near the ground. Though prior research has linked high sulfur emissions in Europe and Asia to the Sahel's severe droughts of the 1970s and 1980s, this study is the first to look at how U.S. emissions influence precipitation in various regions globally.

The researchers ran three independent global climate models to compare the relative impact of the United States cutting its human-caused sulfur emissions to zero and keeping its emissions at 2000-2005 levels. In the zero-emissions scenario, all three models showed a slight increase in average global rainfall, with higher levels in the United States and other northern-hemisphere regions. In the Sahel, two models found that wet-season rainfall increased by 5 to 10 percent, with one producing a rainy season two-and-a-half days longer.

"We were surprised to find that removing sulfur emissions in just one country would significantly influence rainfall on another continent, thousands of miles away," said study coauthor Arlene Fiore, an atmospheric scientist at Lamont-Doherty.

The added rainfall came as the tropical rain belt returned to its normal, northernmost position above the equator during northern hemisphere summer, the models showed, consistent with earlier research. The rain belt ordinarily shifts north when the northern hemisphere heats up during summer, but when sulfur emissions are high, cooler temperatures in the north stop the rain belt from migrating as far.

Cutting U.S. emissions to zero was enough to move the rain belt roughly 35 kilometers north, placing more of the Sahel in its path, the researchers found. "We did not expect to see such a clear, significant influence on the Sahel," said Westervelt. "This northern shift of the tropical rain belt could mean that cropland at the Sahel's northern edge could become more productive in the future."

Though two of the three models were generally consistent, they disagree on exactly how much rain different regions can expect as U.S. sulfur emissions go to zero, says study coauthor Drew Shindell, an



atmospheric scientist at Duke University. "We have just one real-world example—historic data—to rely on, making it very challenging to quantitatively link emissions to response," he said.

The influence of rising carbon emissions is another complicating factor. The technology to trap carbon dioxide, unlike sulfur dioxide, is still far from being cost-effective. So while carbon dioxide levels continue to climb, falling sulfur emissions impose a climate "penalty"—less human-caused cooling to offset human-caused warming from carbon dioxide.

"It's still a good idea to cut SO<sub>2</sub> with pollution control equipment on coal-fired power plants for the sake of public health, but even better would be to move away from coal-fired power plants entirely to reap the benefits of public health and climate change mitigation," said Shindell.

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## Air Pollution Due to Traffic May Cause DNA Damage in Kids and Teenagers

*Date: 23-May-2017 Source: Smart Cooky*



A new report by the World Health Organisation confirms that about 92% of the world's population lives in places where air quality levels exceed WHO limits. Outdoor air pollution especially traffic related pollution has been rising at an alarming rate around the world. Along with these disappointing facts, comes a major health risk that air pollution poses. A new study, published in the *Journal of Occupational and Environmental Medicine*, warns that exposure to high levels of

traffic-related air pollution may lead to a certain type of DNA damage called telomere shortening in children and teenagers.

Telomere shortening has been typically associated with ageing and also asthma in young adults. According to lead author of the study, John Balmes of University of California, Berkeley and his colleagues, the length of the telomere serves as an important biomarker for DNA damage cause due to chronic inflammation and the harmful effect of environmental pollutants.

For the study, researchers examined 14 children and adolescents living in Fresno, California — the second-most polluted city in the US. The researchers assessed the relationship between polycyclic aromatic hydrocarbons (PAHs), a "ubiquitous" air pollutant caused by motor vehicle exhaust; and shortening of telomeres.

The results showed that as the exposure to PAHs increased, the length of the telomere decreased in linear fashion. Further, children and teenagers with asthma were exposed to higher PAH levels. The study also takes into account previous evidence which shows that air pollution can cause oxidative stress which can damage lipids, proteins, and the DNA. According to their research, children may experience different telomere shortening regulation than adults which makes them more vulnerable to the damaging effects of air pollution.



## Steps You Can Take to Protect Your Kids Against Air Pollution

There's a lot that you can do to protect your kids against the menace of air pollution. Start with keeping the air at home clean. You can do this by keeping beewax candles, salt lamps or house plants like Peace Lily or Lady Palm that help filter toxins from the air. You can even install an air purifier at home. Since, kids and teenagers spend a lot of time outdoors, it is important to fortify them from within to fight the harmful effects of pollution. According to Clinical Nutritionist, Dr. Rupali Datta, "To protect yourself from the effect of free radicals that your body may form when exposed to polluted air, foods that are rich in antioxidants. These include all the fruits and vegetables, especially those rich in Vitamin A and Vitamin C".

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## Trouble Sleeping? Air Pollution Could Be the Culprit

*Date: 24-May-2017 Source: Live Science*

The air pollution around you could affect how well you sleep, a new study finds.

Researchers found that people in the study who lived in areas with high levels of air pollution were 60 percent more likely to sleep poorly, based on the measures used in the study, than those who lived in areas with cleaner air.

Chronic sleep deprivation has been linked with a range of health problems, the study said.

"Not having enough sleep and having low quality sleep affects people's performance, increases the risk of vehicle accidents, lowers mood," said Dr. Martha E. Billings, the lead author of the study and an assistant professor of medicine at the University of Washington. [5 Surprising Sleep Discoveries]

"Over time, there is a higher risk of cardiovascular diseases and cancer in people who are not getting adequate sleep, so there is a lot of implications as well as general well-being and the quality of life," Billings said.

The researchers used data from an ongoing study called the Multi-Ethnic Study of Atherosclerosis (MESA) to look for correlations between exposure to air pollution and the quality of sleep of 1,863 individuals in six U.S. cities. The researchers focused on two measures of sleep quality — sleep efficiency, which is the total amount of time actually spent asleep, and the frequency of awakenings after falling asleep.

The study participants wore actigraphy watches, which are similar to a FitBit. They detected how many times each person woke up during the night and how long they stayed awake, Billings said.

The researchers compared this data set with information about the concentrations of two major air pollutants around the participants' homes. They looked at nitrogen dioxide (NO<sub>2</sub>) and fine particulate pollution (PM<sub>2.5</sub>), meaning solid particles in the air that have a diameter of less than 2.5 micrometers. This information came from the Environment Protection Agency's monitoring sites across the U.S. in combination with local environment data and statistical modeling.

The researchers grouped the participants into quartiles based on the level of air pollution in their areas, Billings said. "We found that there was an about 60 percent higher odds of having a low sleep efficiency if you had an exposure in the highest quartile of air pollution."

Low sleep efficiency, as the researchers defined it in the study, meant being asleep less than 88 percent of the time spent in bed. The researchers found that the percentage of people suffering from low sleep efficiency as well as the total amount of time they were awake increased with the concentration of air pollution in their homes.

The study found an association, not a cause-and-effect relationship, between air pollution levels and sleep quality. Billings said the researchers don't know how air pollution may affect sleep, but there are many possible mechanisms in which air pollution could be causing people to toss and turn. [7 Strange Facts About Insomnia]

"It may be because they are exposed to more traffic noise that is disrupting their sleep," Billings said. "It could also be an effect of the air pollution itself that is causing airway irritation. Sometimes those small particles can get into the blood stream and that could affect regulation of sleep in the brain – that's our hypothesis, but we still need further studies to show whether this is really the case."

The average age of the study's participants was 68. Billings said she and her team made sure to adjust for other factors that could affect people's sleep quality, such as body mass, age, smoking or having certain conditions, including sleep apnea or depression.

Air pollution has been linked to the increased risk of respiratory conditions, including asthma and even lung cancer. But recent studies have pointed to the possible association between air pollution and a much wider range of health problems. For example, a study by researchers at the University of Birmingham in the U.K. published earlier this year found that every extra 10 micrograms of PM2.5 per cubic meter of air was linked with a 22 percent increase in risk of dying of any type of cancer in elderly people.

Other research suggests that pregnant women who breathe highly polluted air are more likely to give birth prematurely, according to the Stockholm Environment Institute. A team from the University of Lancaster in the U.K. found air pollution particles in human brains, and said the evidence suggests these particles could contribute to dementia.

Billings and her colleagues presented their new research at the International Conference of the American Thoracic Society earlier this week. The findings have not been published in a peer-reviewed journal.

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## **Asthma in boys linked to maternal prenatal stress, air pollution**

*Date: 25-May-2017 Source: Healio*

Male infants who were exposed to ambient fine particulate matter and maternal psychosocial stress in utero were more likely to develop asthma by 6 years of age, according to research presented at the 2017 American Thoracic Society International Conference.

“We know from prior research that air pollution affects childhood lung health starting in early development, even in pregnancy,” Alison Lee, MD, MS, from the Icahn School of Medicine at Mount Sinai, told *Infectious Diseases in Children*. “Our study suggests that children, especially boys, born to women experiencing increased levels of stress during pregnancy may be even more sensitive to the negative effects of air pollution.”

To evaluate the connection between ambient fine particulate matter (PM<sub>2.5</sub>) and asthma in early childhood regarding potential additional effects of maternal stress and the sex of the infant, the researchers conducted an analysis of 736 mothers and their full-term infants. Each infant was born at least 37 weeks gestational age and were followed until they reached 6 years of age to observe if a physician had provided an asthma diagnosis.

Using a validated satellite-based spatiotemporal resolved model, the researchers estimated daily maternal PM<sub>2.5</sub> over the length of gestation. Additionally, negative life events scores were collected, with mothers acquiring a score of three or more considered to have high stress. The researchers also used Bayesian distributed lag interaction models to adjust for maternal age, race and ethnicity, education, obesity and tobacco smoke exposure.

Researchers found that mothers included in this study tended to be minorities (54% Hispanic; 30% black) who had not completed schooling (66% had less than 12 years of education), yet the majority were nonsmokers (86%).

According to study results, exposure to higher PM<sub>2.5</sub> levels between 13 and 20 weeks gestation increased the odds of developing asthma among male infants. Compounding this association, males born to mothers who reported higher levels of prenatal stress in addition to higher PM<sub>2.5</sub> exposure were particularly affected.

As determined by Bayesian distributed lag interaction models, PM<sub>2.5</sub> exposure was a significant risk factor for asthma development among males born to mothers with high prenatal stress (OR=1.20, 95% CI=1.10-1.34; per IQR increase in PM<sub>2.5</sub>) and marginally significant among males born to mothers with low prenatal stress (OR=1.06, 95% CI=0.94-1.20). However, no significant associations were found among girls, regardless of prenatal stress level.

“Just as clinicians counsel all women about the hazards of smoking in pregnancy, the overwhelming evidence linking stress to asthma risk in children should prompt the same universal counseling in the health care provider’s office,” Lee said. “Importantly, the goal need not to be to eliminate all stress, but rather to remove stress when possible and enhance coping mechanisms with the goal of reducing stress to more manageable levels.” —by Katherine Bortz.

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## **Delhi’s air quality is poor — just like last year**

*Date: 25-May-2017 Source: The Indian Express*

Anumita Roychowdhury from the Centre for Science and Environment said, “The Delhi government



should take action based on daily air quality levels. They need to expedite mechanisms for implementation of the action plan.”

Though the Union Environment Ministry notified the ‘graded response action plan’ to combat air pollution in Delhi-NCR over four months ago, it does not seem to have had an impact, analysis of air quality data suggests.

The average air quality index for the period between April 24 and May 24 this year is 252, placing the city in the ‘poor’ air category. This figure is one point higher than the average of 251 recorded during the same time last year.

Analysis of the CPCB’s AQI bulletin archives also revealed that the number of days over the 31-day period categorised as having ‘very poor’ air was also more or less the same: seven days in 2017, up from six in 2016.

Similarly, 19 days were recorded as having ‘poor’ air quality days last year, while the figure this year is 18 days. The only significant difference is in traces of ozone picked up by monitoring stations. While nearly half the month last year revealed varying levels of ozone in the air along with other particulate matter, there have been only been two instances over the last month this year.

However, analysis of the archives also showed that data is not collected every day of the month from every functioning monitoring station. There are more than 12 monitoring stations across the city, run by the Delhi Pollution Control Committee, the CPCB and other agencies. For instance, April 20, 2016 was categorised as a ‘very poor’ air quality day at an index of 316 and traces of PM 2.5 were found in the air. This was, however, based on data from one monitoring station.

Noting that the trend appears to be similar across time frames, despite the notification of the graded response action plan, the Centre for Science and Environment’s Anumita Roychowdhury said, “The Delhi government should take action based on daily air quality levels. They need to expedite mechanisms for implementation of the action plan.”

The graded response lays down actions required to be taken as and when concentration of particulate matter or other pollutants reaches a certain level.

She also pointed out that summer months are a challenge given the impact of dust, dry-ash and traces of ozone which is harmful while at ground-level, for which there are controlled measures in the graded response action plan. “It is an issue that not every monitoring station is picking up the data,” Roychowdhury said. “Authorities must ensure proper maintenance is taking place so there are no data gaps.”

An EPCA member said raw data being used to estimate AQI should be made available in the public domain so it can be useful to regulators and activists. Currently, SAFAR, under the Ministry of Earth Sciences, is responsible for AQI estimation and display.

# The Body Shop reveals smart posters that filter out London air pollution

Date: 26-May-2017 Source: The Drum



The Body Shop has unveiled a series of clever out of home (OOH) ads in London that remove pollutants from the atmosphere.

The cosmetics and skin care company has teamed up with environmental tech firm Airlabs to pilot the scheme at three high-profile and highly polluted locations in the capital.

Airlabs' air cleaning system removes harmful pollutants from city air including nitrogen dioxide and particulate matter. The Body Shop has signed on to incorporate the innovative cleaning units into its OOH ads as part of its commitment to environmental activism.

The posters will be active at three JCDecaux bus stops sites in New Oxford Street, Tottenham Court Road and High Holborn as part of a pilot scheme.

Airlabs research shows that Central London has exceeded legal limits of N02 levels nearly every day so far this year. It claims the bus stop ads will deliver up to 95% cleaner air, helping protect passengers standing inside a bus stop who are at high risk from pollution exposure as they wait by the road for their bus. The clean air provided could fill more than 80 buses every day.

Maxus is handling the campaign for The Body Shop.

"While these air cleaning units have yet to be introduced on a wider scale, we're making a start to help protect Londoners from air pollution exposure, as well as help raise awareness of this incredible technology available," said Elen MacAskill, The Body Shop's UK marketing and corporate responsibility director.

"We are calling on other businesses, transport operators, bus stop site owners and brands to follow this industry leading approach. The technology can help reduce urban pollution exposure for thousands of people every day where nitrogen dioxide levels exceed the legal limit."

Last year, The Body Shop announced an ambitious plan to become "the most ethical and truly sustainable global business," in the world. At the time its director of commitment and corporate comms, Kate Levine, told The Drum it had come up with a list of targets for 2020 under the new philosophy of 'Enrich Not Exploit'.

The initiative includes making sure that every one of its natural ingredients are traceable and sustainably sourced, developing new packaging that doesn't contain fossil fuels, and reducing the environmental footprint across all of its stores.

## Ore exporters favour larger trucks to curb air pollution in Goa

*Date: 29-May-2017 Source: Financial Express*



Admitting that transportation of iron ore causes air pollution, ore exporters body in Goa has suggested that smaller trucks be phased out.

Admitting that transportation of iron ore causes air pollution, ore exporters body in Goa has suggested that smaller trucks be phased out. Iron ore is transported in open trucks, which leads to dust from the ore flying and spreading along the route. Goa Mineral Ore Exporters Association (GMOEA) made a presentation on the issue before the Goa State Pollution Control Board (GSPCB) last week.

“We agree that trucks transporting ore lead to dust pollution, but we can certainly take steps to mitigate it,” GMOEA secretary Glen Kalavampara said here today.

As a “medium-term” solution, GMOEA suggested replacing trucks with capacity of ten tons or less with higher-tonnage ones for ore transportation, so that the traffic decreases.

“Do we require 10,000 small trucks moving up and down, putting pressure on road infrastructure, or should we move towards phasing out the 10-ton capacity trucks and switch over to higher-capacity trucks?” Kalavampara asked.

This can reduce the pollution by half and also lessen the congestion on the roads. Phasing out of smaller trucks can be done by taking the locals, who are involved in transportation business, into confidence, he added.

As a part of “long term” plan, the association proposed dedicated mining (transportation) corridors in both South Goa and North Goa districts. GSPCB had recently suspended operations of 12 mining firms at Sonshi in North Goa after the locals complained of pollution due to ore dust.

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## Delhi rain brings good news: Mercury, pollution down, cool week ahead

*Date: 29-May-2017 Source: Hindustan Times*



Met officials says temperatures will remain much below 40°C till Friday due to the cooling effect of showers in the Capital which have also brought down the pollution level down from poor to moderate.

Delhiites woke up to a bath-fresh morning on the

first day of the week as an overnight rain helped to bring down both the mercury level and the pollution on Monday morning.

To add to the good news, Met officials have predicted that the day temperature would remain much below the 40°C-mark at least till Friday, as another spell of dust storm and thunderstorm is likely to hit Delhi later this week.

“The city received around 7.2 mm of rain till 8.30am on Monday. The day temperature, which had shot up to 43.9°C even on Friday, has dropped to 34°C. This is at least six degrees below that what it should have been,” said an official of the local Met department.

The wet roads, the drenched trees and the moist soil with a few water puddles here and there were a welcome sight for Delhiites who had been baking under the scorching heat till Saturday.

The System of Air Quality and Weather Forecasting and Research (SAFAR), which maintains the Air Quality Index of Delhi, revealed that the showers also brought down the PM2.5 and PM10 levels from ‘poor’ to ‘moderate’.

“The rain was the combined effect of a western disturbance and a cyclonic circulation over Punjab. Most of the states in northwest India, including Punjab, Haryana and Himachal Pradesh, received rain,” an official said.

Experts said that such systems that trigger rain and thundershowers at regular intervals during this time of the year help to keep the rising mercury levels under check.

On May 21, a spell of rain had helped bring down the mercury level to around 29.4°C from 39.5°C, within 24 hours. It was the lowest day temperature Delhi had witnessed in the last seven years.

“We expect that the day temperature would remain in the range of 37°C-39°C at least over the next few days due to the lingering effect of the rain,” said a senior official.

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## **Why Gurugram fails to curb air pollution?**

*Date: 30-May-2017 Source: The Times of India*

**GURUGRAM:** The Haryana State Pollution Control Board (HSPCB) inspected only 32 construction sites in the past four years on an average only eight in a year — in Gurugram, a real estate hub that witnesses large-scale construction activities round the year.

The response to an RTI query has revealed that the pollution watchdog examined two under-construction hotels, and 30 residential and commercial complexes since 2013.

This is despite well spelt-out guidelines of the National Green Tribunal (NGT), which mandates regularly inspections at construction sites to prevent dust pollution. Further, in its directives issued from time to time, NGT has instructed all pollution boards in Delhi/NCR, including HSPCB, to keep tabs on all



construction activities and impose a hefty penalty of Rs 50,000 on builders if they are found to be violating any environmental norm.

In fact, there is a dedicated field officer to carry out inspections at construction sites in Gurugram. "The field officer has been entrusted the work to oversee and check dust pollution being caused by construction projects," states the RTI response given by the HSPCB (a copy of which is with TOI).

But, the field officer seems to have done little to ensure that green norms are followed.

"Construction projects are a major source of dust pollution in the city. It is unfortunate that the regulatory agency deals with the issue of air pollution in the city so casually," said Aseem Takyar, who had filed the RTI application.

Environmental activist Ameena Shervani said that she had filed a similar RTI plea with the department of town and country planning in 2013 to know if builders in the city were following construction norms. "I found out that notices for violation of norms were issued to builders back in 1980s and 1990s. In 2000s, there was hardly any developer, who was pulled up or penalised for violating green norms," she recalled.

"Unfortunately, the situation is still the same. The authorities are just acting as mute spectators while Gurgaonites are dying due to rising pollution," Shervani rued.

As per the guidelines laid down by the NGT, builders should to put up green barriers and wind-breaking walls around construction sites, keep construction material, such as sand, gravel, cement etc. covered, keep construction waste covered, install sprinklers to settle dust and provide masks and gloves to construction workers.

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## India's first early warning system in Ahmedabad aims to reduce health impact of air pollution

*Date: 31-May-2017 Source: Hindustant Times*

India's Air Quality Index			
AQI	Description	Health impact	Health advisory
0-100	Good +satisfactory	Minimal impact	No cautionary action required.
101-200	Moderate	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults.	Unusually sensitive people should consider reducing prolonged or heavy exertion and heavy outdoor work.
201-300	Poor	May precipitate severe attack on short term exposure in high risk individuals and respiratory symptoms (breathing discomfort) in normal individual on long term exposure.	Children and adult with heart or lung disease, should reduce prolonged or heavy exertion and limit outdoor activity.
301-400	Very poor	May cause mild respiratory problems in normal individual/ more pronounced in people with lung and heart disease.	Everyone should reduce prolonged or heavy exertion. More caution for children or adult with heart or lung disease.
401-500	Severe	May cause respiratory effects even on healthy people and serious health impacts on people with lung and heart diseases. The health impacts may be experienced even during light physical activity.	Everyone should avoid all outdoor physical activity. Sensitive individuals should remain indoor with minimal activity.

An early warning system will notify people of excessive air pollution days as part of the response plan, while medical professionals will be trained to respond to emergencies.

The first Indian monitoring and early warning system for air pollution was launched on May 12, 2017, in the nation's fifth most populous city, with the hope that it will reduce the health impacts and deaths from air pollution, a growing problem in a country with nine of the world's 20 most polluted

cities in 2016, according to the World Health Organization (WHO).

Combining the efforts of local government, scientists and non-profits, eight new air quality monitoring sites across Ahmedabad will produce a daily air quality index (AQI) that will be accessible to citizens through 11 LED screens across the city, as part of what is called the Air Information and Response (AIR) plan.

An early warning system will notify people of excessive pollution days as part of the response plan, while medical professionals will be trained to respond to air-pollution emergencies. The monitors are installed at eight locations (Bopal, Satellite, Pirana, Raikhad, Navrangpura, Rakhiyal, Chandkheda and the airport) in a city of over 5.5 million people.

An AQI is a metric on a sliding scale that tells people about the quality of the air and associated near-term health impacts. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

Ahmedabad was among the five most polluted cities in India in terms of PM 2.5, according to the WHO's 2014 Ambient Air Pollution database.

PM 2.5 is particulate matter finer than 2.5 micro-meters, or about 30 times finer than a human hair. Inhaled deep into the lungs, they can cause heart attacks, strokes, lung cancer and respiratory diseases, and are known to pose the greatest risk to human health. Their measurement is considered to be the best indicator of the level of health risks from air pollution, according to the WHO.

In the footsteps of Beijing

People living in more polluted areas die prematurely after long-term exposure to air pollution, and inconsistent monitoring makes it difficult to assess the threat posed by ambient air pollution.

The AIR plan is a collaborative effort between the Ahmedabad Municipal Corporation (AMC), Indian Institute of Public Health (IIPH), a nonprofit in Gandhinagar, Natural Resources Defense Council (a non-profit head-quartered in New York), Indian Institute of Tropical Meteorology (government institute) and the Indian Meteorological Department's System of Air Quality and Weather Forecasting And Research (SAFAR) network.

The monitoring and warning system will be tried for the first time in India, but follows the successful example of Beijing, that started the program for issuing colour-coded pollution alerts in 2013, according to this report by The Scientific American.

However, this warning plan was accompanied by other measures like restricted driving schedules, school closures and reduced industrial production to curb emissions, according to a 2014 paper in the Journal of Epidemiology and Community Health, which is missing in the Ahmedabad plan.

The AMC has set aside a budget of Rs 30 lakh for 2017, Chirag Shah, nodal officer of the AIR plan and the Deputy Health Officer of the West Zone at the AMC, told IndiaSpend.

“All the recurring costs, such as the maintenance of screens and stations, issuing advisories and initiating programs to increase public awareness will also be borne by us,” said Shah. “The land for installing the AQI monitors has been provided free of cost to SAFAR by the AMC, and SAFAR has invested about Rs 20 crore to install ten AQI monitors in Gandhinagar and Ahmedabad, eight of which are here.”

The AMC had drafted a comprehensive Air Action Plan to combat pollution from construction activities, vehicular emissions and industries in 2016, its second such plan since 2002, but it is yet to be implemented, according to a Times of India report on May 12, 2017.

Forecast air quality, issue early warnings and be better prepared

The AMC Health Department is responsible for coordination of the AQI and AIR Plan. This includes monitoring the daily AQI, issuing alerts and warning on bad air days and disseminating public health messages to local departments and community service providers.

The AIR plan is modelled after Ahmedabad's Heat Action Plan (HAP), launched in 2013 to reduce health impacts and mortality from extreme heat waves through measures that included early warning systems, increased public awareness and training health professionals.

"If people don't go to the highly polluted areas and follow the health advisory to minimise exposure, then symptoms will be reduced and there will also be a cost saving for citizens," Dileep Mavalankar, , director of IIPH, Gandhinagar, told IndiaSpend. "So, it depends on how effectively we are able to communicate to patients and the people who are vulnerable to avoid exposure."

"Once this plan is implemented, we should be able to observe that the admissions to hospitals or mortality from high pollution levels comes down by taking precautions, like we saw after implementing the heat action plan," said Mavalankar.

As part of the AIR plan, the AMC will issue a health alert when the AQI forecast for the next 24 hours is "very poor" (301-400). When the AQI forecast rises to "severe" levels (401-500), a health warning will be issued.

Under the health alert, the nodal officer of the AIR program – Shah, the deputy health officer – will "inform urban health centres as well as private medical practitioners including pulmonologists, paediatricians to alert them to expect and be prepared for more cases of respiratory health effects".

If the AQI exceeds 401 (severe), the nodal officer will inform urban health centres, the local ambulance service, transport, traffic police, the government radio station, schools, colleges, and the estate department—which handles permissions for real estate—in order to control road dust and construction work.

What causes Ahmedabad's air pollution?

"Major contributors to air pollution are population, industries and vehicles. Rate of urbanisation and industrialisation leading to growth of vehicles make cities like Ahmedabad, Surat, Vadodara and Rajkot the hot spots for air pollution," according to this 2012 report by the Gujarat ENVIS centre.

Ambient levels of PM 2.5 from transport sources alone are expected to double by 2030 if no action is taken, according to this 2015 report by the Ministry of Health and Family Welfare.

Between 2000-01 and 2010-11, Ahmedabad's vehicles more than doubled from 1.2 million to over 2.6 million, with two-wheelers forming the largest proportion of the fleet. As of 2014-15, there were 3.4

million vehicles in the city. Ahmedabad also had more than 2,000 industrial air-polluting units as of May 2012, the report stated.

In Ahmedabad, “pollution comes from a variety of sources – power plants and brick kilns surrounding the district. We often believe that vehicles moving in immediate surroundings contribute to the pollution in cities. However, a plant or a kiln away from the city can also affect Ahmedabad considering the wind direction,” Sarath Guttikunda, researcher and founder of Urbanemissions.info (a repository of research, and analysis related to air pollution) told the Times of India in this 2012 report. Ahmedabad has two thermal power plants and more than 300 brick kilns, according to this 2012 paper.

“While Chennai has almost the same size and more industries, sea breeze blows PM 10 away from the city, reducing the suspended particulates in the air,” said Guttikunda. “Going by the PM 10 levels in Ahmedabad, the estimated premature deaths due to pollution is likely to be 4,950 as compared to 3,950 in Chennai.”

The Air Action Plan, if implemented, will reduce pollution from these sources through various measures such as improving fuel quality, phasing out commercial vehicles over 15 years old, traffic management, installing pollution control measures in industries and reducing pollution from thermal power plants.

A part of the plan was also to strengthen the air quality monitoring network and sponsor studies on health impacts of air pollution on the city, which is now underway.

How serious is Ahmedabad’s air-pollution problem?

In 2015, 153 of 168 days (93%) monitored for air quality in Ahmedabad remained “good” according to the national air quality index (AQI).

However, in 2016, the annual PM 2.5 average in Ahmedabad was 183.35  $\mu\text{g}/\text{m}^3$  (microgram/cubic metre), over 4.5 times the national ambient air quality standard of 40  $\mu\text{g}/\text{m}^3$  prescribed by the Central Pollution Control Board (CPCB). In 2017, the monitor installed by the CPCB in Maninagar to provide real-time air-quality data has been working intermittently.

IndiaSpend analysed air quality data from its monitoring systems, collectively called #Breathe, for two devices located in Ahmedabad for the duration March 14 to May 14, 2017, when CPCB data were unavailable.

Of the 62 days that IndiaSpend analysed, only six days (9.6%) fell within the WHO guideline of 25  $\mu\text{g}/\text{m}^3$ . However, only three of 62 days were over the national standard of 60  $\mu\text{g}/\text{m}^3$ , meaning that 95% of the monitored days fell within the permissible Indian standard for PM 2.5. However, the most severe air-pollution levels occur during the winter months of November, December and January, according to Mavalankar.

Levels of PM 2.5 over 60 may cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.

“While we need more data, roughly 40% of Ahmedabad’s population will fall within this vulnerable category,” Mavalankar said. Mukta Patil is an analyst with IndiaSpend.

## June 2017

### **How to offset negative health effects from urban air pollution**

*Date: 01-Jun-2017 Source: Accu Weather*



For tens of millions living in cities around the world, air pollution poses a slew of serious health hazards.

More than 80 percent of people in urban areas that monitor air pollution are exposed to air quality levels that exceed what the World Health Organization (WHO) deems safe.

Poor air quality can lead to the risk of stroke, heart disease, lung cancer and chronic and acute respiratory diseases, including asthma, the WHO

said.

Ozone pollution can constrict muscles in the airways, leading to shortness of breath and wheezing, according to the Environmental Protection Agency (EPA).

Long-term exposure has been shown to trigger asthma and may cause others to develop asthma, the EPA said.

However, there are some ways to combat the negative health effects.

Pollution levels are highest during busy times such as morning and evening rush hour. Avoid being outside during peak travel times, said Elizabeth Garland, MD, MS and associate professor at the Department of Environmental Medicine and Public Health at the Icahn School of Medicine at Mount Sinai in New York City.

It's especially wise to avoid exercising during these times or along busy roads.

"On the occasional days when ozone and particle pollution levels are extremely high all day, it may be prudent to avoid or reduce the intensity or duration of exercise," Garland said.

If exercising outdoors, morning hours are best, outside of busy travel times. Ozone levels are lower in the morning. Sunlight can also make ozone pollution levels worse throughout the day.

Garland recommended exercising in parks, wooded areas or less traveled streets.

"Reduce the amount of time spent outdoors, plan activities for morning or evening, perform less vigorous outdoor activities like walking instead of running and plan indoor activities," she said.

A diet rich in antioxidants can also offset some of the negative health effects.

"Some studies suggest a diet rich in fruits and vegetables may suppress some of the harmful effects of air pollution," Garland said. "Supplementation with antioxidants might modulate the impact of ozone exposure on the small airways of children with moderate to severe asthma."

Those with chronic cardiac and lung diseases, like asthma, should be extra cautious.

"Ozone is a known trigger for asthma exacerbation," Garland said.

Mortality rates are higher on high ozone concentration days. Babies and the elderly are also more susceptible.

As far as wearing surgical masks, Garland said they are not effective in filtering out small particulate matter.

Masks issued by the National Institute for Occupational Safety and Health work to block those particles; however, they have to be fitted and are not effective if one has facial hair.

To check air quality levels in the United States, use the AirNow website.

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## **How climate change and air pollution can affect your health**

*Date: 02-Jun-2017 Source: ABC News*

President Donald Trump's decision to pull out of the landmark Paris climate agreement could have far reaching consequences on climate and fossil fuel emissions in the future.

While climate change and pollution are often discussed in terms of environmental damage, they can also greatly impact public health.

Under the Paris agreement, the U.S. said it would cut carbon emissions by 26-28 percent from 2005 levels by 2025 and parties agree to try to hold global temperatures to no more than 2 degrees Celsius above temperatures in the late 1800s.

Jeffrey Shaman, director of the Climate and Health Program at the Mailman School of Public Health, pointed out that a changing climate may mean fundamental changes to human health.

Acquiring and using fossil fuels "has led to the disruption of the [climate] system that we have come to rely on," said Shaman pointing out civilization developed during the 11,000 year period of climate stability. "That disruption is a fundamental stressor on our system."

Without that climate stability, Shaman and other public health officials have found that there are risks to public health from multiple factors including extreme weather, spreading populations of insects and irritating airborne pollutants.

Cardiovascular Disease

The World Health Organization reports exposure to airborne pollutants increases the risk of numerous cardiovascular diseases including stroke, chronic obstructive pulmonary disease and lung cancer. They estimate approximately 3 million deaths a year are linked to exposure to outdoor air pollution.

"Air pollution continues take a toll on the health of the most vulnerable populations – women, children and the older adults," Dr. Flavia Bustreo, Assistant Director General at WHO, said in a statement. "For people to be healthy, they must breathe clean air from their first breath to their last."

The American Heart Association reports that air pollution is believed to have inflammatory effects on the heart, increasing the chance of cardiovascular problems. Pollution particles released by fossil fuel combustion may be so small they can more easily enter the body and irritate the lungs and the key blood vessels near the heart and lungs, according to the American Heart Association.

In some cases, people who already have underlying heart disease can have a heart attack after being triggered by high levels of pollutants causes plaque to rupture, according to the American Heart Association.

"This kind of pushes them over the cliff," Dr. Russell Luepker, a cardiologist and the Mayo professor in the School of Health at the University of Minnesota, said in a statement.

#### Asthma

Putting more ozone and other pollutants in the air can exacerbate or trigger asthma attacks in people with the condition.

The pollutants are believed to harm the respiratory system by causing inflammation and bronchospasms among other irritations. Infants and children are at particular risk due to their size

"Young children with asthma have long been regarded as a group who are very susceptible to adverse effects from air pollution because of their developing lungs, immature metabolic pathways, high ventilation rates per bodyweight, and increased time exercising outdoors," researchers wrote in a 2014 published study.

#### Insect-Born Diseases

Changing weather patterns mean changing territory for insects and other animals that can spread disease.

Shaman said it's still unclear exactly which species will be affected by a warmer climate but that they have already seen some disease-spreading insects change habitats.

"A good example might be *Aedes albopictus* [mosquito]," Shaman said, explaining the insect can spread Dengue fever, chikungunya and Zika. "It's been adapting in way we haven't seen it before."

The insect has now been found in New York City and other areas further north than expected.

Warmer temperatures have also been linked the spread of ticks from the northeast to other areas of the country. As a result of this increase in ticks, which may also be due to an increased deer population, the U.S. Centers for Disease Control estimates there will be an increase of Lyme disease cases northward.



## Heatstroke

The WHO estimates that the earth's temperature may rise between 1.8 to 4 degrees Celsius by the end of the century. This means longer hotter summers and increasing heatwaves.

Cases of heatstroke or other heat-related illness such as hyperthermia could spike should temperatures continue to increase and if heatwaves become more common. When weather gets too hot and humid, even sweating can't cool down the internal body temperature, allowing it to rise to dangerous levels.

In the U.S. Global Change Research Programs' Climate and Health Assessment, changing climate could mean an "increase of thousands to tens of thousands of premature heat-related deaths in the summer."

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## Noise, Air Pollution is Having a Negative Effect on Heart Health

*Date: 02-Jun-2017 Source: NEWS 18*



It is not just the pollution caused by traffic that is affecting our health, but also the noise according to a new European study, which found that exposure to excessive traffic noise is linked to a higher risk of heart disease.

Led by Dr Yutong Cai from Imperial College London, the new study looked at data from 144,000 adults in Norway and the Netherlands, and compared their exposure to levels of air pollution and traffic related noise to levels of blood biological markers, which are often used to

assess the risk of heart disease.

Although air pollution has already been linked to an increased risk of heart disease, stroke, asthma, and risk of death, and noise pollution linked to raised blood pressure, disturbed sleep, and an increase in stress hormones, until now little research has been carried out on the effects of noise pollution and air pollution -- which are often found together -- on health.

Defined as noise louder than conversation level -- around 60 decibels (dB) -- noise pollution mainly affects those living near busy roads, under flight paths, or those who are exposed to industrial machinery.

To look at its effect on health the researchers tested the participants' blood for a range of biological markers that could indicate heart disease, including C-reactive protein (CRP), a protein that indicates inflammation and can lead to health problems like heart disease, lipids and triglycerides, which are linked to heart attacks when found at higher levels, and blood sugar levels, which are linked to heart disease, diabetes and stroke at higher levels.

After taking into account lifestyle factors which could change levels of these biomarkers, such as age, sex, education, employment, alcohol consumption, and smoking status, the team found that an increase of

just 5dB in noise levels was linked to 0.3% higher blood sugar levels than those living in quieter neighborhoods.

In addition, a 10 µg/m<sup>3</sup> increase in air pollution levels was also linked to 2.3% higher blood sugar levels, a 2.6% increase in CRP levels, and a 10% increase in triglycerides independently of noise pollution, suggesting that both air pollution and traffic noise are having a negative effect on health.

As well as causing an increase in the biological markers in the blood, the team also believe noise could be increasing the risk of heart disease by causing long-term psychological stress due to lack of sleep and an increase in the production of stress hormones.

The team now plan to carry out further research focusing on the effect of air and noise pollution to add to the limited body of research in this area.

The findings can be found published online in the European Heart Journal.

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## High air pollution levels may hit India's solar power generation plans

*Date: 03-Jun-2017 Source: Live Mint*



New Delhi: High pollution levels could play spoilsport in India's solar power generation plans, say experts.

For instance, in the National Capital Region (NCR) centred on Delhi, high pollution levels have hit the efficiency of solar rooftop projects to the extent of 10%, the experts said.

Delhi is among the most polluted cities in the world. The World Health Organization ranked Delhi as the most polluted city in the world in

2014. In 2016, it ranked 11.

“Ninety per cent of our projects are in the metros, the top eight cities of India... They are usually either in centre of city or in industrial areas. And we have already seen, particularly in NCR, that whenever we set up a project we do a generation forecast based on 25 years of meteorological data,” said Andrew Hines, co-founder of CleanMax Solar, an on-site rooftop solar power developer. “We have already seen in NCR that the plant underperforms—radiation is consistently lower than what historical average suggests.”

There is no explanation other than pollution, he added. “Certainly if you have a look at pollution today or in the last few years versus last 25 years, that's the biggest factor. It's already driving generation numbers down in cities. Rural areas' pollution may not be as much of a factor although pollution doesn't stay contained. So if it is in NCR, it will be there in neighbouring states,” said Hines.

The loss on account of pollution assumes significance as the average efficiency of a solar panel is usually only around 16-22% of total capacity.

Experts said solar power generation is impacted by the dimming effect, a phenomenon wherein the amount of solar radiation reaching the earth's surface decreases due to the presence of pollutants in the air that absorb solar radiation and reflect it back into space.

"Dimming effect is well established and because of that the solar panels are bound to receive less solar radiation and that ultimately results in those panels generating less energy. If we can eliminate such particles from atmosphere, the efficiency will definitely improve," said Sumit Sharma, a fellow at the Energy and Resources Institute, a Delhi-based think tank working on environmental issues.

The annual mean of particulate matter (PM) under 2.5 micrograms found in every cubic metre of air or PM 2.5 in the data released in 2014 for Delhi was 153 ug/m<sup>3</sup>. It declined to 122 ug/m<sup>3</sup> in 2016.

"In the urban and industrial areas, we clearly see more particulate matter that impacts the generation capacity of solar panels due to soiling. What it means for us is frequent cleaning and possibly longer-term impact on the module health," said Sanjeev Aggarwal, managing director and chief executive of Amplus Energy Solutions Pvt. Ltd, which sets up solar rooftop projects.

This is in the backdrop of solar power projects being bid out at record low tariffs.

"It (efficiency hit) can be as high as 10% in NCR...10% may not sound like a big number but it is a big number from an investment perspective. So if your solar plant is underperforming by 10% from what you forecast, that is very significant... Normally you would see solar power plants fluctuating by +/-5% due to natural weather fluctuations but if there is a structural 10% drop across the 25-year life of the project, then that's a major thing especially if very aggressive bids are going on," said Hines.

Queries emailed to spokespersons of the ministries of environment, forest and climate change; and new and renewable energy remained unanswered at the time of going to press.

Driven by the government's ambitions for a green economy, India's solar power generation capacity has more than tripled to over 12,228 megawatts (MW) as of 31 March 2017 from 2,650MW in May 2014.

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## **Noise pollution and air pollution both have negative effects on heart health: study**

*Date: 03-Jun-2017 Source: CTV News*

It is not just the pollution caused by traffic that is affecting our health, but also the noise according to a new European study, which found that exposure to excessive traffic noise is linked to a higher risk of heart disease.

Led by Dr. Yutong Cai from Imperial College London, the new study looked at data from 144,000 adults in Norway and the Netherlands, and compared their exposure to levels of air pollution and traffic related noise to levels of blood biological markers, which are often used to assess the risk of heart disease.

Although air pollution has already been linked to an increased risk of heart disease, stroke, asthma, and risk of death, and noise pollution linked to raised blood pressure, disturbed sleep, and an increase in stress hormones, until now little research has been carried out on the effects of noise pollution and air pollution -- which are often found together -- on health.

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To look at its effect on health the researchers tested the participants' blood for a range of biological markers that could indicate heart disease, including C-reactive protein (CRP), a protein that indicates inflammation and can lead to health problems like heart disease, lipids and triglycerides, which are linked to heart attacks when found at higher levels, and blood sugar levels, which are linked to heart disease, diabetes and stroke at higher levels.

After taking into account lifestyle factors which could change levels of these biomarkers, such as age, sex, education, employment, alcohol consumption, and smoking status, the team found that an increase of just 5dB in noise levels was linked to 0.3% higher blood sugar levels than those living in quieter neighborhoods.

In addition, a 10 µg/m<sup>3</sup> increase in air pollution levels was also linked to 2.3% higher blood sugar levels, a 2.6% increase in CRP levels, and a 10% increase in triglycerides independently of noise pollution, suggesting that both air pollution and traffic noise are having a negative effect on health.

As well as causing an increase in the biological markers in the blood, the team also believe noise could be increasing the risk of heart disease by causing long-term psychological stress due to lack of sleep and an increase in the production of stress hormones.

The team now plan to carry out further research focusing on the effect of air and noise pollution to add to the limited body of research in this area.

The findings can be found published online in the European Heart Journal.

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## **WHAT TO BELIEVE? AIR POLLUTION DATA ON LED SCREEN NOT IN SYNC WITH APP**

*Date: 04-Jun-2017 Source: Ahmedabad Mirror*

India's first monitoring and early warning system for atmospheric pollution installed in the city to reduce impact of air quality on health is leaving users more confused than convinced. The LED screens displaying real-time Air Quality Index were installed by AMC as part of the Indian Meteorological Department's SAFAR project (System of Air Quality and Weather Forecasting and Research) at eight locations -- Navrangpura, Satellite, Bopal, Airport, Pirana, Raikhad, Rakhial and Chandkheda. But you may not want to believe what you see on the LED screens because the SAFAR website throws up a different real-time info, reveals Mirror Check conducted on June 1, 2 and 3. Besides, while pollution data of many areas show up on the LED screens but not on the SAFAR app or website. That is not all. Since

each screen displays data of all the eight stations, a user who needs to check the level of pollution in the area he is present in will have to wait for 30 minutes for the relevant info to pop up. At times, the screen shows up lengthy messages that one fails to comprehend while driving down. Why is API important? The Air Quality Index (AQI) converts air quality data of different pollutants and assigns it an index value, nomenclature and colour to educate people of pollution-related health hazards and prompt self-mitigation of the same. An AQI of 0-100 is Good, 101 -200 = Moderate; 201-300 = Poor; 301-400 = Very Poor; 401-500 = Severe. However, Mirror kept a tab on the LED screens and the SAFAR cellphone application on June 1, 2 and 3 to discover that there was absolutely no synchronisation between the two. Defending the system, Project Director of Indian Institute of Tropical Meteorology Gufran Beig said, “Our team is working on the interface in Ahmedabad. The screens are refreshed every half an hour, so there may be small differences.” He further added, “We have received feedback that the information is a bit complicated and not user-friendly. So our team is making it more graphic-heavy, interactive and easier to understand.” The screen set up outside Collector office shows air quality of even the remaining stations. It shows Raikhad as having AQI of zero on June 1 which means the AQI is good as per SAFAR parameters. But when Mirror checked the SAFAR website at the same time, it showed ‘Moderate’ air quality for Raikhad. Similarly, AQI shown on the LED screens for Ahmedabad airport and Pirana were markedly different from the AQI on SAFAR mobile application. SAFAR has put in Rs 20 crore to install eight monitors in Ahmedabad and two in Gandhinagar, said sources. ‘Data is confusing’ Environmental scientist and researcher Mahesh Pandya said, “The data relevant to my area takes too long to come up on the screen. Besides, it appears confusing and non-reliable to someone like me who comes from the field of environmental research. Besides, the info displayed is too technical for the common man to understand.” Another info SAFAR project reveals is that air pollution in Ahmedabad is worse than Pune. “The situation may improve in monsoon and winter,” confirms Beig. Meanwhile, AMC has made several plans to inform citizens about the pollution forecast in several interactive ways. Chirag Shah, Deputy Health Officer West Zone said, “We have plans to give coloured flags to all municipal schools the day they reopen and sensitise children and principals about the AQI. Flags indicating the next day’s pollution levels will be put up at the schools so that the people passing through the area know of the quality of air.” The recent meeting between the project stakeholders also discussed a plan to send SMSes on air pollution forecast. Confirming the same Dr Dileep Mavlankar, director of Indian Institute of Public Health, said, “We plan to update doctors, schools and other government bodies in the area of pollution forecasts through SMS so that they can take necessary precautions. SAFAR project was launched in collaboration with Indian Institute of Tropical Meteorology, Pune, Ministry of Earth Science, Government of India, Indian Meteorology department, Earth System Science Organisation and Global Atmosphere Watch and is supported by the AMC.

#### PIRANA:

An LED screen near Vishala showed pollution level at Pirana as green which falls under ‘Good’ Air quality Index. However when checked online at the same time, AQI was Moderate with higher levels of PM 2.5, PM 10 and CO2 at Pirana. The screen also showed technical errors in several slides.

#### SATELLITE:

The screen set up outside ISRO gate showed pollution level of Danapith to be 'Moderate' and forecast for Vastrapur to be 'Satisfactory'. Interestingly both the areas do not appear either on the mobile application or website of SAFAR where they share real-time data.

#### OUTSIDE AMC OFFICE:

A screen is set up outside AMC office, the screen showed different readings when checked on June 2. It showed AQI 0 in Raikhad which means very good environmental conditions, way different from what was shown on mobile application at the same time. The application showed AQI 102 in Raikhad at 11.37 am.

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## Air quality worsens in Delhi, Ozone level 3.4 times above normal: CSE Study

*Date: 04-Jun-2017 Source: Business Standard*



Already dealing with the high particulate matters in the air, the national capital this summer has witnessed an alarming build-up of ozone, a Centre for Science and Environment (CSE) study said on Saturday.

According to the CSE findings, on several occasions and several locations, between February and May 2017, the ozone concentration was found to be very high — 3.4 times the normal standard.

"Early deaths due to ozone pollution are the highest in India. The new burden of disease study

by Health Effect Institute has shown that early deaths due to ozone have jumped by 148 per cent in India," it said.

Additional analysis also shows heat waves and sunshine have increased the frequency of days with unhealthy levels of ozone.

Ozone, a more reactive form of oxygen, causes lung-related issues and heavy breathing. According to experts, its not directly emitted but is formed in a reaction between nitrogen oxides emitted from diesel vehicles and hydro-carbons in the presence of sunlight.

Its standards are based on hours -- the eight-hour standard concentration is 100 units (microgramme per cubic metre) and one-hour standard is 180 units.

"The share of days violating the eight-hour Central Pollution Control Board (CPCB) standard of 100 microgram per cubic metre in February was 12 per cent -- this increased to 19 per cent in March, 52 per cent in April and finally a whopping 77 per cent in May," the CSE said, adding that the trend shows that the ozone pollution in the city was worsening progressively with the onset of summer.

"Delhi and NCR are in the grip of multi-pollutant crisis. Even before the health risk from particulate matter could be addressed, deadly ozone has raised its ugly head in Delhi and NCR.

"Without a time-bound implementation strategy and preventive action, this can deepen into serious public health crisis. This will spare neither the rich nor the poor," said Anumita Roychowdhury, Executive Director, Research and Advocacy and head of CSE's air pollution programme.

According to the experts, diesel vehicles are one of the major sources of the nitrogen oxides (NOx) and thus indirectly the ozone.

"Diesel vehicles produce five times higher the NOx than the petrol vehicles... The BS-6 standard fuel, which would be launched in India in 2020, would drop this emission by 80 per cent," said Vivek Chatopadhyay of the CSE.

He added that while normal masks could not save us from ozone, vegetation was also among the worse sufferers due to it.

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## WHO: United States Among Least Polluting Nations on the Planet

*Date: 05-Jun-2017 Source: Breitbart*



Despite recent attempts to paint the United States as a major global polluter, according to the World Health Organization (WHO), the U.S. is among the cleanest nations on the planet.

In the most recent WHO report on air pollution, the United States was listed as one of the countries with the cleanest air in the world, significantly cleaner in fact than the air in Germany, Italy, Switzerland, the UK, Japan, Austria and France.

While France and other G7 countries lamented the U.S. exit from the Paris climate accord, America's air is already cleaner than that of any other country in the G7, except Canada with its scant population.

Following standard practice, the WHO measures air pollution by the mean annual concentration of fine suspended particles of less than 2.5 microns in diameter. These are the particles that cause diseases of all sorts and are responsible for most deaths by air pollution.

According to the WHO, exposure to particulate matter increases the risk of acute lower respiratory infection, chronic obstructive pulmonary disease, heart disease, stroke and lung cancer.



The report, which analyzed the “annual median concentration of particulate matter with an aerodynamic diameter of 2.5  $\mu\text{m}$  or less (PM<sub>2.5</sub>) for both urban population and rural and urban population” found that the United States was one of the most pollution-free nations in the world.

The annual mean concentrations of particulate matter in the air range from less than 10 to over 100  $\mu\text{g}/\text{m}^3$ , the report states. At the very low end of the spectrum, the United States has a concentration of just 8, while China has a concentration more than seven times higher at 59, India at 66, Egypt at 101 and Saudi Arabia with the worst air pollution at 127.

“The mean annual concentration of fine suspended particles of less than 2.5 microns in diameter is a common measure of air pollution,” the WHO states.

The WHO report is corroborated by a series of other such studies on air and water pollution.

In a recent list of the 25 cleanest cities in the world, the only country to boast three cities among the cleanest on the planet was the United States of America, with Chicago coming in second place, Honolulu coming in fourth, and Portland, OR, coming in sixteenth. Unsurprisingly, no cities from China, Russia or India made the list at all.

Similarly, another list of the 15 most polluted cities in the world featured three cities from China, three cities from Saudi Arabia, and a whopping seven cities from India. No U.S. city made the list.

A third list, ranking the ten cleanest and ten most polluted cities in the world, placed two U.S. cities on the list of cleanest cities on the planet. The list of the most polluted cities in the world was led by two cities from China followed by two more cities from India. Two Russian cities also made the list. Again, no U.S. cities were found here.

With such relatively clean air throughout America, how can even reputable news agencies like Reuters continue spreading the well-worn lie that the United States is one of the “biggest polluters” in the world?

Rather than follow the time-tested practice used by the World Health Organization, which measures levels of disease-causing pollutants that get into people’s lungs, some have played a shell game, swapping a new measure of “pollution” based solely on emissions of carbon dioxide.

The problem with this ploy is that carbon dioxide is not a pollutant and it is dishonest to say it is. CO<sub>2</sub> is colorless, odorless and completely non-toxic. Plants depend on it to live and grow, and human beings draw some into their lungs with every breath they take to no ill effect whatsoever.

Growers regularly pump CO<sub>2</sub> into greenhouses, raising levels to three times that of the natural environment, to produce stronger, greener, healthier plants.

Current levels of carbon dioxide concentration in the environment are substantially lower than they have been during earlier periods in the planet’s history. Without human intervention, the concentration of CO<sub>2</sub> has climbed as high as 7,000 parts per million (ppm) in prior eras, whereas at present the concentration is just over 400 ppm.

Some experts, such as UN climate scientist Dr. Indur Goklany, have defended rising CO2 levels as a good thing for humanity. Goklany has argued that the rising level of carbon dioxide in the earth's atmosphere "is currently net beneficial for both humanity and the biosphere generally."

"The benefits are real, whereas the costs of warming are uncertain," he said.

While the United States must remain vigilant to keep the level of real, dangerous pollutants to a minimum, it may take some consolation in the fact that among G7 nations, it has the cleanest air of all.

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## **Air pollution fears see demand for diesel cars fall by fifth**

*Date: 05-Jun-2017 Source: The Guardian*



Demand for new diesel cars plummeted by a fifth last month amid rising concerns over air pollution.

Approximately 81,500 new diesel cars were registered in the UK in May, down 20% on the same month last year, according to the Society of Motor Manufacturers and Traders. This represented a fall in market share from 50% to 43.7%.

The fall comes amid a flurry of negative publicity around the impact of diesel-fuelled vehicles on the environment and people's health.

Air pollution has been linked to an estimated 40,000 early deaths a year and 37 out of 43 areas across the UK are exceeding legal EU limits of the key pollutant, nitrogen dioxide, much of which comes from diesel engines.

Volkswagen admitted in September 2015 that almost half a million of its diesel vehicles in the US were fitted with software to switch engines to a cleaner mode when they were being tested for emissions.

The manufacturer said 11m of its vehicles were affected worldwide – including almost 1.2m vehicles in the UK.

Areeba Hamid, a transport campaigner for Greenpeace UK, said buyers were responding to negative sentiment around diesel.

"The drop in the sales of diesel cars is no accident, and it is happening all over Europe," she said.

"People are consciously choosing to buy cleaner vehicles as they no longer want to be complicit in our cities' pollution problem and condemning our children to the health impacts it causes.

"But car companies remain incorrigible, still selling us brand new diesel cars that pollute up to 15 times more than they are supposed to.

“Cleaner technology exists. Instead of lobbying for weaker standards and gaming tests, car manufacturers need to ditch diesel altogether and go electric.

“This data shows that buyers are beginning to do just that, what are the car manufacturers waiting for?”

Jim Holder, the editorial director of What Car? magazine, said he was surprised by “the scale of the drop-off” in demand but he thought drivers may be responding to uncertainty about future regulation.

He said: “There is no clear government strategy on diesels. There has been a wave of negative headlines around the fuel but at the same time the taxation system continues to incentivise them.

“These mixed messages do nothing for consumer confidence, nor does the blanket reference to all diesels being dirty. There have been significant steps in reducing emissions, particularly with the latest Euro 6 regulation compliant units that are on sale now.”

Last month the government published long-awaited plans to improve air quality, including a “targeted” scrappage scheme to take the most-polluting vehicles off the road.

Clean-air zones are being established in several towns and cities across England, which could involve charges for the oldest and dirtiest vehicles. The most polluting vehicles will be forced to pay up to £24 a day to drive in central London from 2019 under plans unveiled by the mayor of London, Sadiq Khan.

Holder predicted that sales of diesel cars will continue to suffer while there is uncertainty over future policy.

He said: “Until there is clarity over where future tax incentives will lie, and what city centre charges will or won’t be imposed, diesel sales will remain under pressure.

Greg Archer, the clean vehicles director at campaign group Transport & Environment, said buyers also had one eye on the depreciation in value that diesel cars could suffer.

“The sales figures show drivers are losing faith in dirty diesel and are beginning to turn to clean electric alternatives,” he said.

“Drivers know resale values will be rock bottom in a few years time as more towns ban or charge diesels to enter. Carmakers need to recall and repair these polluting monsters that continue to poison both the air and their reputation.”

In May registrations of new petrol cars rose by 0.4%, while demand for alternatively fuelled cars increased by 46.7%.

The overall new car market fell by 8.5%, the second consecutive month of decline. Many buyers brought orders forward to March ahead of new vehicle excise duty rates coming into force which mean the vast majority of new cars now incur a larger fee.

The SMMT’s chief executive, Mike Hawes, said: “We expected demand in the new car market to remain negative in May due to the pull-forward to March – which was an all-time record month – resulting from VED reform. Added to this, the general election was always likely to give many pause for thought and affect purchasing patterns in the short term.”

## Measuring air quality will soon be only a click away

*Date: 05-Jun-2017 Source: Hindustan Times*

Beijing: Zou Yi remembers the day clearly, December 1, 2015. A thick smog had enveloped Beijing city. He took a photograph and posted it on WeChat, China's version Facebook. It received 130 million hits.

"There was so much smog, you couldn't do anything, you could not see anything," he recounted, sitting at a Beijing café.

The smog that persisted for days was the worst the city had seen in many years and even the authorities could not turn a blind eye. For the first time, the Chinese government declared a 'Red Alert' because of the dangerous levels of air pollution.

The photograph that Yi took that smoggy day in December was just one of thousands that he has taken over 4 years. Every day since 2013 he has taken a snap of the Beijing TV Centre building from the window of his 13th floor apartment. He posts a photograph of his morning view on China's social media platforms Wechat and Weibo daily.

"It is a record, to raise awareness about air quality," he said. Yi left a career as an engineer working in many conflict-ridden parts of the world from Pakistan to Liberia, to devote himself full-time to the task of documenting Beijing's struggle with poor air quality. "I have to find the truth, to present the facts."

The snaps of the Beijing TV Centre are an immensely valuable resource for anyone studying air pollution because it provides an unbroken record of pollution from the same spot. Though Yi only posts atleast one photograph a day, he takes around 200-300 photographs from different parts of the city and has built a repository of over 400,000 photos from Beijing.

Not content with merely documenting the air pollution problem Yi decided to use his archive for an even more ambitious project. Two years ago he conceived the idea for a mobile application for analysing air quality based on photographs.

The tool applies deep learning techniques, overlaying images taken by Yi over the years with actual air pollution data for the particular day, which helps the software read any image for air quality information. Users can take a snap on the app and get instantaneous air quality measurements. For now, it analyses the images for PM 2.5 (particulate matter that is 2.5 microns or less in size) levels that is one of the most insidious kinds of air pollutants.

A Global Burden of Disease study estimated that 1.6 million people died in China in 2015 from outdoor air pollution-related health impacts. In India, the number is 1.1 million.

"India now approaches China in the number of deaths attributable to PM2.5," said the report by the Health Effects Institute and the Institute for Health Metrics and Evaluation.

On a recent afternoon, Yi held up his phone to capture a highrise in north Beijing, generating readings that he then compared with the government's air quality data for that day. The values of the official data for PM 2.5 concentration were significantly lower.

For the longest time, the Chinese government did not make air quality data easily available to the public. In 2008, the American embassy in Beijing started to release air quality measurements from their own rooftop air-quality monitor. It was aimed at Americans living in the city but the air quality tweets went out every hour, ruffling Beijing residents.

In a tweet from November 19, 2010, the U.S. embassy termed the air quality in Chinese capital “crazy bad,” it had shot outside bounds of the air quality index that U.S. Environment Protection Agency prescribes. By then there was already a growing awareness among Chinese citizens demanding that the government at least acknowledge the problem and do something about it.

In the initial years, the Chinese government data vastly varied from U.S. embassy dispatches leading the public to wonder if they were being misled. Yi said that these days the measurements from the government are mostly in line with the American embassy. But issues still remain.

A long-standing debate around air pollution monitoring has to do with the location of monitoring stations. Yi believes air pollution should be measured in places where it affects people the most; in heavily populated city centres and residential areas rather than far corners of cities and towns.

At a conference earlier this year an official from the Central Pollution Control Board, India’s apex pollution regulator, suggested that media discussions about Delhi’s air pollution were biased because they quoted readings from monitoring stations in the worst-polluted areas. The placement of the monitors can actually also present a rosy picture. Yi explained how the discrepancy in his readings and the official air quality data could be explained by the fact that the Chinese government’s monitoring station could be located in a leafy park, where air quality was likely to be better.

His method of capturing air pollution data puts the power literally in people’s hands. They can capture air pollution at any spot by clicking a photograph.

About 6 months ago Yi launched Beijing AirNow, a non-governmental organisation, which works with scientists across the world. The photo- documentation initiative that he started in Beijing has now expanded to 20 Chinese cities and 7 international cities with the help of volunteers and collaborators. New Delhi is not one of the cities on the list yet, but Yi is keen to reach out to potential partners in India’s capital.

The software is still undergoing validation, but he hopes to release it for the public in a few months. He will distribute it free he said because it is a public service for him. While he wants millions of people across the world to make use of his app the real intended beneficiaries are somewhat closer home. “I am doing this not for myself but for my children,” he said.

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## **New Hyper-local Air Pollution Map Developed**

*Date: 06-Jun-2017 Source: NEWS 18*

Using specially equipped Google Street View cars to measure air quality on a block-by-block basis,



researchers, including one of Indian-origin, have developed a detailed and extensive local map of air pollution for an urban area.

Most large urban areas tend to have only one air quality monitor for every 100 to 200 square miles. In comparison, the new mobile approach maps air pollution every 100 feet, or at about four to five locations along a single city block.

"Air pollution varies very finely in space, and we can't capture that variation with other existing

measurement techniques," said lead researcher Joshua Apte of The University of Texas at Austin in the US.

"Using our approach and analysis techniques, we can now visualise air pollution with incredible detail. This kind of information could transform our understanding of the sources and impacts of air pollution," Apte added.

The research was conducted in partnership with the US-based non-profit Environmental Defense Fund (EDF), Google and Aclima, a California-based provider of environmental sensors.

By integrating Aclima's sensor system into Google Street View cars, the team mapped air pollution in 78 square miles of Oakland, California, over an entire year, collecting one of the largest data sets of air pollution ever measured of single city streets.

This new technique maps urban air pollution at 100,000 times greater spatial resolution than is possible with traditional government air quality monitors, according to a study published in the journal *Environmental Science & Technology*.

The team believes that their hyper-local mobile measurement system could be implemented in many cities throughout the world, providing detailed air quality information for citizens, families, local governments and scientists.

The new technique could address major air quality monitoring gaps worldwide and has the potential to transform the way air pollution is monitored in urban areas as well as shed light on the health effects on city dwellers.

"You could use this information when you're picking a school for your kids. Is there a school with a playground that might have better air quality because your kid has asthma," Apte said.

"This hyper-local information about consistent air quality can be really useful for people, especially those who are vulnerable because of age or health condition," Apte noted.

## **KNOW YOUR RIGHTS: The right to protection from air pollution**

*Date: 07-Jun-2017 Source: The New Times*

Air is a necessity for the existence of all living things. Clean air is necessary for healthy living. Without clean air, people fall sick, plants die and the environment gets destroyed. It is for this reason that a law which prevents air pollution is in place.

By definition, air pollution according to article one paragraph one of law no. 18/2016 of 18/05/2016, the law governing the preservation of air quality and prevention of air pollution in Rwanda, is a “condition of the atmosphere in which pollutants are present in such a quantity as to be likely detrimental to public health, flora, fauna, property or to interfere with materials and environment.”

Flora and fauna simply mean plants and animals in a given place.

Air pollutants include chemicals, gas and other dangerous and toxic substances that interfere with the cleanliness of the atmosphere. The emission of such substances is “prohibited unless such emission is authorized by the Authority in charge of the protection of environment.” This is according to article 6 of the law governing the preservation of air quality and prevention of air pollution in Rwanda.

The above-mentioned article adds that any person who produces, transports, trades, uses, stores or possesses dangerous chemicals or toxic substances must preserve the safety of human beings and other living things while also avoiding environmental degradation.

Although Rwanda Environment Management Authority is the authority in charge of preserving the environment, preserving air quality is every person’s responsibility. This is according to article 15 of law no. 18/2016 of 18/05/2016 which states: “Every person has the obligation to safeguard and preserve the air quality.”

Preserving air quality requires abstaining from participating in activities that pollute the atmosphere. Such activities are mentioned in article 2 of Ministerial Order N°003/16.01 of 15/07/2010 preventing activities that pollute the atmosphere.

One of the activities mentioned as an air pollutant is open burning of substances and it is prohibited according to article 3 of the ministerial order that prevents activities that pollute the atmosphere. Exceptions are made for campfires as long as the wood used is not coated with paint or glue. Fires which are set for agricultural control of pests and diseases are also allowed. It is also acceptable to have kitchen fires for cooking.

Another element considered to pollute the environment is exhaust fumes from vehicles. As such, article five of the ministerial order that prevents activities that pollute the atmosphere says, “The traffic police shall carry out road worthiness tests on vehicles and if need be ban further use of a smoking vehicle until it has been properly repaired.”

Article 5 of the ministerial order that prevents activities that pollute the atmosphere prohibits industries from emitting dark smoke from their chimneys into the air.



As a country that is developing at a fast rate, there is always the risk of air pollution. Because of this, the ministerial order that prevents activities that pollute the atmosphere says that the list of pollutants can be updated on the basis of research advancement or whenever it is deemed necessary.

Stay vigilant; air pollution affects everything and everyone.

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## **Breaching Regulations, Deadline for 300 Thermal Plants on Adoption of Air Pollution Norms Extended**

*Date: 08-Jun-2017 Source: The WIRE*



Disregarding new environment regulations, the Central Electricity Authority (CEA) has given more than 300 thermal power plants two- to five-year reprieve from adhering to the strict air pollution standards that come into force this year. The CEA has set in place a roadmap for the plants to install essential pollution abatement technology earliest by 2020 instead of doing so by end 2017.

The new environmental regulations requiring the installation of this technology kick in from December 2017 for all existing thermal power

plants. For the stressed thermal power sector this implies a deferment of capital expenditure ranging between Rs 50-75 lakh per megawatt in the least, experts estimate.

The government has decided to do so without amending the regulations which require thermal power plants to adhere to the new pollution standards under the Environment Protection Act, 1986 from December 2017.

After consultation with the power ministry, the environment ministry set in place improved pollution norms for the thermal power industry in 2015. These rules came into force this year. They require all the thermal plants to become more water efficient and to further reduce the pollution they spew into the atmosphere. These include the hazardous oxides of sulphur (SO<sub>x</sub>) and nitrogen (NO<sub>x</sub>), mercury and particulate matter.

To meet the new pollution norms for SO<sub>x</sub> the plants are necessarily required to retrofit or install a technology called, flue-gas desulfurisation or FGD which helps remove sulphur dioxide from exhaust flue gases of fossil-fuel power plants. Industry estimates suggest installing the FGD costs about Rs 50-75 lakh per megawatt of plant capacity. Besides the costs involved, the industry, the power ministry and power sector regulators also needed to draw up a plan for how the costs would be calculated for tariff setting and the downtime that plants would require to fit the technology.

The time needed for meeting other pollution standards was relatively shorter and the investment lower. To meet the norms by 2017 the plants should have begun working to install the pollution abating technology

from 2015 when the norms were put in place giving the two-year window period. That did not happen. Instead, almost the entire industry began arguing back with the government against the rules once they had been officially notified.

The power ministry too represented the views of the industry to the environment ministry, with at least two meetings held at the ministerial level. A decision to officially amend the notification lowering the standards or defer their implementation was not taken.

Instead, now the central electricity authority has given 300 power plants the deadline ranging between 2020-2024 to put the FGD technology in place. The rest four plants have been given a deadline of 2019. None are expected to adhere to the pollution norms before that if one goes by the CEA's "Phasing Plan".

The CEA did not respond to emailed queries asking how the plants could be allowed to delay implementation of an existing environmental regulation.

The environment ministry too did not respond to written queries. But officials explained the ministry's position on the issue speaking off the record. "We are clear that we are not going to lower the standards. But, we have principally agreed with the power ministry to look at it on a case to case basis to defer the implementation. The CEA is yet to send us its proposed plan for installation of the technology in the thermal power plants. When it does the Central Pollution Control Board (CPCB) shall review it on a case to case basis and decide or negotiate the right time frame for each plant to install the technology," an official said.

He added, "We do not need to amend the notification. We shall decide on a case to case basis for each plant and accordingly use the Section 5 provision of the Environment Protection Act, 1986. Our experience shows that industry eventually follows when we enforce under these provisions."

He also said that in many cases countrywide ambient air SOx emissions were not breaching safety levels requiring thermal power plants had to necessarily meet the standards by 2017 itself. He explained that SOx standards had been mandated also because they add up to the generation of secondary particulate matter pollution load.

The Centre for Science and Environment estimates that about 45% of the SOx pollution from the industrial sector comes from thermal power plants.

Documents accessed by Business Standard show that the CPCB has over last year dismissed all excuses by the thermal power industry to not follow the new norms by giving detailed reasoning.

In an earlier reply to an RTI, the environment ministry had said there were no plans to change the new norms. This contradicted what the power minister Piyush Goyal had reportedly told media in February 2017. He was reported saying, "We took up the issue with Environment ministry. They agreed with us that the deadline should be extended, so that old polluting plants can be replaced with supercritical super-efficient plants. This will reduce the pollution to just 10% of the existing (emission) levels of these old plants."

The environment ministry is also facing a case before the National Green Tribunal. In it, the petitioners have claimed the ministry had not enforced the new regulations in the case of several new thermal plants.

The regulations require new plants to adhere to the stricter norms from 2017. The government has defended itself claiming while the project proponents have not proposed following the norms in their mandatory environmental impact assessment, the environment ministry requires them to do so when it sets either the scoping standards or approves the project.

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## **Election result could impact air quality policy**

*Date: 09-Jun-2017 Source: Air Quality News*



Environmental policy experts have raised concerns that government action to address air pollution in the UK could be delayed following today's General Election result.

Theresa May's Conservative Party is to form a government with the support of Northern Ireland's Democratic Unionist Party, having lost a slender majority following polling yesterday which has resulted in a hung parliament.

This comes amid a legal challenge over the government's plans to reduce nitrogen dioxide in England's towns and cities.

Prior to the election, the government was forced to publish its proposals to address the UK's non-compliance with EU air pollution limits, after the High Court ruled that election 'purdah' restrictions did not prevent the publication of the plan.

A draft of the plan was published for consultation on 5 May, with a deadline for the final version of the proposals due to be released by the end of July.

However, since the publication of the draft plan, environmental campaign group ClientEarth has launched a further challenge to the government's proposals, describing the draft plan as 'flawed' (see [airqualitynews.com](http://airqualitynews.com) story).

A date has yet to be set for the legal challenge to be heard, and it is feared that political decision-making could become complicated whilst a new government takes shape.

### **Stability**

Laurie Laybourn-Langton, IPPR Senior Research Fellow said: "The UK is entering a likely period of political instability at a crucial time for air quality. There is the potential for this to affect the timing and quality of its plans to overcome air pollution. The new government must ensure that this does not happen, and will likely face legal implications if it does not."

Speaking to [airqualitynews.com](http://airqualitynews.com), Neil Wallis of the Low Carbon Vehicle Partnership, said: "We already knew before the election that the UK government needed to step up its efforts to meet air quality

standards, and this challenge still stands. The EU currently plays a vital role in ensuring compliance with environmental standards. As Brexit goes ahead, we will need UK enforcement mechanisms to ensure that citizens can hold this and future governments to account if they fail to uphold their own policies.”

## **Brexit**

Brexit negotiations, which had been due to commence from next week, could also be crucial in the development of future government strategy over air quality.

The UK is currently subject to several EU Directives which require action to address air pollution, and it had been hinted that environmental regulations may be brought into UK law ahead of Brexit.

Yesterday’s result has increased the possibility that the UK will negotiate a ‘soft’ Brexit – which potentially means a smoother transition for existing environmental legislation.

Shaun Spiers, Green Alliance director, said: “We already knew before the election that the UK government needed to step up its efforts to meet air quality standards, and this challenge still stands. The EU currently plays a vital role in ensuring compliance with environmental standards. As Brexit goes ahead, we will need UK enforcement mechanisms to ensure that citizens can hold this and future governments to account if they fail to uphold their own policies.”

The Environmental Industries Commission, which represents green businesses has claimed that a soft Brexit could ‘increase certainty’ in environmental markets.

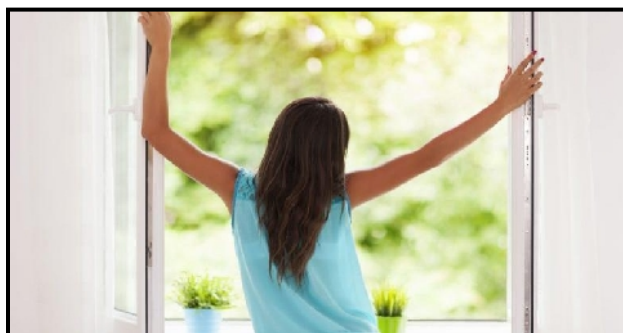
In a statement, the organisation said: “Last night saw the Government’s majority in Parliament ended and the probability of a Conservative minority Government to be formed in the hours and days ahead.

“It may well be that a weak Conservative Government ends up negotiating a softer Brexit, which in turn could make it more likely that UK environmental law post-Brexit will mirror EU law indefinitely (the EU Parliament has insisted that full UK compliance with all EU environmental regulations should be a non-negotiable part of any UK-EU trade deal), which could increase certainty in some environmental markets.”

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## **Breath of fresh air: 4 ways to improve air quality at home**

*Date: 09-Jun-2017 Source: Star 2*



Our house serves as a sanctuary where we relax and spend a lot of time in.

However, are you aware of unseen dangers within your four walls? Many people do not realise it but the air we inhale at home can be quite unhealthy.

The United States Environmental Protection Agency (EPA) ranks indoor air pollution as one of

the top five environmental health risks. It further states that the primary cause of poor indoor air quality in homes come from indoor pollution sources that release gases or particles into the air.

Inadequate ventilation can increase indoor pollutant levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out of the home.

There are generally two categories of pollutants that can affect your home air quality:

a) Particles which include dust, smoke, pollen, animal dander and tobacco smoke. Pollutants in this category are also generated from combustion appliances such as cooking stoves. Tiny organisms such as dust mites, moulds, bacteria and viruses are also part of such particles.

b) Gaseous pollutants which come from combustion processes. Sources include gas-cooking stoves, vehicle exhaust and tobacco smoke as well as building materials, furnishings, and use of products such as adhesives, paints, varnishes, cleaning products and pesticides.

What you can do:

a) Keep your home well ventilated

How often have you seen houses with their doors and windows closed all the time and air-conditioning switched on 24/7? This is unhealthy because it just circulates the stale air within, as well as any indoor air pollutants found.

Instead, open your windows and doors to promote airflow, and switch on wall or ceiling fans regularly. Maintaining a good flow of fresh air is also encouraged in feng shui practices.

Exposure to cooking fumes can also be harmful to health. So, the next time you cook fried rice or tumis (stir-fry) sambal belacan, open all your kitchen windows and make sure your kitchen exhaust fans are working properly.

Increasing the amount of outdoor air coming into your home and good ventilation will help to remove or dilute air pollutants from indoor sources.

b) Get rid of the source of pollutants/reduce their emissions

It's advisable to go through your house with a fine-tooth comb and identify the products and items that can be a source of the pollutants listed above.

Many Asians practice the burning of incense at home. However, studies have shown that incense smoke can be highly toxic and linked to the development of certain diseases.

Pressed-wood products – like those used in built-in kitchen cabinets or wardrobes – containing formaldehyde resins are often a source of formaldehyde in homes.

Animal dander, another culprit, can cause reactions in people who are specifically allergic to these triggers. Dander refers to tiny flecks of skin shed by cats, dogs, birds and other animals with fur or feathers. It's therefore important to vacuum and keep the premises clean, while maintaining good ventilation at all times.

### c) Adopt healthy practices

Tobacco smoke is a major contributor to indoor air pollution. Do not smoke in the house, or even on your balcony.

Indoor plants can also help promote indoor air quality. According to several studies, the average houseplant can remove formaldehyde, benzene, and a host of other toxins that can be indoors. Examples include the Chinese Evergreen, Bamboo Palm or the Geranium plant.

However, be careful of potential allergies, the use of fertilisers and pesticides indoors, adequate ventilation and air flow, and the level of moisture maintained for the plants.

If there is mould growth in your home, clean up the mould and fix the water problem that caused the moisture built-up. Moulds produce allergens, irritants and sometimes, potentially toxic substances (mycotoxins).

### d) Opt for natural air fresheners

Many homes rely on synthetic air fresheners to make their homes smell good. However, those with sensitive noses will know that the fragrances can be a bit too strong at times.

Rather than reaching for those synthetic air fresheners, why not try out the natural alternatives? Not only do they smell good, they also come with other benefits like chasing away pests.

Try out natural remedies like leaving lemon or lime rinds, pandan leaves, fresh coffee grounds, charcoal or baking soda in small bowls around the house.

It's believed that pandan leaves produce a smell that acts as a deterrent to cockroaches, while coffee grounds can be used to repel pesky pests and pets.

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## Sensors to monitor Rajkot's air quality

*Date: 09-Jun-2017 Source: The Times of India*

Rajkot: How fresh is the air you breathe? Residents of Saurashtra's commercial capital will soon know the quality of air with the Rajkot Municipal Corporation (RMC) planning to install 50 environment sensors across the city.

RMC in collaboration with the police commissioner will install the sensors that will not only give information about the pollution levels but also warn about extreme weather. The move is important considering increasing vehicular population in the city and dwindling green cover. The environment sensors will be installed at crowded places like Kalawad Road, Race Course, Raiya Road, among others.

Rajkot has only 1.37 lakh trees which is equivalent to 10 trees per 100 people. Officials said that the city needs a tree cover of 3.63 lakh to meet international standards. Installing environment sensors is part of RMC's Eye-Way project that also includes a huge network of CCTV cameras to monitor and regulate

traffic movements. The city traffic police will soon start issuing e-challans using CCTVs installed at various crossroads.

Municipal commissioner Banchhanidhi Pani told media persons on Thursday that the entire city will be covered through CCTV cameras. The city will have 973 CCTV cameras installed at 172 places. The installation of CCTVs, LED advertising board and IOT environment sensors are aimed at moving towards Smart City. The CCTV network will also help RMC monitor its various civic activities like movement of garbage vehicles and house-to-house garbage collection.

In case of extreme emergency situations like terrorist attack, the LED display boards connected with sensors will warn people to stay away from affected places. The city will also have 250 Wi-Fi access points. The Eye-Way project will be implemented at an expenditure of Rs 69 crore and one control room each will be set up at the RMC office and police commissioner's office.

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## Alarmed over poor air quality, Gurgaon schools install purifiers

*Date: 11-Jun-2017 Source: Hindustan Times*



City residents are alarmed over the air quality of the city, as it has continued to be marked poor over the last five months. With the city's PM 2.5 reading found to be over and above the permissible limit of  $60 \mu\text{g}/\text{m}^3$ , several schools in the city have resorted to installing air purifiers in classrooms with a view to ensuring clean air for the students to breathe.

In a similar move in Beijing, some schools had installed air purifiers to escape the harmful effects of the city's toxic air and smog.

The Haryana government had earlier claimed to be toying with the idea of installing a giant air purifier to curb pollution in the city.

The latest to join the string of schools installing air purifiers is Suncity School at Golf Course Road. It installed 100 air purifiers in all classrooms earlier this month.

Earlier this month, the Delhi government had also directed schools there to install air purifiers to save students from health hazards.

In Gurgaon, schools are shut during winters when air pollution levels reach alarming levels. In May 2017, Gurgaon saw a sudden downturn in air pollution level for two consecutive days. The pollution figures recorded over those two days even surpassed Delhi's most polluted areas.

PM2.5, suspended particulate matter which is 2.5 micrometres or less in diameter, is considered the most deadly of all air pollutants as it can settle in the lungs and cause respiratory problems.



“We have always been cautious about the health of our students. Air pollution, as we all know, could pose serious health risks. Since pollution levels in the city have been touching alarming levels, the move (to install air purifiers) will ensure better physical and mental health of students. It will also help reduce respiratory diseases among children,” Rupa Chakravarty, principal, Suncity School, said.

Air pollution causes could lead to diseases such as cancer and asthma. Several health surveys found that as compared to outdoor pollution, indoor pollution is more toxic due to concentration of pollutants in a closed environment.

Read I Dust pollution turning out to be silent killer, say Gurgaon residents

Sudha Goyal, principal, Scottish High International School, Sector 57, said, “We are trying to provide a pollution-free environment in school. Hence, we have installed air purifiers in classrooms to remove the harmful pollutants in the air.”

However, environmentalists and parents opined that the air purifiers at schools are not enough to mitigate air pollution. “The quality of air in the city has to be improved for the residents to lead better lives. Air purifiers can only provide momentary relief,” Jitender Bhadana, an environment activist, said.

Jitesh Sahgal, father of a student at Shiv Nadar School, said, “I am not sure how beneficial air purifiers in classrooms are going to be. Children only spend a few hours inside their classrooms.”

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## Air pollution more harmful to children in cars than outside, warns top scientist

*Date: 12-Jun-2017 Source: The Guardian*



Children are at risk of dangerous levels of air pollution in cars because exposure to toxic air is often far higher inside than outside vehicles, a former government chief scientific adviser has warned.

Prof Sir David King, writing for the Guardian, says walking or cycling to school would be much better for children’s health. The warning comes as the UK government faces a third legal defeat for failing to tackle the country’s illegal levels of air pollution. Air pollution is known to damage children’s developing lungs but recent research also indicates it harms children’s ability to learn at

school and may damage their DNA.



“Children sitting in the backseat of vehicles are likely to be exposed to dangerous levels [of air pollution],” said King. “You may be driving a cleaner vehicle but your children are sitting in a box collecting toxic gases from all the vehicles around you.”

He said new legislation to ban smoking in cars with children had gained widespread support. “So why are we still happy for our children to breathe in toxic emissions in the back of our cars?”

“The best thing for all our health is to leave our cars behind,” said King, who now advises the British Lung Foundation. “It’s been shown that the health benefits of walking and cycling far outweigh the costs of breathing in pollution. If more drivers knew the damage they could be doing to their children, I think they’d think twice about getting in the car.”

A range of experiments, some as far back as 2001, have shown that drivers inside vehicles are exposed to far higher levels of air pollution than those walking or cycling along the same urban routes.

Prof Stephen Holgate, an asthma expert at Southampton University and chair of the Royal College of Physicians working party on air pollution, said there was enough evidence to tell parents that walking and cycling exposes their children to less air pollution than driving.

“It is nine to 12 times higher inside the car than outside,” he said. “Children are in the back of the car and often the car has the fans on, just sucking the fresh exhaust coming out of the car or lorry in front of them straight into the back of the car.”

Children are more vulnerable than adults, he said, because air pollution can stunt the growing of their lungs and because it increases the risk of sensitisation which can lead to asthma and other respiratory conditions.

Holgate said walking or cycling are better when possible, to reduce pollution exposure in cars and to increase physical exercise. He said: “There are multiple benefits to be gained. But parents are confused at the moment because they think there is less pollution in cars than outside, which is not the case.”

Ben Barratt, from King’s College London, measured the exposure of people travelling by car, bus, bicycle and walking in London in 2014. “The car driver, by a very long way, was exposed to the highest level of pollution,” he said. “The fumes from the vehicles in front and behind were coming into the car and getting trapped there. It is not true that you can escape pollution by sitting inside a vehicle.”

Recent research has added to the concern about the impact of air pollution on children, beyond the direct harm to their lungs. A study in Barcelona showed that air pollution reduces the ability of children to concentrate and slows their reaction times. “This adds to the evidence that air pollution may have potential harmful effects on neurodevelopment,” the scientists wrote.

A smaller study, in California, showed higher levels of traffic-related air pollution correlated with increased DNA damage in children. “Children may be especially vulnerable to the effects of telomeric DNA damage due to their physical development as well as developing immune system,” said the scientists.

Levels of nitrogen dioxide (NO<sub>2</sub>), emitted mostly by diesel vehicles, have been above legal limits in almost 90% of urban areas in the UK since 2010. The toxic fumes are estimated to cause 23,500 early

deaths a year and the problem has been called a public health emergency by a cross-party committee of MPs.

The environmental law firm ClientEarth has defeated the ministers twice in the courts over the adequacy of government air quality plans. Ministers' latest proposals were published on 5 May but were widely condemned as inadequate, and ClientEarth is now suing the government a third time.

"Air pollution hasn't been taken seriously," said Holgate. "There is a very strange situation where the government has to make laws by being taken to court repeatedly. In my view it is really quite appalling that we haven't started to deal with this properly and put children's and adults' health first."

Diesel drivers have been given tax breaks by successive governments, including when King was chief scientific adviser, to buy diesel cars because they have lower carbon dioxide emissions. Stricter regulations were supposed to limit NO<sub>2</sub> emissions from diesels but cheating and the exploitation of loopholes by car manufacturers led to vehicles that emitted far more pollution on the road than in lab tests.

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## **Could renewable 'power-by-wire' help fix China's air pollution problems?**

*Date: 13-Jun-2017 Source: Environmental Research Web*

Bringing renewable power 'by wire' from western China to its power-hungry Eastern cities could have benefits for both local air quality and global climate change, new research has found.

The study, published today in the journal *Environmental Research Letters*, examined if ongoing power transmission capacity investment in China – driven largely by concerns over air pollution – could also reduce local adverse health impacts from air pollution and greenhouse gas emissions.

China is the world's top carbon emitter, and suffers from severe air pollution. It recently committed to improve air quality and to peak its CO<sub>2</sub> emissions by 2030. The research team carried out a quantitative evaluation of the potential air quality, health and climate implications of long-distance energy by wire strategies.

Lead author Dr Wei Peng, from Harvard University, said: "We examined one possibility that could potentially address both problems: using long-distance electricity transmission to bring renewable power to the polluted eastern provinces."

"Using cutting edge atmospheric modelling and recent epidemiological data, we found that transmitting a hybrid of 60 per cent renewable power and 40 per cent coal – known as hybrid-by-wire – reduces 20 per cent more national air-pollution-associated deaths, and decreases three times more carbon emissions, than transmitting only coal-based electricity."

The study also found that, although transmitting coal power was slightly more effective at reducing air pollution impacts than simply replacing old coal power plants with newer, cleaner ones in the east, both coal scenarios had approximately the same carbon emissions.

Co-author Professor Denise Mauzerall, from Princeton University, said: “Our findings have several policy implications. First, it’s critical that transmission planning is coordinated with renewable energy use to maximise the combined air quality and climate benefits from energy-by-wire plans. This sort of coordination can better exploit renewable resources in remote areas, and maximize climate, air quality and health co-benefits.”

“As many countries also need to expand transmission to support greater use of renewable energy, grid planners should consider the air quality implications of investment in transmission capacity in order to increase the co-benefits for health and carbon mitigation.

The researchers also noted that long-distance transmission could lead to other local environmental impacts from power plants in the electricity exporting regions.

Professor Mauzerall said: “For example, relocating coal power generation to arid western regions could exacerbate water scarcity. Alternatively, extensive development of hydropower may have major impacts on local ecosystems. It is extremely important, therefore, that grid planners consider the overall impact of long-distance electricity transmission on the environment at regional, national and global scales.”

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## The Hidden Dangers Of Indoor Air Pollution

*Date: 13-Jun-2017 Source: Huffington Post*



According to the World Health Organisation (WHO), exposure to air pollution is considered to be the biggest single environmental risk to human health. This includes not only outdoor air pollution but indoor air pollution too.

In the UK, Professor Stephen Holgate is chair of the working party that produced the Royal College of Physicians and Royal College of Paediatrics and Child Health report ‘Every breath we take: the lifelong impact of air pollution’.

He says: “We live most of the time indoors and the important thing about this is that the air pollution from outside gets inside, but also inside we generate a different set of chemicals and particles that we breathe in. There has been very little attention paid to what goes on inside buildings, inside our homes, workplaces and schools regarding how it interacts.”

With Professor Holgate’s words in mind, we go from room to room in an average home, examining potential sources of indoor pollution and what we can do about them.

### *Kitchen*

Cooking food on too high a heat causes smoke and releases particles. Your kitchen may also contain cleaning products with VOCs (volatile organic compounds). VOCs are found in thousands of everyday

products - from new carpets to oven cleaners. VOCs are common in indoor air and their effects are usually minor, but they can be irritants to susceptible people, exacerbating symptoms for those with asthma, rhinitis and sensitive skin. To reduce VOCs in the kitchen, use more natural cleaning products. There's little that can't be cleaned with washing-up liquid, soda crystals, white vinegar and lemons.

### *Living areas*

You'll probably find VOCs in new carpet and new MDF furniture, some paints, air fresheners, scented candles and room deodorisers. If a member of your family is sensitive to VOCs, stick to solid wood flooring, low VOC paint and lose the artificial fresheners. If you want the living room to smell sweet, try fresh flowers (be aware of the pollen). Check out retro shops for solid wood vintage furniture, and upcycle it (using low-VOC paint, of course).

We all love a roaring, toasty fire, and open fires or wood burners release soot and ash particles into the indoor air. Keep these particles in your home to a minimum by getting the chimney swept regularly, using smokeless fuel, or wood that is properly seasoned and dry, and checking that the rope seal on your wood burner door is unbroken. And it goes without saying that tobacco smoking is the worst form of indoor air pollution – either give up altogether, or smoke outside.

Pets are a walking (or curled up on the sofa) bundle of potential allergens and pollutants. Your dog or cat holds pet dander in their fur that can cause allergies in some people, and bacteria and viruses on their paws. Keep animals clean, and use a vacuum cleaner with a HEPA filter designed for picking up pet hair.

### *Bathroom*

The most likely place you'll find mould and mildew is in the bathroom. Airborne mould spores can be allergens, causing sneezing, red eyes, skin rashes, and even asthma attacks in susceptible people. Ensure your bathroom is well-ventilated or use an extractor, and clean thoroughly to prevent mould growing in the first place. In fact, address damp problems anywhere in your home to avoid mould growth. Use natural bathroom products to avoid VOCs.

### *Bedrooms*

One trigger of asthma is an allergy to the droppings of house dust mites. These microscopic creatures live in all our homes and their droppings get fluffed up into the air when dust is disturbed. They like warm, damp places - our beds are ideal habitats. Open bedroom windows daily, vacuum regularly with a HEPA filter vacuum cleaner and wash mattress and pillow protectors and bed linen at 60°C. Keep pets and their dander out of bedrooms – no snoozing on the bed. Ask yourself if you need to use VOC-introducing aerosol deodorants and hairsprays. And perhaps invest in one of the below as well...

### *Air purifiers*

We don't need to live in a hermetically-sealed environment, though – we love our pets, vases of flowers, roaring log fires, perfume and crispy bacon. As well as regular cleaning, an air purifier will mop up nigh-on all airborne particles there as a result of everyday living, leaving you free to enjoy your home and breathe easily.

Indeed, Alexander Provins, who heads up Blueair, one of the world's leading manufacturers of home air purifiers confirms, "Whilst outdoor pollution remains concern, what a lot of people don't know is that indoor air is often up to five times more polluted than outside.

"The reason for this is a mix of outdoor pollution regularly travelling indoors in combination with concentrated dose of pollutants inside which can include anything from cigarette smoke, dust mites, scented candles to air fresheners. Air purifiers remain the most efficient way to remove these airborne pollutants and helps individuals breathe healthier."

Blueair is one of the world's leading manufacturers of air purifiers for home and the workplace. Using our own unique technology, HEPASilent™, Blueair air purifiers capture 99.97% of airborne particles including: pollen, dust, pet dander, cigarette smoke, bacteria, viruses and volatile organic compounds (VOCs), right down to 0.1 µm in size.

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## BMW's Hometown Munich Mulls Diesel Ban to Fight Air Pollution

*Date: 14-Jun-2017 Source: Bloomberg Market*



BMW AG's hometown of Munich is considering outlawing older diesel cars, the latest European city to crack down amid mounting evidence that the technology's not that clean after all.

The driving ban was floated after a government study detected hazardous pollution levels in the Bavarian city's air, especially of cancer-causing nitrogen oxide, said a spokeswoman for Mayor Dieter Reiter. Exemptions would apply for buses, taxis and diesels that meet Europe's latest Euro 6 emissions standards.

Diesel's image as a better-burning fuel has been tarnished by Volkswagen AG's emissions-cheating scandal and a growing body of research showing that the engines spew harmful pollutants that can cause smog and cancer. Cities from London and Paris to Mercedes-Benz's hometown of Stuttgart are making moves to restrict older diesels. Consumers worried about future bans are increasingly switching to gasoline autos.

In Europe, carmakers for years relied on fuel-efficient diesel to meet ever-tightening emissions standards and governments offered tax incentives to spur demand. The technology's demise adds to manufacturers' challenge of complying with environmental laws as they're already struggling to convince drivers to buy electric cars instead of gas-guzzling sport utility vehicles.

Even though diesel's popularity is waning, the engines still account for 50 percent of European new-car sales. Gasoline autos are less fuel-efficient and emit higher levels of carbon dioxide.

Munich's proposal comes after a German appeals court ruled that the city acted unlawfully by allowing high levels of nitrogen oxide pollution. Munich's deliberations, which were reported earlier by *Sueddeutsche Zeitung*, could be finalized this year.

### 'Unfair' Rules

Diesel's decline is particularly tough for luxury brands including Audi and Mercedes, whose line-up is filled with heavy vehicles such as the S-Class sedan and Audi Q7 SUV. Diesel cars accounted for 71 percent of BMW's total sales in Europe in the first four months, down 4.2 percent from a year earlier.

Munich's proposal won't solve pollution problems in the long-term, a BMW spokesman said on Wednesday. In May, the company warned that carmakers won't be able to meet the EU's 2020 targets on CO2 emissions without diesel, which uses about 20 percent less fuel than gasoline engines.

Mercedes parent Daimler AG has complained that such bans are unfair to customers who bought their cars as recently as 2015, before Euro 6 kicked in.

"There are better, more intelligent measures like incentives for car sharing and electric mobility that would lead to a sustainable improvement," said BMW spokesman Glenn Schmidt.

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## Air pollution is killing wildlife and people

*Date: 14-Jun-2017 Source: The Guardian*



On National Clean Air Day, Thursday 15 June, we're calling for action to cut air pollution which threatens our native wildlife (Nature needs fresh air too, 2 June). The UK government's air quality consultation, closing on 15 June, focuses on "tackling nitrogen dioxide in our towns and cities". That issue deserves urgent action – but it's not enough. Air pollution is a problem in both rural and urban areas, for people and wildlife. We need to tackle the sources and solutions as a whole.

Nitrogen in air pollution acts as a fertiliser, making conditions too rich for many wild fungi and plants. That's why you're more likely to see nitrogen-tolerant species, such as common orange lichen, nettles and hemlock, on road verges and field margins – rather than bird's foot trefoil, harebells or orchids, which are more sensitive. In 63% of special areas of conservation, our best wildlife sites, nitrogen levels are already too high. This has dire consequences for animals, including pollinating insects, that depend on wild fungi and plants for food, nutrients and shelter. This affects us all, as biodiversity is vital to our health and wellbeing, our culture and our economy.



Measures to cut air pollution from transport and other sources need to be extended across the country – not just urban areas. These include better green spaces, public transport, walking and cycling routes. In particular, much faster action is needed to cut ammonia emissions, which have not reduced in line with other pollutants. Ammonia is a precursor to particulate matter, affecting human health as well as nature. The main source is farming – livestock and fertilisers – requiring concerted action by farmers, industry and government.

Let's have an air quality strategy that delivers for people and for wildlife.

Ian Denholm Chair, Botanical Society of Britain and Ireland

David Minter President, International Society for Fungal Conservation

Allan Pentecost President, British Lichen Society

Matt Shardlow Chief executive, Buglife

Marian Spain Chief executive, Plantlife

Stephen Trotter Director, Wildlife Trusts England

It's useful to know that people's exposure to atmospheric pollution can be reduced by walking or cycling away from streets where it is at its worst (Walking on side streets can halve exposure to pollution, study says, 14 June), but it is important to realise that this advice refers mainly to exposure to NO<sub>2</sub>.

In fact, the health effects of pollution come not just from NO<sub>2</sub> but also from small particulates (especially PM<sub>2.5</sub>s: particles that are up to 2.5 microns in size). NO<sub>2</sub> concentrates mainly near the areas where it is produced (hence the advice), while for PM<sub>2.5</sub>s the fall in concentration over distance is much less, and even 100 metres away from the source – mainly vehicle engines – concentrations are still significant. Given that, according to other research from King's College London, over a third of early deaths from pollution are caused by PM<sub>2.5</sub>s, it is clear that, while walking on side streets may help, it will not completely remove the damaging effects of pollution.

Dr Richard Carter

London

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## Oxford air pollution estimates 'excessively optimistic'

*Date: 15-Jun-2017 Source: BBC*



Government estimates for air pollution in Oxford have been deemed "excessively optimistic" by the city council.

Oxford's atmosphere breaks European limits for nitrogen dioxide but a government action plan suggests the city will hit targets by 2020.

Oxford City Council said it was "surprised" by the estimate and "concerned" at the modelling used.

The government said it was committed to improving air quality and cutting harmful emissions.

According to a 2016 report from the Royal College of Physicians, air pollution across the UK is linked to around 40,000 premature deaths annually.

Last year Oxford was listed by the World Health Organisation as one of 10 urban areas in the UK breaching air pollution safety levels.

But the government's Draft Air Quality Action Plan predicted Oxford will meet the European Union's target by 2020, without any further action.

Estimates 'incorrect'

Oxford City Council said the government's modelling was "excessively optimistic" and did not use the council's own data.

Councillor John Tanner said: "These draft proposals find that, without taking any further action, the city will have no problem by 2020. We think this is incorrect."

A spokesperson from the Department for Environment, Food, and Rural Affairs (DEFRA) said it had set out its plans to improve air quality through its new programme of Clean Air Zones.

"We are firmly committed to improving the UK's air quality and cutting harmful emissions," the spokesperson added.

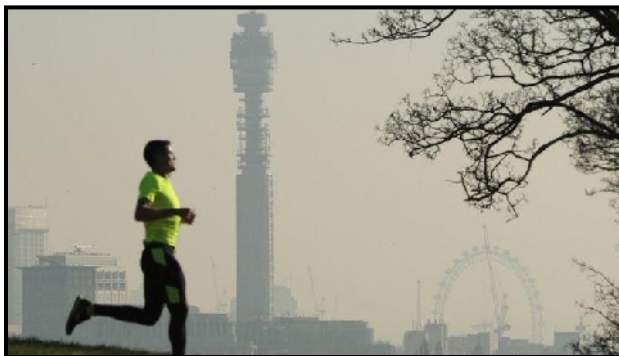
The Draft Air Quality Action Plan was described as "weak" by Mayor of London Sadiq Khan when it was released in May, and criticised by the Liberal Democrats and The Green Party.

Consultation on the government's plan closes at 23:45 BST, and DEFRA said it would publish its final air quality plan by 31 July.

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## Air pollution plan 'unfair' on local authorities

*Date: 15-Jun-2017 Source: BBC*



was published last month.

The UK government is abdicating its responsibilities and "unfairly shifting the burden" of dealing with dirty air on to local authorities, says an industry body.

The Chartered Institute of Environmental Health outlined its views in response to the government's consultation on air pollution.

Under pressure from the courts, an outline plan



A detailed scheme must be in place by the end of July.

On the top of Michael Gove's rather full in-tray will be the tricky question of how best to tackle air pollution, especially the very high levels of nitrogen dioxide which are linked to diesel engines.

The new Environment Secretary will have to decide on the best way of meeting the substantial challenge posed to the government by the courts.

Last November, the High Court told the government that its existing air quality plan was not fit for purpose and ordered publication of a draft scheme by early May.

While the draft plan considers many options for tackling the problem, the central thrust of making local authorities responsible for cleaning up the air has drawn the ire of the Chartered Institute for Environmental Health (CIEH).

"The government's proposals are woefully inadequate to tackle air pollution and place far too much responsibility on the shoulders of our over-stretched local authorities," said Tony Lewis, head of policy at CIEH.

"We stand on the cliff-edge of a national public health emergency and these plans are devoid of substantive proposals, timescales for addressing the key challenges, clarity around targets or even availability of resources to support necessary actions."

An analysis by Friends of the Earth, also published on Thursday, says that the government's own data shows that 58 local authorities across the UK will still have illegal levels of air pollution in 2019 without further action being taken.

"They were trying to hide the true effects until the court forced them to show the much worse situation and that is revealed in this table," Jenny Bates from Friends of the Earth told BBC News.

"Without further action, London would still have illegal air in 2030, Birmingham and Leeds until 2026, and 58 places until 2019."

The campaigners say that properly funded, clean air zones that impose charges on the dirtiest vehicles must be introduced by the end of next year.

They are annoyed that in its draft plan the government did all it could to ensure that councils looked at every other option, including removing speed bumps, before imposing charging clean air zones.

"The law requires the cleaning up of the air in the shortest possible time. Deliberately delaying the most effective tool can't be right," said Jenny Bates.

"It's supposed to be done irrespective of cost, irrespective of political difficulties. They just have to do it because it is literally costing lives."

However, the idea that clean air zones that charge drivers of polluting vehicles should be top of the government's list does not find favour with everyone.

"We need a programme of replacing or retrofitting ageing bus and taxi fleets with cleaner engines, especially in towns and cities which are breaching air pollution limits," said Nick Lyes from the RAC.

"Rushing to implement charges on car owners in such a short space of time is simply not practical for many drivers, and charges should only be considered if other measures are deemed not to be improving local air quality."

The RAC says that no-idling zones could be introduced immediately, while longer term, greater efforts should be made to encourage drivers to switch to low-emissions vehicles.

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## **Automotive Air Pollution, Global Warming, Fuel Economy**

*Date: 16-Jun-2017 Source: Missoulain*

Irony: Crying about pollution, poor mileage, and warming while subsidizing the sources

There has been much ado in the "news" lately about automotive air pollution, global warming, and fuel economy. The evidence seems to indicate that America likes air pollution, global warming, and wasting trillions of dollars on gasoline and diesel. The auto industry is happy selling wasteful polluting internal combustion automobiles. The oil industry is happy to sell excessive amounts of expensive gasoline and diesel for internal combustion engines. Our United States Congress wants to keep these industries happy. Congress created the Department of Energy as surrogate partly to protect status quo. The record shows that the Department of Energy killed steam engine development in 1977. In 1976 it had been recognized and shown that clean, efficient, advanced steam engines could be developed for automobiles as reported in the DOE publication, ERDA-77-54, "An Assessment of the Technology of Rankine Engines For Automobiles" and "S.A.E. Paper, 760342". The DOE Report also stated "that some alternative to the internal combustion engine would have to be found." Rankine engines are steam engines. The need is greater now than in the 1970's.

Is our U. S. Congress truly serious about clean air, global warming, and fuel economy? If so, Congress needs to address this serious discrepancy and correct the direction America is going. Is Congress serious about clean air, global warming, and fuel economy, or more concerned with keeping the auto and oil industries happy at great expense to us and our environment? Real corrective action requires strong resolute fortitude from an authority higher than these industries. Such corrective action could also greatly help polluted Beijing as well as the rest of our suffering world. The sooner real change occurs the better for all the people of earth.

John A. Cozby

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## enLight launches air quality monitoring kit

*Date: 16-Jun-2017 Source: Smart Cities World*



As part of Smart Oxford, Oxfordshire council welcomes collaboration with tech providers like enLight

enLight has introduced a smart cities pilot kit aimed at helping councils and local authorities to better understand and address air quality.

The kit combines an enLight lighting upgrade with a selection of enSense sensors for monitoring air quality, noise levels, localised flooding and microclimate levels.

Levels of nitrogen dioxide (NO<sub>2</sub>), emitted mostly by diesel vehicles, have been above legal limits in almost 90 per cent of urban areas in the UK since 2010 and toxic fumes are estimated to cause 23,500 early deaths a year.

Two thirds (68 per cent) of travel to and from work is by car and nearly half (46 per cent) of 5-10 year olds are driven to school but air pollution is 9-12 times higher inside a car than on the street. Air pollution levels are often higher in the morning but time-based levels across multiple locations are not easy to assess without the use of dedicated sensors like those available as part of the smart cities pilot kit, said enLight.

“With such worrying statistics facing the nation, air quality is now a key priority for communities across the country so we are delighted to be working with councils to help them to better understand their environment and to deploy our innovative technology to support the goal for cleaner cities, towns and villages,” said Gary Atkinson, CEO of enLight.

According to enLight, the kit enables local authorities to try out new smart city data collection technologies and use the data to build a business case for a larger deployment. They are offered in recommended bundles to provide statistically relevant data but can be customised subject to specific priorities and available budget.

enLight’s solution not only measures the key gases responsible for poor air quality, but also overlays this data on other environmental factors such as traffic type and quantity, ambient temperature, humidity and barometric pressure.

“Our research shows the majority of urban residents want to see action to tackle pollution,” said Chris Large, senior partner, Global Action Plan.

“It is also clear that the public wants business and government to join them in tackling pollution as swiftly as possible. If new technologies and ideas can speed up progress, we should welcome them to the mission to clean up our air.”

“As part of our Smart Oxford initiative, Oxfordshire County Council [is] committed to finding innovative solutions to tackling the challenges all cities face in improving the quality of life for our citizens,” added Laura Peacock, innovation and research manager infrastructure, innovation and development communities, Oxfordshire County Council.

“We welcome collaboration with companies such as enLight to help us identify the best solutions.”

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## Unhealthy air quality expected for SCV

*Date: 17-Jun-2017 Source: The Signal*



Gary Muller charges his electric BMW i3 at Whole Foods Market on Valencia Blvd. on Monday, Aug. 8, 2016. Electric cars are a good option for reducing ozone emissions and helping to clean up the environment.

High temperatures in the Santa Clarita Valley have increased the chance of unhealthy to very unhealthy air quality in the area. Ground-level ozone, the biggest summertime pollutant, can cause adverse health effects when it reaches high levels.

“Ozone air pollution can irritate the respiratory system, reduce lung function, inflame and damage cells that line the lungs and aggravate asthma and other chronic lung diseases,” said an advisory from the South Coast Air Quality Management District (SCAQMD), which is the air pollution control agency for major portions of Los Angeles.

Poor air quality is not unusual during the summertime. Although, The National Weather Service is predicting a heat wave that can last through at least early next week. These conditions coupled with atmospheric effects that trap pollution near the ground, can result in an unhealthy air quality for the region.

In order to stay safe while there is unhealthy air quality, the SCAQMD suggests checking the air quality in your area and limiting physical exertion when it is at high levels. A map showing ozone levels throughout Los Angeles can be found [here](#).

Ozone levels are considered unhealthy when the air quality index (AQI) is between 151 and 200 and is very unhealthy when between 201 and 300. The SCAQMD also suggest reducing ozone levels by using public transportation, carpooling or reducing driving in general, especially on hot summer days.

People with asthma may be more sensitive to high ozone levels.

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## HOVs to ease traffic congestion, air pollution in Tehran

*Date: 17-Jun-2017 Source: Tehran Times*



TEHRAN — Tehran Municipality is planning on introducing high-occupancy vehicle lanes in two of the expressways in the capital with the goal of reducing traffic congestion and air pollution.

A high-occupancy vehicle lane (also known as carpool lane, diamond lane, 2+ lane, and transit lane or T2 or T3 lanes) is a restricted traffic lane reserved at peak travel times or longer for the exclusive use of vehicles with a driver and one or more passengers, including carpools, vanpools, and transit buses. The normal minimum

occupancy level is 2 or 3 occupants.

Studies to implement HOV lanes in Niayesh Expressway, north-central Tehran, and Imam Ali Expressway, eastern Tehran, are well underway, Mehr news agency quoted Maziar Hosseini, deputy mayor for traffic and transport affairs, as saying on Friday.

“We have made necessary arrangement with Traffic Police and fortunately we agreed upon the matter,” Hosseini highlighted.

He went on to say that traffic regulations will be imposed in these lanes as well by mounting traffic enforcement cameras on the side of the ways.

The possibility of implementing HOV lanes was once discussed and considered some five years ago in Tehran while vehicles with only one occupants are deemed as the main culprit of persistent air pollution in metropolis of Tehran.

HOV lanes are normally created to increase average vehicle occupancy and persons traveling with the goal of reducing traffic congestion and air pollution, although their effectiveness is questionable.

However, HOVs are fast and less crowded lanes for emergency vehicles which seems to be vital to a metropolis.

MQ/MG

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## The battle to tackle Hull’s congestion and air quality problem as parents blamed for traffic spikes

*Date: 19-Jun-2017 Source: Hull Daily Mail*

Tackling the air quality issue is an ever-growing problem across the UK and in Hull, with traffic levels



dramatically worsening in recent years.

And it may not surprise drivers to hear one group cause a hike in congestion and air pollution across the city on a daily basis.

Parents who use their cars to collect their children from school, rather than walking or using public transport, are being blamed for "mid afternoon" snarl-ups.

Councillor Martin Mancey, portfolio holder for strategic transport, says he has noticed a key change in driver habits, with traffic now building around "school chuck-out time".

He said: "It used to be that we'd see congestion from around 4.30pm - 5pm, especially in the city centre. Now, there is a significant increase in traffic from about 3pm.

"My message to parents is, wherever possible, walk or catch a bus to collect your children."

Cllr Mancey's comments come as Greener Journeys, a national campaign group that calls on people to use alternative transport, predicts average traffic speeds in Hull are likely to drop from 17mph to 12mph by 2030.

Its experts say in heavy congestion, exhaust emissions are four times greater than in free-flowing traffic. Halving average traffic speeds is said to lead to a 50 per cent increase in harmful carbon emissions from larger vehicles.

In Hull, average bus speeds have slowed from 10.8mph to 9.1mph since 2002/3. Rising car ownership and an increase in traffic have seen Hull become the sixth most congested city in the UK in recent years.

Greener Journeys argues that, although government ministers have recognised the link between congestion and pollution, their plans fall short of tackling air pollution.

They say the government focuses on removing speed humps and traffic light sequencing rather than reducing the number of vehicles on the road, which it claims causes 75 per cent of all delays.

The group suggests the only way to resolve the air quality crisis is to reduce vehicle numbers and free up alternative forms of transport, such as buses.

Claire Haigh, chief executive of Greener Journeys, said the government must "take meaningful action" to tackle poor air quality in our towns and cities.

She added: "Congestion has a direct and severe impact on air pollution. The government's plans must tackle congestion and encourage greater use of sustainable transport modes such as the bus, which can take 75 cars off the road reducing both pollution and congestion."

Cllr Mancey said he supported the notion to get more cars off the road.



"There is a need for greater emphasis on a modal shift, moving people away from cars and towards public transport.

"As a council, we are adopting a two-prong approach. Firstly, we are trying to make public transport more attractive to people. Secondly, it's about providing priority measures for public transport, which has included the implementation of bus lane enforcement."

Cllr Mancey also pointed to the introduction of the Hull Card - a travel card that can be used on the both EYMS and Stagecoach buses - and wifi on selected EYMS routes as examples of measures to improve passenger experience.

He said drivers are also benefiting from the council's efforts to tackle notorious "pinch points", such as the recent widening of Anlaby Road.

But he suggested the single-most effective way of reducing congestion, and therefore improving air quality, is to tackle the misery that is Castle Street.

As part of a £250m upgrade scheme, a section of Castle Street will be lowered under a new bridge taking traffic between Ferensway and Commercial Road.

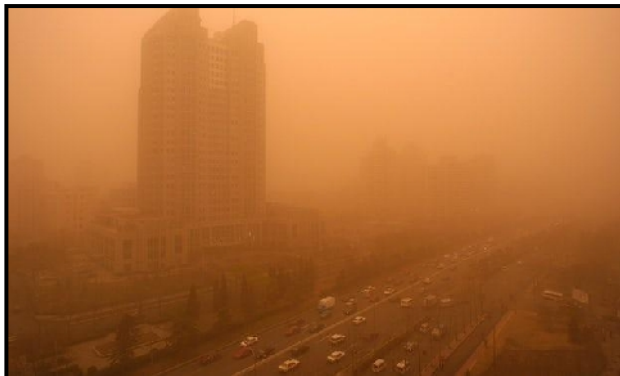
Two new footbridges are also planned, including a major pedestrian crossing from Princes Quay to the Marina.

"I have a meeting coming up with Highways England and Hedon Road haulage operators," said Cllr Mancey. "But I would not anticipate work starting before the end of next year, with completion not before 2022."

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## Dust on desert winds reduces air pollution

*Date: 20-Jun-2017 Source: The Guardian*



People in China breathe more easily when dust-laden winds blow in from the Gobi desert. Paradoxical as it sounds, desert dust helps to keep human-made pollution down, a new study shows.

Air pollution is a big issue in China, with hundreds of millions of people suffering from respiratory problems. An estimated 1.6 million deaths (17% of mortalities) a year are attributed to China's dirty air.

In particular, eastern China has had severe and persistent winter haze episodes in recent years, with cities, including Beijing, being regularly issued "red alerts" for air quality. Belching coal-fired power stations, traffic fumes and industrial chimneys are to blame, but it is the weather conditions that determine how long the pollution lingers.



Using historical data, Yang Yang, a scientist at the Pacific Northwest National Laboratory, in Washington State, US, and his colleagues, simulated 150 years of wind and dust patterns over eastern China.

This research showed that when the winds were slack the lack of desert dust in the air allowed more solar radiation to reach the surface. This lessened the temperature difference between land and sea, reducing winds even further and helping the air to stagnate over east China, creating the perfect conditions for a build-up of pollutants produced by people. The effect was most pronounced during the winter monsoon season.

The findings, published in Nature Communications, suggest that air pollution in eastern China increases by as much as 13% when the desert winds are at their slackest.

Observational data from dozens of sites backed up the model findings, showing that the air became cleaner two or three days after the winds brought dust into the region.

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## **Gov. Wolf must veto bill that would help polluters**

*Date: 21-Jun-2017 Source: ydr.com*

What is more important, the health of our children or corporate profit? Apparently, our Legislature would say corporate profit. Last week the Senate passed SB 561, The Regulatory Review Act. On the surface, many may think this is a good idea. However, the Legislation, which is modeled after the H.R. 26 (“REINS” Act of 2017) in the U.S. Congress, would change the current General Assembly review process by blocking any new “economically significant regulation” from becoming law unless both the House and the Senate vote to approve it.

A new regulation would be “economically significant” if it was estimated to have a “direct or indirect cost” to state and local government and the private sector of more than \$1 million.

However, the legislation only looks at one side of the ledger. The bill does not account for the billions of dollars in lost wages, birth defects, health care costs or other direct costs borne in the lives, lungs, hearts and minds of our children. In other words, the true cost is ignored. It’s a one-sided piece of legislation designed to empower polluters to keep polluting if it costs them money to stop poisoning God’s creation.

The Evangelical Environmental Network represents over 70,000 pro-life Christians in Pennsylvania who understand that pure water and pristine air are God’s gifts to ensure an abundant physical life. We know what fouls the creation will harm our kids. For us, creation care (being stewards of God’s earth) is an act of stewardship and discipleship in following Jesus. We also recognize that creation care is a matter of human life, and as such we are asking Gov. Tom Wolf to put our kids and grandkids first by vetoing Senate Bill 561. Simply put, The bill continues to value corporate subsidies over public health.

In addition to the corporate welfare, SB-561 allows either Pennsylvania’s House or Senate, not both, the ability to stop a regulation. That verges on unconstitutional and will only cost our commonwealth thousands upon thousands of dollars to defend legal battles at the expense of the lives, health, safety and welfare of Pennsylvania’s children, both born and unborn.

Medical research has demonstrated birth defects and pre-term births associated with fugitive methane and other chemicals from natural gas extraction. Smog (ozone) and soot (particles) exacerbate the lives of over 300,000 Pennsylvania's children with asthma. Eleven of our cities rank in the worst 20 communities in the United States for ozone and/or particulate pollution, making our air among the dirtiest in the nation. Pennsylvania's fresh waters have hundreds of fish eating advisories for mercury and PBCs, known to cause brain damage. Did you know that the Susquehanna is filled with cancerous bass? These are just a few of the impacts that threaten our children and Pennsylvania's most vulnerable citizens each day and must not be allowed to continue.

For far too long we have allowed businesses to privatize their profits while dumping the costs into our kids' bodies. We are not against natural gas production or other significant industries for Pennsylvania. As market-based conservatives, we want true costs to be known so the market can work. We also want the government to halt subsidies to our biggest polluters. The only way to insure our unborn children's right to an abundant life is for Pennsylvania to provide adequate laws and funds to enforce the standards that defend our kids and correct for market failures.

As an example, no one really remembers acid rain anymore. Why not? It was the one of the most successful federal regulations put into action. While industry pundits cried that the standard would cost \$5 billion annually, the actual cost was \$836 million per year and the health benefits alone were up to \$430 billion. Yet, if acid rain regulations were started over again in Pennsylvania they would not pass the General Assembly's test.

So, we're praying that Gov. Wolf does the moral thing, the biblical thing, and vetoes this poor legislation that only protects polluters at the expense of our kids.

The Rev. Mitchell C. Hescox is president of The Evangelical Environmental Network and lives in New Freedom.

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## **Air pollution tied to survival odds for liver cancer patients**

*Date: 21-Jun-2017 Source: REUTERS*

(Reuters Health) - For people diagnosed with liver cancer, living in an area with heavy air pollution from industry, traffic or smoke is linked to lower odds of survival, a California study finds.

The association between levels of tiny particles known as PM 2.5 in the air and death from liver cancer or from any cause was strongest for people with the least advanced cancers, researchers report in the International Journal of Cancer.

"Our study suggests that liver cancer patients may be another susceptible group that could benefit from reductions in air pollution," study co-author Sandrah Eckel of the University of Southern California in Los Angeles said by email.

The liver may be at a high risk because it is responsible for helping the body process toxic materials that enter from the outside, she added.

PM 2.5 pollution is made up of small particles and droplets less than 2.5 microns in diameter. These particles, which are tiny enough to enter the bloodstream through the lungs, are usually the product of combustion - including smoke and fumes from industrial sources and power plants, vehicle engines, wildfires or indoor cooking fires.

Air pollution has been shown to increase lung cancer risk, but it may affect other cancers as well, the study team writes.

The U.S. has standards to control air pollution, but some areas like Los Angeles still go above the allowed levels, Eckel noted. Globally, air pollution may be as much as 10 times the U.S. standard, she said.

To see if there is a link between air pollution and liver cancer survival, the researchers used data on over 20,000 patients with the most common form of liver cancer, hepatocellular carcinoma.

The researchers included all patients who were diagnosed between 2000 and 2009 and listed in the California Cancer Registry.

The research team also used air pollution measurements from the areas where patients lived based on data from the Environmental Protection Agency's Air Quality System database.

They found that people who were exposed to higher levels of PM 2.5 pollution after being diagnosed were significantly more likely to die from liver cancer or any cause.

For people with localized liver cancer, higher levels of pollution exposure were tied to a 31 percent higher risk of death from any cause compared to people with the same stage cancer exposed to the least pollution. For those whose cancer had spread to nearby tissues, the increased risk associated with higher pollution exposure was 5 percent and for those whose cancer had spread further in their body, the added risk was 10 percent.

The risk differences were similar for death from liver cancer, the researchers note.

Researchers adjusted for factors that might influence the analysis, like the patients' socioeconomic status, distance from the pollution monitoring station and the size of the city they lived in.

A strength of the study is having included all liver cancer patients in the state registry for a good representation of this population, the authors note. One limitation is that researchers didn't have much information about patients' personal details and behaviors, like weight, alcohol consumption and whether they had hepatitis A or B.

"There is increasing evidence that particulate air pollutants can lead to early death from cardiorespiratory disease as well as a range of cancers including liver cancer," Neil Thomas of the University of Birmingham in the UK said by email.

People can try to reduce their exposure by using air filters, wearing masks and avoiding indoor pollution like burning candles, but the most important step is to put pressure on lawmakers to improve air quality, said Thomas, who was not involved in the study.

“Air pollution reduction should be the goal of everyone for their own health and that of future generations,” Thomas said.

“We generally recommend that people monitor their local air quality index,” said Eckel, noting that in the U.S., local data from the EPA's air quality monitoring system can be found on the AirNow.gov website. “On high pollution days, you might want to stay indoors, close the windows, and clean the air indoors using filters,” Eckel said, and drivers should roll up their windows on busy roads.

SOURCE: [bit.ly/2rBcrnV](https://bit.ly/2rBcrnV) International Journal of Cancer, online June 7, 2017.

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## **Breathe easy: Rains bring down air pollution levels, improve quality**

*Date: 22-Jun-2017 Source: The Times of India*

Thane: The heavy showers over the past few days has not only given the lake city denizens some respite from the sweltering heat, but has also cleared the air of pollutants.

The air pollution level in the city has gone down by over 60% as compared to the beginning of the year. This has improved the air quality in the city. This was stated in the data collected by the civic body's new continuous ambient air quality monitoring station (CAAQM).

While the ceiling permissible limit of the respirable suspended particulate matter (RSPM) is 100 gm per metric cube (g/m<sup>3</sup>), the first few months this year recorded an average of 250 to 293 g/m<sup>3</sup>.

This month, the pollutant concentration level has dropped drastically to an average of 108 g/m<sup>3</sup> level. Interestingly, even though the average RSPM level continues to be slightly above the permissible limit of 100 gm per cubic meter this month, the RSPM levels in the city over the past one week has been below limit and even touched 56g/m<sup>3</sup> on Sunday.

Vidyadhar Walawalkar, vice president of a city-based NGO, said, "The heavy rains have washed out the particulate matter that was present in the air. This is one of the major reasons for air pollution. These particles can penetrate through the lungs and directly enter the bloodstream, which is dangerous for humans."

While environmentalists have pegged this low pollution level to the heavy showers in the last few days, civic officials who have been installing air pollution controllers (APC) across city junctions believe that this drop is because of the use of APCs.

"The showers are one of the main reason for the decrease in pollution levels but in comparison to the last few years, the air pollution level has been lower this year. We believe, this is because of the numerous initiatives taken up by the civic body to mitigate pollution levels, including tree plantation drives, setting up air controlling units across the city and so on. The APC machines will be able to function even more effectively and maintain good air quality till next monsoon," said a senior civic official from the TMC's pollution control department.

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## No smoking, no firecrackers: DOH sees wins in war vs air pollution

*Date: 22-Jun-2017 Source: ABS-CBN News*

The Department of Health is optimistic that the new executive orders of President Rodrigo Duterte on smoking and the use of firecrackers would help lessen air pollution in the country.

"Kung mababawasan ang magpapaputok, mababawasan ang air pollution natin," Corazon Flores, assistant regional director for DOH-National Capital Region, said during the Clean Air Forum.

The health department also launched a hotline that provides counseling services to people who want to quit smoking as well as a campaign for smoke-free local government units.

Tobacco smoking is one of the main culprits of indoor pollution while the use of firecrackers add up to bad air quality particularly during the holidays.

President Rodrigo Duterte on Tuesday signed Executive Order 28 which shall confine the use of firecrackers to "community fireworks display."

Last month, the President also signed EO 26, banning smoking in public places nationwide.

The DOH is also positive that the tobacco sin tax somehow correlates to fewer purchase of cigarettes.

Based on the department's 2012 data, around 4.3 million people die prematurely annually due to illnesses attributable to household air pollution.

These are mainly caused by the use of inefficient solid fuels in cooking such as wood, crop wastes, charcoal, and coal use in open fires and leaky stoves.

A World Health Organization report in 2016 stated that 7 million people die annually from air pollution. Of this figure, almost 6 million are from Asia.

WHO added that people who lives in urban areas with declining air quality are more at risk of stroke, heart disease, lung cancer, and chronic and acute respiratory diseases such as asthma.

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## Sadiq Khan: Gove must get a grip on 'life and death' air pollution crisis

*Date: 23-Jun-2017 Source: The Guardian*



The mayor of London, Sadiq Khan, has requested an urgent meeting with the new environment secretary, Michael Gove, to urge him to get a grip on Britain's "life and death" air pollution crisis.

This week, Khan activated the capital's emergency alert system after experts warned toxic air in the capital had reached dangerous levels. Large parts

of southern England and Wales were also affected on Wednesday.

The government has come under growing pressure over the air quality crisis, which is responsible for 40,000 deaths a year in the UK.

After a string of humiliating defeats in the courts, the government eventually published its air quality plan consultation earlier this year. Khan described it as a “deep disappointment” and a “backwards step” and challenged Gove to overhaul the government’s plans.

Khan said: “Michael Gove has a huge opportunity to change course for this government and finally get a grip on the national air quality health crisis.”

He said previous environment ministers had not prioritised air pollution, or even recognised its harmful impact.

“We know it causes an estimated 40,000 early deaths in this country every single year,” Khan added. “This is now a matter of life and death and the government has one last chance to put it right.”

Khan said the government’s plan – published shortly before the general election after a legal challenge – lacked “serious detail, fails to tackle all emission sources, such as from buildings, construction or the river, and does not utilise the government’s full resources and powers”.

A Defra spokesperson said: “We are firmly committed to improving the UK’s air quality and cutting harmful emissions. That’s why we have committed more than £2bn since 2011 to increase the uptake of ultra-low emissions vehicles, support greener transport schemes and set out how we will improve air quality through a new programme of clean air zones.

“We have consulted on proposals to further improve the nation’s air quality and will publish our final air quality plan by 31 July.”

Earlier this year the Guardian revealed the risk to children’s health posed by air pollution. An investigation revealed that hundreds of thousands of children are being exposed to illegal levels of damaging air pollution from diesel vehicles at schools and nurseries across England and Wales.

The government’s own statistics show that 38 out of 43 UK “air quality zones” breach legal limits for air pollution.

Khan has set out a package of measures to tackle air pollution in the capital including a toxicity charge from October and an ultra low emission zone.

He said it was now time for the government to introduce a national vehicle scrappage fund to help retire diesel cars and vans bought in good faith, to reform vehicle excise duty and to publish a Clean Air Act.

Khan, who has also announced a new £1m scheme to help businesses clean up the capital’s air, said: “The government can no longer continue to bury its head in the sand about our toxic air. Londoners simply cannot wait ... I urge government to tackle this challenge immediately, because its current air quality plan quite frankly is not fit for purpose.”

## Air pollution is plateauing above legal limits in many parts of Oxford, new figures reveal

*Date: 23-Jun-2017 Source: Oxford Mail*



AIR pollution levels are plateauing above legal limits in a quarter of Oxford city.

Latest figures from Oxford City Council show that, despite its best efforts to control the problem, dangerous levels of harmful Nitrogen Dioxide are persisting in 24 per cent of areas tested.

What's more, the council's efforts to reduce the levels seem to be having less and less impact as NO<sub>2</sub> levels in the most polluted parts of Oxford, which until recently have been coming down, are

now plateauing above the EU level limit.

The city council is legally required to monitor air pollution, but has to rely on Oxfordshire County Council, as highways authority in the county, to actually control road use.

The worst part of the city, according to the council's measurements, remains St Clements, at 61 micrograms of NO<sub>2</sub> per cubic metre - more than 50 per cent over the EU 40µg/m<sup>3</sup> limit.

Levels of NO<sub>2</sub> have also gone up around the Westgate shopping centre redevelopment, likely due to road closures, though the highest level in that area is still only 35µg/m<sup>3</sup> in Norfolk Street – below the 40µg/m<sup>3</sup> limit.

Latest figures from Public Health England estimate that 276 deaths in Oxfordshire in 2014 could be attributed to long-term exposure to air pollution, including NO<sub>2</sub>.

By comparison in the same year just 26 people died in road traffic accidents in the county.

The new data on pollution levels comes from Oxford City Council's Air Quality Annual Status Report 2017.

In the past decade, the council helped to bring the levels of roadside NO<sub>2</sub> across the city down by an average of 36.9 per cent.

However the new data shows that success is slowing down: between 2011 and 2013, average NO<sub>2</sub> levels across the city centre fell by 18.9 per cent, but between 2014 and 2016, average NO<sub>2</sub> levels fell by just 3.9 per cent.

The council said the step change between 2011 and 2013 could be attributed to the Low Emission Zone it helped introduce with Oxfordshire County Council, which banned high-emission buses from the city centre. Bus companies began converting their vehicles in the run up to the zone's introduction in 2014.



What's more, the Government's new Draft Air Quality Action Plan, published last month, stated that even without further action, Oxford was on target to meet the EU air quality limits by 2020.

However the city council disagreed with that assessment and has asked the Government for more funding and powers to tackle the problem.

City councillor John Tanner, board member for air quality, said: "We have seen air pollution levels drop by 36.9 per cent in the last decade. This significant reduction has been due to a wide range of work carried out by the city and county councils, particularly the Low Emission Zone.

"But now we are beginning to see air pollution levels fall much more slowly in Oxford. Another step change in tackling pollution is urgently needed. Oxford City is supporting the idea of a Zero Emission Zone in the city centre to clean up Oxford's air. Last week we wrote to the Government to request more funding and powers to tackle pollution."

Ruthi Brandt, a Green Party member on Labour-run Oxford City Council, said: "The council's own analysis shows that air pollution is set to worsen in the city centre due to its own poor planning.

"By allowing the huge new Westgate centre to go ahead on council-owned land without insisting on improved public transport provision is going to lead to more traffic and pollution. To make matters worse, the council has given control over parking charges to the Westgate Partnership who are now able to offer discount parking undermining what public transport provision there is and reducing use of the park and rides."

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## City wants more powers to reduce air pollution further

*Date: 23-Jun-2017 Source: Oxfordshire Guardian*



Local authorities in Oxford are asking for more powers to reduce air pollution despite a positive report on the city's high-emission vehicle strategy.

Oxford City Council said they are 'anxious' to keep improving the city's pollution levels earlier this month.

The Government's Draft Air Quality Action Plan revealed that several towns and cities across the country are currently failing to meet the European Union target in nitrogen dioxide (NO<sub>2</sub>) level.

But without any further action Oxford will meet the target by 2020.

Now, politicians have responded to a consultation for the plans, saying this move could threaten future funding for tackling air pollution.

Councillor John Tanner, executive board member for A Clean and Green Oxford, said that air pollution is still a ‘public health emergency’.

He said: “We are deeply concerned that Oxford is unlikely to get Government funding to tackle air pollution because these draft proposals find that, without taking any further action, the city will have no problem by 2020. We think this is incorrect.

“We are anxious to work with the government to tackle this public health emergency.”

The county council has also stressed the need for a holistic approach that tackles other pollutants such as ‘particulates’, which are hazardous to health.

Councillor Yvonne Constance, cabinet member for environment, said: “We would like to see greater emphasis on the role central government will play in tackling air pollution as well as a stronger commitment to resources for local authorities so that we can play our part.

“We need a holistic approach that also tackles other pollutants, notably health-damaging particulates, and that is consistent with efforts to combat climate change.”

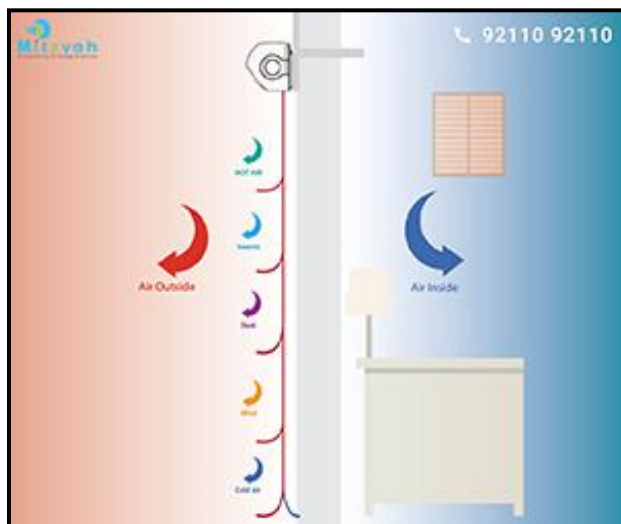
Measures to improve air quality in Oxford have resulted in a 35 per cent reduction in NO<sub>2</sub> levels in the last decade, but in areas like St Clement’s Street, these are exceeding the recommended average.

Emissions of the pollutant are thought to have significant health effects, particularly on people with heart and respiratory conditions.

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## Street View Fleet Gets A Makeover With New Air Pollutant Sensors

*Date: 24-Jun-2017 Source: BLORGE*



In its bid to improve the quality of its products and services, Google, Inc. does not stop from offering new features and latest updates. One of the most recent improvements was the attachment of sensors to the vans used for Street View capturing.

By now, we are all aware of how the firm utilizes different modes of transportation to capture images of streets for Google Street View and Google Earth. The list includes drones for aerial shots, the Google Street View Trekker backpack for 360-panoramic images as well as cars and vans for on-ground image capturing.

Air Pollution Monitors

The most recent update on Google Street View is the incorporation of sensors to the fleet of vehicles used for Street View. On top of giving its users the chance to explore locations and global landmarks, the tech giant letting us find our way on the road via healthier routes.

With these devices, it is now possible to give a detailed map of the level of pollutants in cities. To make this possible, the cars have been sensor-fitted to monitor the streets for levels of nitrogen dioxide, nitric acid and soot.

The update allows the mapping which part of the city is most filled with toxic gases to let the commuter or driver look for another travel route. The first prototype pollution map released by the company is that of Oakland, California.

Started in 2015, this air quality project has already covered around 14,000 miles in the United States. As for the Oakland pollution map prototype, it showed that air pollutants found in crossroads and junctions are much higher than in other streets.

The levels are five to eight times higher. This might be the case since more vehicles ply these routes and when caught in traffic and with the engines running, pollutants stay in the air. Also, as drivers accelerate when the traffic light turns green, more carbon emissions are released.

To indicate the levels or severity of air pollution, the usual colors (red, orange, yellow) used in Google maps were chosen as level indicators. The hotter the color, the higher is the level of pollution.

According to the gathered data, pollution hot spots include restaurants, warehouses, industrial plants, intersections and ports, among others. This development comes in handy for parents in terms of deciding where to send their children to school.

What makes this update helpful is the information found on the map when zoomed in using Street View. As a particular area is enlarged, the user is presented with the part where pollution level is the highest, along with what causes the high presence of pollutants.

Not only will these sensors help commuters and people on-the-road with finding out which places in their cities have clean or unclean air. The detailed map of the air quality of specific areas will be a boon to city planners in determining what city and town streets need improvement to reduce air pollutants.

If you don't get to check out Google Street View often, perhaps, in the coming months, opening Street View might just become a part of your routine.

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## **Air Pollution and High Temperatures Make Paris a Very Uncomfortable City**

*Date: 24-Jun-2017 Source: French Tribune*

More than 65 regions in France have been placed on alert due to very high temperatures, but the climate situation in the French capital is being exacerbated by record levels of air pollution.



With temperatures hitting 37 degrees Celsius, nearly 99 degrees Fahrenheit, comfort levels are reaching the point of exasperation in the City of Light. City officials took immediate action on June 21 by reducing speed limits on the highways, asking drivers to stay home and limiting the number of delivery trucks allowed to enter the metropolitan area.

Post office workers in Paris have been tasked with knocking on the doors of flats known to be occupied by elderly residents who live by themselves. This safety check is necessary to avoid unfortunate situations such as during 2003, when thousands of senior citizens passed away during major heatwaves.

Despite the unbearable heat and air pollution, a nationwide music festival that features street performers took place the entire week. Parisians have been flocking to fountains, riverbanks and ponds in an effort to cool off. The first heatwave of the year has taken place a few weeks earlier than usual, and some scientists believe it may be due to climate change.

Paris is hardly the only French city affected by the heatwave. In the northern border with Germany, Strasbourg residents had to deal with temperatures close to 36 degrees on June 20 and June 21. In the western and southern regions, locals and tourists flocked to the beaches.

French workers are being urged to remind their employers that the labor code legally binds them to provide a comfortable and safe workplace at all times. During periods of intense heat, French employers would be obligated to provide fans and plenty of cold water. Dress codes can also be relaxed, and work hours can be modified to avoid the scorching afternoons.

Public health officials in France are broadcasting recommendations for dealing with the heat, particularly to families with elderly members.

Thus far, the month of June is expected to be among the three hottest in French history. Meteorologists believe that the summer of 2017 will be at least one degree warmer than average. Climate models suggest that temperatures should climb by 0.7 degrees on an annual basis from now until 2020. One positive aspect of the longer summers is that tourists from other parts of Europe are now flocking to the south of France earlier than usual.

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## **Analysis: EU may not be perfect but it has been the source of almost all environmental legislation in Scotland**

*Date: 24-Jun-2017 Source: The Herald*

IN 1993 THE Norwegian Environment Minister called John Gummer, the UK Environment Secretary, a drittsekk – a s\*\*\*bag – because of the massive impact on Scandinavian lakes and forest of acid rain caused by emissions from British power stations.



Throughout the 1980s Britain had been known as “the Dirty Man of Europe” because of our widespread pollution of air, land and water.

The European Union is far from perfect but it has been the source of almost all environmental legislation and standards in Scotland. The air we breathe, the water we drink, the products we buy and the food we eat are all cleaner and safer because of 40 years of EU rules. Collective EU targets on climate change, renewable energy and energy efficiency have pushed the UK further than

we would otherwise have gone. And the European Courts have helped concentrate the minds of ministers on meeting environmental standards and protecting nature properly.

Already we have seen chemicals giant Ineos using Brexit to argue to relax climate laws and senior Tories suggesting environmental and safety standard could be slashed “a very long way” to help set up trade deals.

Fortunately, most things to do with the environment are controlled by the Scottish Parliament. So if the Government down south decides to have a bonfire of environmental protections because they can’t be bothered with clean air standards, don’t like road schemes being held up by protected species or think that factories should be allowed to pollute more, we can make our own choices in Scotland and keep intact the laws we already have. The Scottish Government has already said it will keep our current laws aligned with European laws at the moment of Brexit. Crucially though, there has been no commitment to keep up with European laws as they evolve after Brexit. No doubt we in environment groups will press for a commitment on this, but the main pressure to keep up may well come from the business lobby, who will want to make sure they can continue to sell their products and services in the EU.

There will be strong pressures to do away with some European protections from powerful sectors in Scotland. Farmers have been lobbying hard to use bee-killing neonicotinoid pesticides. The fishing industry has complained like mad about European fishing quotas, even though these limits are the only reason key species were not completely fished out in the last 20 years. In the Brexit negotiations the industry will be looking for a free-for-all deal that would see the rapid end of North Sea cod and decimate our marine environment.

The UK will no longer be part of the EU’s joint climate targets but will still be a member of the UN, so the UK Government will need to come up with new climate targets as part of 2015’s Paris Agreement. They will no doubt try hard to do as little as possible, which is a problem for Scotland as we are supposed to be setting even tougher climate targets this year.

When the UK is no longer bound by even the current weak renewable energy targets from Europe, the UK Government can pretty much give up entirely on renewables as it pursues the fantasy of fracking and nuclear power – entirely out of step with almost every other country in the world and to the great harm of a rapidly growing Scottish success story.

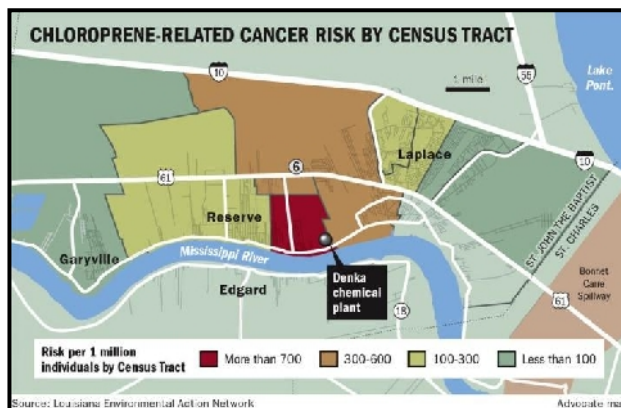
There is plenty to fight for in the environmental dimensions of the Brexit process.

Dr Richard Dixon is Director of Friends of the Earth Scotland.

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## Timeline of air pollution problems at LaPlace chemical plant

*Date: 25-Jun-2017 Source: The New Orleans Advocate*



### History of Denka plant in LaPlace

Recently, it was discovered that the chemical plant Denka Performance Elastomer LLC was emitting high levels of chloroprene into the air, a toxic compound the Environmental Protection Agency says is likely able to cause cancer.

This timeline outlines when production started at the LaPlace plant and when scientists alerted the public about production-related dangers.

1931:

The chemical company DuPont Performance Polymers invents neoprene, a synthetic rubber that uses the chemical chloroprene to make wetsuits, orthopedic braces, electric insulation and other products.

1964:

DuPont opens a chemical plant in LaPlace.

1969:

DuPont begins producing chloroprene and neoprene at the LaPlace plant.

1976:

The EPA says DuPont violated the Clean Water Act. The case was referred to the U.S. Department of Justice, and the company paid \$15,960 in penalties.

1997:

The EPA seeks a \$31,800 civil penalty from DuPont for violating permits relating to the production of chloroprene.

2006:

The EPA cites DuPont for violating the Clean Drinking Water Act at its LaPlace location.

2008:

A DuPont facility in Rubbertown, an industrial area in Louisville, Kentucky, closes its doors after facing pressure from workers and environmental groups. Chloroprene production in LaPlace increases after DuPont moves its remaining operations to the St. John the Baptist Parish plant.

2010:

The EPA for the first time categorizes chloroprene as a "likely carcinogen."

2011:

EPA conducts the most recent National Air Toxic Assessment, which estimates exposure for 180 air toxins. The study finds the six census tracts with the highest estimated cancer risks nationally are all in St. John Parish due to chloroprene emissions from the DuPont plant.

2014:

DuPont becomes the largest emitter of chloroprene into the air in the United States, according to an EPA assessment used in the NATA study. Later that year, the EPA investigates DuPont for potentially violating the Clean Air Act.

November 2015:

DuPont sells the LaPlace chemical plant to a new company, Denka Performance Elastomer. Management changes hands, but Denka keeps 235 of the plant's 240 employees.

December 2015:

The EPA makes the 2011 National Air Toxic Assessment public. That same month, the EPA asks Denka for more information in an attempt to confirm emissions estimated in the study. The national regulatory agency also asks for proof that the plant is in compliance with air permits issued under the Clean Air Act.

May 2016:

The EPA visits the Denka facility to gather more information about chloroprene production at the plant and to understand what air pollution controls are in place.

Later that month, in coordination with the state Department of Environmental Quality, the agency announces an air sampling/monitoring plan for chloroprene in areas surrounding the Denka plant. It also requires the facility to start conducting its own emissions testing, and it starts working on updating the plant's chloroprene permit.

June 2016:

The EPA orders DuPont to pay \$37,500 in civil fines after the 2014 Clean Air Act investigation. The agency found DuPont failed to repair leaks of toluene, another chemical produced at the plant. Investigators also visit the plant to evaluate whether it is in compliance with the Clean Air Act.

October 2016:



The investigators send a draft report to the EPA's regional office.

December 2016:

Denka says it will contest the draft report. The company also asks for numerous redactions because of “confidential business” concerns.

Later that month, DEQ Secretary Chuck Brown tells the Parish Council that some residents are “fear-mongering” about the plant’s emissions.

January 2017:

DEQ signs a consent decree with Denka. In it, Denka agrees to spend \$17.5 million to reduce chloroprene emissions by 85 percent by the end of 2017. The company announces a timeline for retrofitting the plant with newer technology.

April 2017:

The EPA makes public the draft report outlining more than 50 potential Clean Air Act violations at the plant.

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## CityTree: the air pollution startup with the purifying power of 275 trees

*Date: 26-Jun-2017 Source: Independent*



Zhengliang Wu knows all about the dangers of air pollution. He rarely returns to his birthplace of Shanghai from Germany, where he lives. But he sees his mother and sister suffer each time they return from visiting his elderly grandmother in China.

“Every time they go back they get sick, it’s terrible,” the IT engineer and co-founder of Green City Solutions says down the phone from Berlin. He’s about to leave for Paris, where he will oversee the installation of two new CityTrees, a plant-based air filter as powerful as 275 normal

trees, in 99 per cent less space.

The four co-founders of Green City Solutions - an architect, a horticulturalist, a mechanical engineer and Wu, the IT specialist - met at Dresden University and founded the startup in 2014. Together, they created the CityTree as part of the answer towards a complex problem: how to clean the air in the world’s increasingly overpopulated urban areas.

City dwellers suffer from asthma, heart disease and lung cancer because of the poor quality of the air where they live. The World Health Organisation says four in every five city residents face toxic levels of particulate air pollution: a combination of poisonous nitrogen dioxide and other carcinogenic particles. It's not getting any better: the WHO says air pollution was eight per cent worse in 2013 than it was in 2008.

Yet social entrepreneurs tackling air pollution and other environmental issues often face huge barriers from corporate lobbying power and a lack of finance. Even when the governments attempt to introduce regulation, it can be thwarted by corporate greed just like in 2015, when regulators discovered that Volkswagen had been fixing the emissions figures for diesel cars.

While governments grapple with legislation and its enforcement, Wu has come up with a way to tackle air pollution in real time. Green City Solutions uses plants that are good at filtering air, like mosses and lichens, with a very large leaf surface compared to other plants, so that the leaves can absorb more pollution without it clogging up the surface. They attach the moss to air vents to speed up the cleansing process and collect data about types and levels of pollution where the CityTrees are installed.

Green City Solutions was able to develop the CityTree thanks to significant support from the German government and a private bank loan. As the company grew, it secured private investment and even won a couple of small prizes in Europe. In July 2017, it is in with a chance of winning its biggest competition yet as a finalist in the the Chivas Venture. Judges must decide between 30 socially responsible enterprises gathered in Los Angeles for the chance to win \$1m.

"Chivas is the biggest competition we have been part of," Wu says. "It's the first time we have a chance on a global scale to get that much money. They are connecting different startups worldwide and helping them make an impact."

The competition includes eco-friendly stationery that funds education projects for women and girls, vertical reef mussel-farming technology and smokeless cooking technology that can be fuelled by twigs, cow dung, coconut shells and even the husk of a corn cob.

Many of the entrepreneurs in the final have come up with solutions to combat waste. There's FOLO Farms, which collects food waste from hotels and restaurants and turns it into nutrient-rich compost, as an alternative to the pesticides that have wreaked destruction on the land in the company's home country, Malaysia.

Or Recycle Points, a rewards system to encourage low-income families to recycle waste in Nigeria. The company employs young so-called "wastebusters" to go door to door on electric tricycles collecting recyclable waste such as plastic bottles, aluminium cans, newspapers and cartons. These items are then processed by unemployed women within the community, and sold on to recycling plants to use as raw materials for new products.

The UK is represented by Tessa Cook, co-founder of Olio, an app that connects people in a community with shops to help them share surplus food, rather than it going to landfill. Cook, the daughter of a farmer, knows first hand how much work goes into producing food, but also that up to half of it never gets eaten.

She says social enterprises need to make sure they are addressing a real problem to be effective. “This ensures the market is there and it’s big enough,” Cook says. “Be clear on why it’s your problem to solve because this ensures you have the passion and resilience that’s absolutely essential for any startup.”

Wu’s market at the moment, is often authorities keen to show that they are taking a progressive approach to air pollution. Anna Richardson, Glasgow city convener for sustainability and carbon reduction, said the installation of two CityTrees is part of Glasgow’s commitment to clean air.

“We have set a target of making Glasgow one of Europe’s most sustainable cities and the arrival of these installations is a massive boost,” she said after the installation of trees next to the Buchanan Bus Station on Killermont Street and outside the Gallery of Modern Art on Royal Exchange Square.

There are also CityTrees across Germany and in Macedonia, Oslo and Brussels, where one the size of a bus shelter is strategically positioned outside the Mont des Arts with benches for passers by to stop and breathe the fresh air.

“It’s my favourite CityTree,” Wu says. “It’s planted at a very popular spot and it’s very symbolic because it’s where the EU decision makers are sitting.”

But Wu has ambitions for CityTrees to become more than symbols that governments are taking action on the deadly issue of air pollution. He wants the CityTree to become part of a new climate infrastructure that prioritises the health of citizens above profit.

“We’re building a climate infrastructure,” he says. “We want to move in the direction where we have solutions for every application in the city, not just in the street but also attached to facades, integrated into the ventilation systems of buildings and in private homes.”

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## **Goa airport operating without valid consent: Pollution board**

*Date: 26-Jun-2017 Source: The Times of India*

PANAJI: The Goa State Pollution Control Board has found that the international airport at Dabolim is operating without a valid consent under air and water acts. The pollution board also found that the sewage treatment plant at the airport was not functioning.

"As per the board records, the unit doesn't have the consent to operate for the new terminal building. The board may direct the unit to apply for consent to operate at the earliest and may also apply penalty for delay in obtaining consent to operate," GSPCB said in its inspection report.

The pollution board inspected the Dabolim airport after it received a letter on May 30 from panchayat minister Mauvin Godinho's office. The minister's office forwarded a complaint of May 3 from one Jude Joseph Thypo of Assoi Dongri, who had alleged that the Airports Authority of India was discharging sewage in Assoi Dongri nallah.

After getting the complaint, the pollution board representative along with the health officer of urban health centre in Vasco conducted an inspection on June 20. The officials first visited Assoi Dongri nallah

adjoining NH 17B and found water flowing into the nallah from the airport side and the surrounding areas littered with solid waste.

"Water sample from the Assoi Dongri nallah (downstream sample) was collected for analysis," the board said in the report.

The board officials also visited the AAI's sewage treatment plant. "The STP was not in operation due to maintenance of sand filter. The STP operator informed that the plant will be put into operation within two days. Hence, STP sample could not be collected for analysis," the report said.

The board also observed that the unit has installed flow-meter at the outlet of STP and no flow-meter is installed at the STP inlet. It also observed that the logbooks were maintained at STP but the records were not in proper order so as to ascertain the quantity of water treated daily.

The officials inspected the garbage sorting facility of AAI and it was observed that the sorting shed is inadequate for the quantum of waste generated.

The GSPCB recommended that the board may conduct performance evaluation of the STP at AAI and also increase the capacity of the garbage sorting shed. The report also recommended that the board may direct AAI to monitor noise and ambient air quality levels as directed by the Union ministry of environment, forest and climate change.

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## India's air pollution could decrease solar power generation by 17%, study says

*Date: 27-Jun-2017 Source: Hindustan Times*



Air pollution might cast a cloud over India's solar power ambitions. Providing another reason for the Indian government to tackle the poor air quality, a new report found that pollutants can dampen solar power generation by as much as 17%.

The problem is particularly bad in north India. Both dust and manmade sources contribute equally to the reduction in power generation. In some pockets of northwestern India the depression

in solar power generation can be as much as 50% of the installed power capacity. "Crop burning here is one of the main reasons for this," Chinmay Ghoroi, one of the authors of the report, and a researcher at IIT Gandhinagar.

Air pollution impacts solar generation because particulate matter and dust that is a form of pollutant prevent shortwave solar radiation required for energy production from reaching the panels. Though particulate matter produced from sources like vehicular pollution, industries and crop burning may make up only 8% of the pollutants, because they constitute partially burned carbon, tend to absorb solar energy.

Though the report cites installed solar capacity as 4.GW the current installed solar capacity, at the end of 2016-17 stood at 12 GW, accordingly the loss could actually be over 2 GW. India is not only leads the International Solar Alliance, it has set ambitious renewable energy targets of 175 GW by 2022. Last year, for the first time investment in renewable energy in the country surpassed investment in coal.

However, Ghoroi, expressed doubts about India's ability to meet its solar power targets. Despite how much solar generation capacity in India grows, how much energy is actually produced also depends on natural factors like how much sunlight is received, what is the cloud cover, weather conditions and it seems heavily dependent on manmade factors like air pollution.

There are reductions in other regions like China and the Arabian peninsula that also invest heavily in solar power generation and also suffer from poor air quality. China has a larger installed solar capacity of so 17% translates into a loss of about 7400 MW of energy.

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## **A city covered in trees will fight air pollution in China**

*Date: 27-Jun-2017 Source: Engadget*



It's easy to find buildings laced with greenery in order to reduce their CO2 footprints. But what about an entire city? That's on its way. Construction has started on Liuzhou Forest City, a 30,000-person urban development where every building will be covered in pollution-reducing plants (over 1 million of them, in fact). They'll also rely on geothermal energy for air conditioning and pack solar panels to collect their own energy. Logically, the transportation network

will be green as well. It'll revolve around electric cars and a central rail line that links the experimental space to the city of Liuzhou.

If all goes well, the project will absorb nearly 10,000 tons of CO2 (and 57 tons of other pollutants) on a yearly basis, and pump out 900 tons of oxygen in the process. This isn't some far-off dream, either, as Boeri's firm expects to complete the Forest City by 2020.

Just don't count on these eco-friendly cities becoming ubiquitous. Even if municipalities are fine with retrofitting existing buildings, they'll still need ideal climates to support all that flora. There's a good reason why Boeri's team is setting up in southern China -- it's easy to maintain plant life in an area which rarely deals with freezing temperatures. Nonetheless, this hints at a future where entire population centers fight air pollution and leave a relatively tiny mark on the environment.

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## Restored copper statues back atop courthouse

*Date: 28-Jun-2017 Source: Vindy*



The public got a close-up look at the restored copper statues taken from atop the Mahoning County Courthouse, downtown.

After the ground-level display in front of the courthouse this morning, they were hoisted this afternoon back to their pedestal on the roof of the 106-year-old building, which is undergoing

restoration.

During that display, county commissioners met in the courthouse rotunda.

“This is a beautiful building, over 100 years old. The statues on the top of the building are the crown jewel,” said Commissioner Anthony Traficanti. Seeing their return to the courthouse “is a highlight of my career,” he told the meeting audience.

The three hollow statues, which were restored after being removed from the roof in October 2010, are named “Justice” on the left, “Strength and Authority” in the center and “Law” on the right.

They were displayed on a flatbed trailer in the southbound curb lane of Market Street, which was closed to motor vehicles in front of the courthouse for the occasion.

Their statues' heads, which had to be removed for highway bridge clearance purposes, were bolted back on immediately after their downtown arrival early today.

The center statue in the 2,200-pound cluster is 12 feet high; and the cluster is 16 feet 10 inches wide and 79 inches deep.

“They did a great job, I think. It says a lot about our tax dollars at work,” Doug Martinec, construction superintendent with Murphy Contracting Co. of Youngstown, said of the restoration crew.

Murphy Contracting is the building restoration project’s general contractor.

“They’re in very good shape now. I’m intending to give us another 100 years of life. ... Their inside structure has been restored with stainless steel this time,” Elizabeth Murphy, an Akron historic architect engaged in the restoration, said of the statues.

“They also will not have to put up with acid rain or any of those kinds of airborne pollutants,” because of reduced industrial air pollution, she said.

“These are the same structure as the Statue of Liberty. It’s copper sheet metal with a steel frame,” she explained.

The statues were restored at the McKay Lodge Fine Arts Conservatory Laboratory Inc. in Oberlin.



The \$70,000 statue restoration included realignment of all bent pieces, re-soldering of all copper joints, application of a chemical patina and installation of a new stainless-steel interior armature and anchoring system.

The courthouse restoration project has included replacement of rusted statue pedestal support beams and of the building's roof and 730 pieces of the building's fired-clay masonry, known as terra cotta, around the building's upper perimeter.

The project was delayed by the need to replace unforeseen asbestos roofing discovered in the pedestal.

In January, commissioners added \$853,529 to the \$6 million restoration project cost to cover additional work to be performed this year, including brick repairs and replacement of rotted original wooden window frames in two interior window wells.

The building, which opened March 6, 1911, has a granite exterior and a marble interior and was entered in the National Register of Historic Places in 1974.

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## Friends of the Earth project shows serious levels of air pollution across the UK

*Date: 28-Jun-2017 Source: The Reading Chronicle*



Campaigners have claimed the UK's air pollution problem could be worse than thought as a "citizen science" project showed dirty air across the country.

Thousands of people have taken part in the experiment run by Friends of the Earth to assess levels of pollutant nitrogen dioxide in local areas such as the street they live in or outside their children's schools over a period of two to four weeks.

The "clean air kits" give a snapshot of pollution and have recorded high nitrogen dioxide levels - which if they were seen across a year would breach legal limits - in 133 local authorities and in 181 parliamentary constituencies.

The number of areas recording high concentrations is greater than in Government documents, Friends of the Earth said.

The results also suggest there are 13 pollution hotspots across the country which are not currently identified as having a problem by their local authority or Government, the environmental group said.

Ministers must put in place measures to tackle air pollution in final air quality plans due to be published in July, they demanded.



These should include Government-funded and mandated clean air zones, with charges for the most polluting vehicles to enter areas with high air pollution, and for a diesel scrappage scheme.

Oliver Hayes, Friends of the Earth air pollution campaigner, said: "It's shocking that these early results suggest the Government is underplaying the true extent of pollution in the UK.

"With a new batch of MPs, at least 181 of whom appear to have high levels of pollution in their constituency, and a new Environment Secretary, there can be no excuse for weak action as ministers pull together the final air quality plan over coming weeks.

"These results, and the stories behind them of people suffering poor health because of air pollution, add even more weight to the overwhelming case for quicker, tougher action on dirty air."

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## **Bavaria agrees anti-pollution steps with BMW, Audi, MAN**

*Date: 28-Jun-2017 Source: Reuters*

German carmakers BMW, Audi and truck manufacturer MAN (VOWG\_p.DE) have agreed with Bavaria to cut pollution from diesel engines, with manufacturers promising to reduce emissions from older models and the state government planning incentives to spur sales of newer, more efficient cars.

With Germany's national elections only three months away, politicians are raising pressure on the powerful car industry to contribute toward improving air quality and win back trust that was pared down by Volkswagen's emissions scandal two years ago.

The steps agreed on Wednesday include a pledge from luxury rivals BMW and Audi to ensure that at least half of their Euro-5 standard diesel car fleets will reach a level of nitrogen oxide (NOx) emissions that will cut pollution in cities, the Munich-based state government said.

Bavaria wants to table proposals in July for limited purchasing incentives, especially through amended car tax, to get drivers to switch from older Euro-3 and Euro-4 models to more fuel-efficient Euro-6 technology, it said.

Wednesday's moves coincided with a warning by Germany's ADAC car club, Europe's largest and most influential, to push back planned purchases of diesel cars until Euro-6D technology becomes available in new models this autumn.

Sales of diesel cars have been falling since the VW scandal, but have dropped even faster since cities, including Stuttgart and Munich, have considered banning some diesel vehicles, blaming emissions for a rise in respiratory disease.

"We believe there are more intelligent options than driving bans," BMW Chief Executive Harald Krueger said in an emailed statement. "That's why we support the initiative of the Bavarian government for a comprehensive and lasting improvement of air quality in our cities."

The manufacturers have agreed to shoulder the costs for certification and development of the necessary engine management software, the Bavarian government said.

(Reporting by Joern Poltz; Writing by Andreas Cremer; Editing by Maria Sheahan)

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## Your city could be exporting deadly air pollution – here's how

*Date: 29-Jun-2017 Source: City Metric*



Air pollution is often seen as a local problem requiring local and regional solutions. Karachi, London, Lagos, Mexico City and Paris are just a few of the world's cities grappling with poor air quality. With city-dwellers increasingly being asked to ditch the car – especially if it's diesel – and use greener modes of transport, it's easy to forget that air is also mobile. As a result, there's very little attention being paid to the impact of cross-border air pollution on human health and well-being. *The Conversation*

Globally, air pollution caused by microscopic fine particles (PM<sub>2.5</sub>) kills 3.5m people each year. These particles can easily enter the respiratory tract. They rank fifth worldwide among all risks to health after high blood pressure, smoking and diet. Breathing filthy air can increase the risk of heart disease, lung cancer, stroke and affect mental health.

And it is the vulnerable in society who suffer the most, with 300m children currently breathing in toxic air. Indoor and outdoor air pollution, together with second-hand smoke, causes 570,000 deaths in children under five years of age each year, due to respiratory infections such as pneumonia.

The movement of air pollutants from transport and agricultural activities in one country can affect the air quality in another. Such as the smoke from Indonesian forest fires which has caused a toxic haze to descend over parts of Malaysia and Singapore. Another example is the atmospheric brown cloud – a transnational air pollution phenomenon which contains aerosols such as soot and dust that poses risks to human health and food security, especially in Asia.

### Exporting emissions

Cross-border air pollution has been an issue for some time: in the 1970-80s, the UK was nicknamed the “dirty man of Europe” for belching out industrial sulphur emissions, which contributed to acid rain in Europe – a reputation that the Greens fear will be regained after Brexit.

But it's only recently that the scale of the air pollution effects of international trade has been assessed, with one study suggesting that around 400,000 premature deaths occurred in 2007 in a different region of the world than the one in which the air pollutants were emitted.

Goods and services produced in one region for use by another region are responsible for 22 per cent of air pollution-related deaths worldwide (762,400). In particular, Chinese particle emissions were responsible for 64,800 premature deaths in other regions, including over 3,000 deaths in Western Europe and the US. By contrast, Chinese products bought in Western Europe and the US are linked to over 100,000 deaths in China in one year.

International trade has seen many developed countries transferring their manufacturing abroad, in order to take advantage of cheap labour and lax environmental standards in often less wealthy nations. As a result, air pollution, including greenhouse gas emissions, has effectively been exported to developing countries.

### Making the switch

So, while murky grey images of smog smothered Beijing or New Delhi may prompt others to ask why they don't clean up their act, it's important to remember that these cities are shouldering an enormous manufacturing burden, as much of the world's goods and services are outsourced to China and India.

There is now a need for governments to switch from calculating greenhouse gas emissions based on production to one based on consumption of goods and services. This has important implications for global climate and air mitigation policies because as much as 20 per cent to 25 per cent of overall carbon dioxide emissions come from the production of goods and services which are traded internationally.

Although there has been success in achieving better air quality over the past the six decades, this doesn't erase the need to face up to big global environment challenges. Cities are responsible for around 70 per cent of global greenhouse gases. While carbon dioxide has warming influences on the climate in the long term, short-lived climate pollutants such as black carbon (a primary part of particulate matter), methane and ozone have warming influences on the climate in the near-term. Local action, such as banning diesel cars, addresses both air and climate pollutants. This can achieve immediate effects by reducing near-term warming and improving air quality levels.

There are several international conventions to regulate air pollution and related issues. But for now, there's no coherent legal framework which aims to protect the atmosphere. This has led to calls for a new Law of the Atmosphere to provide effective cooperation on air pollution and climate change at regional and global scales. As it stands, the likelihood of such a law gaining support is low, given the climate change scepticism exhibited by powerful world leaders such as presidents Trump and Putin.

Everyone has the right to clean air. But air pollution requires no visas, and its devastating impact can be felt far from the source. No longer can the leaders of developed nations shy away from the fact that their citizens' consumption and lifestyle choices have a significant impact on people in others part of the world. As consumers, we have the power and the responsibility to demand better environmental and social standards – so we can all breathe life, wherever we live.

Gary Haq is SEI Associate in the Stockholm Environment Institute at the University of York.

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## Solar energy revolution hits barrier: Air pollution

*Date: 29-Jun-2017 Source: CBS News*



Solar energy is running into a pesky problem: air pollution worldwide.

Researchers from Duke University found that air pollution — specifically airborne particles, which accumulate on solar cells — is cutting solar energy output by more than 25 percent in certain areas of the world, causing billions of dollars of losses. The research was published this week in the journal *Environmental Science & Technology Letters*.

The hardest hit regions happen to be those currently investing the most in solar energy infrastructure: China, India and the Arabian Peninsula, according to researchers.

Duke University professor Michael Bergin set out to explore the link between air pollution and solar panel efficiency after a visit to India.

"My colleagues in India were showing off some of their rooftop solar installations, and I was blown away by how dirty the panels were," Bergin said in a statement.

Working with researchers at the Indian Institute of Technology-Gandhinagar and the University of Wisconsin at Madison, Bergin confirmed that solar panels become significantly less efficient as they become dirtier over time.

Maintenance is key: the panels he examined showed a 50 percent uptick in efficiency from being cleaned after several weeks. Cleaning solar panels is somewhat complex, and there's a risk that cleaning them incorrectly could damage the expensive structures.

Analyzing the panels at the Indian Institute of Technology-Gandhinagar, Bergin found they were covered in about 92 percent dust and 8 percent carbon and ion pollutants, particles from manmade pollution.

That 8 percent is particularly dangerous, researchers said, as small particles from human-made pollution are extremely effective at blocking out light.

In polluted environments, ambient particles in the surrounding air also block out sunlight and undercut solar panel efficiency.

Extrapolating from their observations in India, the researchers estimate that dry regions like the Arabian Peninsula, Northern India and Eastern China must be facing heavy losses in solar efficiency. Solar panels in these regions face efficiency losses between 17 to 35 percent, depending on how well they're maintained.

"We always knew these pollutants were bad for human health and climate change, but now we've shown how bad they are for solar energy as well," Bergin said. "It's yet another reason for policymakers worldwide to adopt emissions controls."

China stands to lose tens of billions of dollar per year as the country's growing solar energy infrastructure collides with its toxic air pollution, the researchers said.

China has emerged as a major player in renewable energy in recent years, overtaking the U.S. as the global leader in renewable power. The momentum stems from extreme circumstances: China is by far the world's largest user of coal and has long struggled to gain control over the toxic smog that blankets urban areas. China's smog routinely shuts down airports, schools and roads, forcing locals to stay inside or risk serious respiratory damage.

China is still committed to the landmark Paris Agreement on reducing carbon emissions, despite President Trump's decision to pull out of the accord. In the wake of the U.S. pullout, China signed a independent, non-binding agreement with the state of California to expand renewable energy trade between the two economies.

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## Air quality in Shimla, Manali declines due to tourist influx

*Date: 29-Jun-2017 Source: Hindustan Times*



Kashmir's loss is certainly Himachal's gain in terms of tourism but at the cost of air quality. The ongoing unrest in the Valley has led to tourist influx in Himachal Pradesh, bringing cheers to the hospitality industry, but resulting in a rise in vehicular traffic. Such ingress has alarmingly deteriorated air quality in major tourist towns, besides impacting the ecology due to littering.

State's capital in the past one month has witnessed heavy tourist footfall, which increases manifold on the weekends. Around 4,000 vehicles

enter Shimla on weekends apart from locally-registered vehicles. There are 14,000 vehicles registered in Shimla and its vicinity. The level of respirable suspended particulate matter (RSPM) has increased by 40% in last fortnight.

The state environment and pollution control board gathers the ambient air-quality data through its monitors at two locations -- one at the bus stand and other at the Ridge. The RSPM level at the main bus stand on the circular road was recorded at 97.74 microgram per metric cube, almost double the permissible limit.

This level multiplies during the weekends. Air-quality monitoring of the town also shows that air pollution on the roads surges between 10am and 6pm. Experts attribute the decline in air quality to increase in traffic.

“We have formulated a joint plan with other departments concerned to monitor the air quality,” member secretary pollution control board Sanjay Sood told Hindustan Times. “We have already suggested government to ban the old vehicles plying in the town,” he said, adding, “Rains should bring down the air pollution level now.”

However, he offered no explanation on pollution control board’s failure to check the carbon emission from tourist vehicles.

Similarly, the air-quality level has also decreased in Manali that attracts hordes of tourists. The RSPM level in Manali increases on the weekends with the latest being recorded at 60.35 microgram per metric cube.

The influx of tourist vehicles also results in emission of more toxic gases -- sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>). Moreover, the tourists also tend to leave behind trails of litter.

“Managing garbage is a difficult affair for us. The garbage generation doubles in the peak tourist seasons,” Manali municipal council president Shabnam Tanwar said.

He said the waste management plant in Manali is obsolete and we want the government to upgrade. “Even the trash, particularly plastic, from Rohtang Pass is treated here,” he said.

Manali town and panchayats in vicinity generate around 20 metric tonne (MT) garbage on daily basis with volume increasing up to 50 MT in tourist season.

Manali municipal council is now seeking help from its ward members, hoteliers and taxi operators to run a drive to clean up the trash left by visitors.

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## **Fine motorists idling outside schools to cut air pollution, say health watchdogs**

*Date: 30-Jun-2017 Source: The Guardian*



Parents who leave their car engines running at the school gate should be fined in order to help tackle the air pollution crisis, according to England’s official health watchdogs.

New guidance from Public Health England (PHE) and the National Institute for Health and Care Excellence (Nice) sets out a wide range of measures to cut air pollution, which is at illegal levels in almost 90% of urban areas.

The health experts say children and older people are most at risk from toxic air and so “no idling” zones should be used outside schools, care homes and hospitals. Westminster city council has already introduced £80 fines for drivers caught with idling engines. Other PHE and Nice recommendations include planting more pollution-absorbing trees and hedges, training motorists to drive smoothly and to keep their tyres pumped up, and supporting cycling and electric vehicles.

The health watchdogs also back “clean air zones” that charge or restrict polluting vehicles from entering town centres. The government’s own evidence shows this is the fastest way to cut pollution, but ministers have shied away from implementing zones, fearing a backlash from motorists.

Air pollution is estimated to cause 40,000 premature deaths a year in the UK, making it the biggest environmental killer. It also results in health costs of between £8.5bn and £18.6bn a year, according to PHE and Nice. The government’s plans to solve the pollution problem have twice been declared illegally poor and its latest plan in May was dismissed as “weak” and “woefully inadequate”. Ministers are now being sued for a third time.

“Air pollution is a major risk to our health, and so far suggested measures have not managed to tackle the problem sufficiently,” said Prof Paul Lincoln, chair of the Nice guideline committee. “This guidance is based upon the best evidence available. It outlines a range of practical steps that local authorities can take, such as the implementation of no-idling zones, to reduce emissions and protect the public.”

Penny Woods, chief executive of the British Lung Foundation, said: “These guidelines bring into sharp focus the reality that air pollution is one of our most important public health issues. We welcome the recommendations to introduce no vehicle idling areas, which will help to protect the most vulnerable in our society.”

RAC roads policy spokesman Nick Lyes said: “We welcome the principle of no-idling zones, especially outside schools, hospitals and care homes. No-one should have to suffer dirty air as a result of a driver leaving their engine on unnecessarily. Sadly, many drivers don’t realise the harm they are causing by doing this.”

Healthcare professionals should play a role in tackling Britain’s air pollution problem too, said Prof Paul Cosford, director of health protection at PHE: “They can advise individuals, particularly those who are most vulnerable, on how to reduce the personal impact of air pollution – for example, by reducing strenuous activity when air pollution is high and by using less polluted routes in towns and cities.”

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**July 2017**

## **Preserve and improve Missoula's air quality by adequately funding the EPA**

*Date: 01-Jul-2017 Source: Missoulian*



It has become a point of pride that Missoula frequently ranks as one of the best towns in the nation for livability, outdoor adventures and the arts. Last year, Missoula County benefited to the tune of more than \$300 million from tourists who came to take advantage of our beautiful surroundings and pristine environment.

This wasn't always the case. Not that long ago, we were highlighted for a far less favorable reason. In 1970, National Geographic printed a spread about

Missoula's air pollution, lumping us with the most polluted places in the country. They weren't wrong. For decades until the early 1970s, tepee burners filled our valley with industrial wood waste smoke, and in the 1980s, residential woodstoves and fireplaces caused such dense smoke that streetlights would turn on during the daylight hours. Health studies from the 1980s showed Missoula children had decreased lung function compared to children from Montana cities with cleaner air.

Missoula has come a long way. When you stand outside and breathe fresh air or admire the view, you are benefiting from decades of local vigilance and efforts spent implementing national clean air standards and reducing sources of air pollution.

There's no denying that air pollution is a serious threat to public health. It causes tens of thousands of premature deaths in our country every year, as well as tens of millions of cases of adverse health impacts, such as cancer and damage to respiratory, cardiovascular, neurological and reproductive systems. The more we study the effects of air pollution, the more its detrimental impacts become clear.

In Montana, our constitution guarantees a clean and healthful environment, but the president's proposed FY 2018 budget threatens our pursuit of clean air for every Missoula County resident. It slashes the federal grants that provide essential funding for the Missoula City-County Air Pollution Control Program and severely weakens the Environmental Protection Agency, which provides necessary support for our local program.

The administration also targeted programs aimed at slowing climate change, which couldn't come at a worse time. We in the West now face increasingly severe wildfires and heavy smoke due to the warming climate. Wildfire smoke is currently our worst source of air pollution in Missoula, and it can have dire health consequences, especially for our most vulnerable residents, including children, the elderly, and those with heart or lung conditions.

Montanans' daily, direct experience with the environment motivates us to speak out strongly on issues that affect us, our children and our grandchildren. We are a thrifty people and judicious with our

expenditures. With an eye toward the public good, Montanans strive to be good stewards of the land and of public funds. Air quality programs are but one of many important government efforts, yet one that has a large impact in our lives due to its immediate importance.

The cost of clean air programs is a sound investment, and a cost-effective use of public money. Our best option to achieve a healthy and sustainable environment is to put financial resources toward environmental goals. Short-sighted reductions in environmental budgets will escalate health, economic and other societal costs.

Please join us in reaching out to our Congressional delegation and urging them to maintain EPA funding and grants for local programs, as well as restoring the mission to slow climate change.

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## Legal action over air pollution plans for devolved nations

*Date: 02-Jul-2017 Source: BBC*



Plans to tackle air pollution in the devolved nations are "inadequate", the High Court in London will be told later this week.

Environmental group ClientEarth is taking legal action against the UK government.

It comes after the campaigners won a case forcing ministers to publish their draft clean air strategy.

The organisation now says there is no evidence of "concrete actions" for Scotland, Wales and Northern Ireland.

Reality Check: The 40,000 deaths figure Tech solutions to monitor air quality

The UK government's department for environment, food and rural affairs (Defra) has insisted its plan does set out steps for the devolved institutions.

The Scottish government said it has sought to shape the UK government's clean air strategy.

Last month, the government at Westminster lost a court bid to delay publication of its air pollution strategy ahead of the general election. It had argued such a move would fall foul of election "purdah" rules.

ClientEarth has been involved in the long-running legal action against the government over illegal levels of nitrogen dioxide (NO<sub>2</sub>) pollution.

Now the group of environmental lawyers is going back to the High Court on Wednesday to argue that ministers have failed to comply with the court order forcing publication of the draft guidelines.

They will say the plans contain little detail about tackling air pollution in Scotland, Wales and Northern Ireland.

Air quality is a devolved matter but the environmental group said the UK, as EU member state, was deemed responsible for enforcing legal pollution limits.

ClientEarth chief executive James Thornton said: "The draft plans for Scotland, Wales and Northern Ireland are simply plans for more plans.

"The court ordered a plan for the UK government to obey the law on pollution limits across the UK as soon as possible. The health of all UK citizens is at stake, not just some."

A spokesman for Defra said it had consulted with the devolved authorities on its proposals and the clean air plan was "for the entire UK".

He added: "Improving the UK's air quality and cutting harmful emissions is a priority for this government.

"We have invested more than £2bn since 2011 to increase the uptake of ultra-low emissions vehicles and support greener transport schemes, and set out how we will improve air quality through a new programme of Clean Air Zones."

A Scottish government spokesman said it had made "strong progress" in reducing air pollution levels and would "continue to build on these achievements".

He added: "We have already sought to shape the UK government's plan with our Clearer Air for Scotland Strategy, which sets out ambitious actions designed to secure further improvements in Scotland's air quality."

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## Government taken back to court for third time over air pollution plan

*Date: 03-Jul-2017 Source: Independent*



The UK Government is being taken to court for a third time over its latest attempt to produce an effective plan to reduce air pollution to within safe limits.

ClientEarth, a group of campaigning environmental lawyers, has twice successfully won court orders requiring Ministers to come up with a strategy that complies with European Union law.

A draft third attempt was published for public consultation shortly before the general election, but only after a judge ordered the Department of

Environment, Food and Rural Affairs to do so. Defra lawyers had unsuccessfully argued that it should be delayed until after the vote because it would drop a “controversial bomb” on the campaign.

ClientEarth is due to argue that this latest version is still not good enough.

It said proposals for England were flawed because local authorities were told to use the most effective proposal – establishing clean air zones in the most polluted parts of the country that some vehicles must pay to enter – only after considering other options.

The group also criticised proposals for Scotland, Wales and Northern Ireland, saying they lacked any actual concrete action.

James Thornton, ClientEarth’s chief executive, said: “The draft plans for Scotland, Wales and Northern Ireland are simply plans for more plans.

“The court ordered a plan for the UK Government to obey the law on pollution limits across the UK as soon as possible. The health of all UK citizens is at stake, not just some.”

While air quality is devolved to these three parts of the UK, the British Government has overall responsibility, according to a Supreme Court ruling in 2015.

Public Health England and the National Institute for Health and Care Excellence have issued a report calling for clean air zones that include “restrictions or charges on certain classes of vehicles” to be considered.

It said the establishment of such zones should include “targets to progressively reduce pollutant levels below EU limits and aim to meet World Health Organization air quality guidelines”.

Mr Thornton said this expert advice should have been made available to the public during the consultation on the air quality plan.

The UK Government did not make this clear to people when it consulted on its air quality plans for the UK, forcing us to go back to the High Court next Wednesday to try to get them to do this,” he said.

“If this is going to happen, then people need to have their say on it.”

A Defra spokesperson said: “Improving the UK’s air quality and cutting harmful emissions is a priority for this Government.

“We have invested more than £2bn since 2011 to increase the uptake of ultra-low emissions vehicles and support greener transport schemes, and set out how we will improve air quality through a new programme of Clean Air Zones.”

The Government plans to publish its final air quality plan by 31 July.

## Bad air to blame for irregular rain

*Date: 03-Jul-2017 Source: The Times of India*

NEW DELHI: It's not just your lungs that the city's bad air is hurting. A study, published in the Atmospheric, Chemistry and Physics journal, has highlighted how air pollution could delay rains in some areas, on one hand, and cause intense rain in a relatively short period, on the other.

This — and several other similar studies — drives home how air pollution may already be impacting crop yields and food production.

The study carried out by IIT-Kanpur, Weizmann Institute in Israel and Indian Meteorological Department has assessed long-term data of clouds, aerosols and rainfall from June to September between 2002 and 2013. "Satellite modelling studies showed that aerosols caused formation of a large number of cloud droplets that are relatively smaller in size. These release a lot of energy, or latent heat. Then, the droplets are pushed vertically, crossing the freezing line. This is also an energy-extensive process that fuels cloud growth," said professor SN Tripathi of department of Centre for Environmental Science and Engineering at IIT-Kanpur.

In simple terms, he explained, "more aerosols can cause intense rain in a relatively short period. It can also delay the onset of rain during monsoon". Aerosol Optical Depth — the degree to which aerosols (airborne solid and liquid particles) prevent transmission of light in an area — is also considered an indirect proxy for air quality. In this study, scientists found AOD in the summer monsoon region during the monsoon months to be 0.6. There is no safe standard for AOD, but in cleaner areas such as in the US, the AOD is about 0.1.

A study by Princeton University in 2011 had indicated that monsoon rain was decreasing over the years, mainly because of anthropogenic aerosol emissions.

Professor Sagnik Dey, associate professor at Centre for Atmospheric Sciences at IIT-Delhi, said: "The frequency and intensity of rainfall during monsoon is getting affected. When it's raining, it's raining very heavily and the monsoon is often not progressing smoothly. The aerosol load is higher over the Indo-Gangetic plains, the heating gradient is higher and the cloud patterns are also changing."

According to Pallavi Pant, a US-based scientist: "The role of aerosols in rainfall is quite complex. Presence of particles in the atmosphere can influence cloud formation because they can act as nuclei or seeds for clouds to form. In some cases, a higher number of particles in the atmosphere can result in heavier rainfall."

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## Air pollution issues go back to court

*Date: 04-Jul-2017 Source: BBC*

Air pollution is forcing the UK government back to court for the seventh time.



The environmental legal group ClientEarth says ministers failed to conduct their recent public consultation on clean air properly.

It also says the government's pollution plans for Scotland, Wales and Northern Ireland are far too vague.

A government spokesman said ministers were committed to improving air quality.

- 'Smart' four-lane motorway opens
- MSPs launch air pollution inquiry
- 'Ban parents from leaving engines on'

ClientEarth's case centres on the disparity between the consultation document the government produced for the public, and a related technical document from government experts.

The technical document makes it clear that the best way of combating pollution is for councils to set up clean air zones and then to charge vehicles for entering them.

But the consultation document – produced around election time following a court ruling – said councils should try all other measures before imposing charging zones.

Critics said the consultation had been rendered toothless by ministers' wish to avoid political controversy.

ClientEarth says the difference between the two documents could open the government to judicial review from members of the public or councils who feel they were not properly consulted.

Its spokesman Tim Reid told BBC News: "The government needs to consult on this issue – it's just not behaving properly. We are dismayed to be taking them back to court again."

The group thinks that even a brief consultation of one or two weeks on charging zones would insulate ministers from further legal challenge as they prepare their air pollution strategy by the 31 July deadline imposed by a previous court ruling.

The other issue before the courts is the relationship between the UK and the nations.

Air pollution is a devolved issue, but ClientEarth argues that the UK government must take overall responsibility for EU laws. It says the pollution strategy for Wales, Scotland and Northern Ireland is "plans about plans".

A government spokesman said: "We have jointly consulted with the devolved authorities on proposals to further improve the nations' air quality and will publish a final air quality plan by 31 July.

"The draft plan sets out steps the UK, Scottish government, and Welsh governments and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland propose to take to improve air quality in our towns and cities."

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## Latest legal challenge to Tory air pollution plans fails

*Date: 05-Jul-2017 Source: The Guardian*



The government has won the latest court challenge over the UK's air pollution crisis.

Environmental lawyers ClientEarth had argued that ministers' draft proposals to improve air quality – which contributes to tens of thousands of deaths each year – were unlawful.

But at the high court in London on Wednesday Mr Justice Garnham dismissed the claim and instructed ministers to publish their full proposals

by the end of July.

He said any perceived failings in the plan did not make it unlawful as it was a draft and may change.

"Voicing opposition to proposals is what consultations are all about," he added.

Speaking after the hearing ClientEarth said although the ruling had gone against them it represented a "shot across the bows of the government".

CEO James Thornton said: "In our view, the judge made it very clear that the government must meet very specific criteria in order to avoid any future legal challenge."

ClientEarth has already inflicted two defeats on the government over ministers' previous plans to improve air quality which the courts ruled were so poor as to be unlawful.

The government's latest proposals were published on 5 May and were widely condemned, with the mayor of London, Sadiq Khan, calling them "woefully inadequate".

In court ClientEarth's argued that the government's own research proved the most effective way to reduce toxic air is by discouraging polluting vehicles from entering cities and towns through charging clean air zones. However, they argued the consultation published by the ministers in May states that charging zones should only be the option of last resort, after all other measures such as removing speed bumps and encouraging cycling have been tried.

"The draft AQP (air quality plan) is unlawful," Natalie Lieven, QC told the high court. "It is incapable therefore of meeting the terms of your order."



Lieven also argued the plan was unlawful because it only provided “a plan for a plan” rather than “concrete actions” to tackle toxic air in Scotland, Wales and Northern Ireland.

This was dismissed by lawyers for the government who said regional authorities were fully engaged in the consultation process.

The scale of the air pollution crisis was revealed in a joint Guardian-Greenpeace investigation earlier this year showing hundreds of thousands of children were being educated within 150 metres of a road where levels of nitrogen dioxide from diesel traffic breached legal limits.

Figures obtained by Labour showed that more than 38 million people, representing 59.3% of the UK population, were living in areas where levels of nitrogen dioxide pollution were above legal limits.

Research consistently shows that exposure to traffic fumes is harmful to children and adults. Children are more vulnerable because their lungs are still developing and exposure to nitrogen dioxide reduces lung growth, causes long-term ill health and can result in premature death.

Conservative ministers are reluctant to implement charges on drivers who were given tax breaks to buy diesel cars, which have lower carbon dioxide emissions.

But the increasing pressure on the government to cut the NO<sub>2</sub> emissions from diesel vehicles has been accompanied by a sharp decline in UK diesel car sales. June’s figures released by the Society of Motor Manufacturers and Traders (SMMT) on Wednesday show a 15% drop compared to June 2016. This follows a drop of 20% year-on-year in May.

The market share for diesel cars in the first half of 2017 was 44%, compared to 48% the year before. But sales of electric and hybrid cars jumped by 30% in June, giving them a market share of 4.4%.

“More long term incentives are required if this new generation of vehicles is to be a more common sight on British roads,” said Mike Hawes, SMMT chief executive.

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## With colour-coded warnings, Ahmedabad gets serious about dirty air

*Date: 05-Jul-2017 Source: Live Mint*



Ahmedabad: A plan to combat extreme heat in India’s Ahmedabad city has been so effective in raising awareness and bringing down fatalities that city officials are rolling out a similar programme to fight another environmental risk: air pollution.

Ahmedabad has among the worst air pollution in the country. But it is the first to install an air monitoring and warning system.

The Air Information and Response (AIR) plan, launched in May, involves the creation of an air quality index that measures daily pollution levels in eight locations. Giant LED screens display five colour-coded alerts of the levels, and their related effects.

An early warning system also alerts people to days when pollution is likely to reach the “very poor” or “severe” level. “Air pollution is a major risk, and unless we have data we cannot devise ways to control it and minimise its effect,” said Chirag Shah, a deputy health officer at the Ahmedabad Municipal Corporation. “But what good is collecting data if we just keep it in the office and don’t use it?”

India and China account for more than half of global deaths due to air pollution. The increase in people dying in India from such pollution is forecast to outpace the rate of such deaths in China.

India is home to four of the 10 cities in the world with the worst air pollution, measured by the amount of particulate matter under 2.5 micrograms found in every cubic metre of air, according to the World Health Organization. Tiny particulate matter can cause lung cancer, strokes and heart disease over the long term, as well as triggering symptoms such as heart attacks that kill more rapidly.

Too many cars

The main causes of air pollution in Ahmedabad include diesel-fuelled vehicles, construction, cooking fires and the burning of trash. Air quality is particularly bad in the cooler months of November to January.

Other Indian cities—Delhi, Mumbai and Pune—also have an air pollution index, but only Ahmedabad has a warning system.

“We must invest in measurement and response, or we can’t fight it,” said Dileep Mavalankar, head of the Indian Institute of Public Health, which was involved in the AIR plan as well as the Heat Action Plan. “It has to be a collaborative effort with the government, non-profits and experts,” he said.

In neighbouring Maharashtra, officials last month launched a star-rating programme that uses smokestack emission data to rate industries based on the density of fine particulate pollution. The WHO says more than 7 million premature deaths occur every year due to air pollution, 3 million of them due to outdoor air quality.

In Ahmedabad, the response to severe pollution days could include curtailing certain activities, Shah said. “This is about protecting health and saving lives. With data and warnings, we are better able to address it,” Shah said. Thomson Reuters Foundation

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## Satellites Help Reveal How July 4th Fireworks Degraded US Air Quality

*Date: 06-Jul-2017 Source: Forbes*

As my family watched neighborhood fireworks and even detonated our own little "pop, pop" versions, my 10 year old son kept asking me if this was causing air pollution. The simple answer is yes. In his well-read Weather Underground Blog, Dr. Jeff Masters wrote about his observations of degraded air quality in Michigan. My preliminary analysis of data in Georgia revealed similar spikes in PM2.5 (fine particles,



with size diameters near 2.5 micrometers and smaller). As a reference, a micron is 1 millionth of a meter so these particles are small, and therein is the problem. At that size, they pose a significant health risk. The Environmental Protection Agency (EPA) is legally mandated by the Clear Air Acts to monitor and set standards for particulate matter (PM). The Clean Air Act emerged during the Nixon and George W. Bush presidencies, respectively, and have been good for the nation because I like the concept of breathing clean air.

The National Ambient Air Quality Standards provide guidelines for the amount of PM<sub>2.5</sub> and other pollutants over certain periods of time. Particulate matter is primarily measured by ground-based sensors, but there are satellite-based methods that are very credible proxies. I became curious about whether the nation's temporary obsession with fireworks a couple of days ago can be detected in various measurements of air quality. The answer is "yes."

To answer my question, I went to IDEA: Infusing Satellite Data into Environmental Air Quality Applications. I was familiar with IDEA because I often discuss it in my Satellite Meteorology class at The University of Georgia. It is a project conceived by scientists Jim Szykman, Jack Fishman and Doreen Neil over a decade ago at NASA's Langley Research Center. According to NASA's Earth Observatory website, the developers hoped to

give local air quality forecasters better advance warning of significant regional pollution events by fusing the EPA's local, ground-based air quality measurements with NASA's satellite perspective of pollution. By combining this information with weather forecasts from the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Szykman and his colleagues will give forecasters a new view of how pollution moves over a region, like meteorologists track weather systems moving across the country.

They succeeded. EPA ground sensors actually collect small particles in the atmosphere near the surface. NASA satellite-based instruments use something called "aerosol optical depth or AOD." Aerosols, tiny particles in the atmosphere, can block or attenuate sunlight. More aerosols in the pathway of sunlight means less light passes through that part of the atmosphere. If you have a satellite dish for television reception at home, a similar process happens when it rains heavily. Large AOD means less light transmission. NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) aboard the Terra and Aqua satellites can help produce AOD measurements. When satellite-based AOD and ground-based PM values exceed certain thresholds, IDEA scientists monitor wind information from NOAA's National Weather Service and forecast how the pollution will move. Other products are also produced by the IDEA and can be found at this website.

The images of the IDEA Air Quality Index for the period July 3 to July 5th 2017 are very revealing. From the IDEA website. Wayne Feltz (University of Wisconsin) and Brad Pierce (NOAA) pointed me to this particular product. Pierce told me in an email

The Infusing satellite Data in to Environmental Applications (IDEA) three day composite history for July 03-05, 2017 shows MODIS aerosol optical depth (AOD, shaded), hourly AIRNow in-situ PM2.5 mass concentrations (micrograms/m<sup>3</sup>, colored circles), NAM 850mb wind vectors, and WF-ABBA fire locations (purple diamonds). On the evening of July 4th (02Z on July 5th is 9:00pm Central (10 pm Eastern) time on July 4) you can see high PM2.5 concentrations (>60 micrograms/m<sup>2</sup>) over much of the central US associated with aerosols from fireworks"

Times are in Greenwich Mean Time so the period July 5th 00 to 04 Z is actually the evening of July 4th. In the animation above, watch the dramatic increase in the Air Quality Index (higher PM2.5) around 02Z on July 5th for the eastern half of the country. On a 24 hour clock, 02Z is around 10 pm Eastern on July 4th (probably "firework prime time"). At 04Z (9 pm Pacific), there is a notable increase in the PM2.5 (poor air quality) along the west coast.

Since I am a scientist, I am curious and chose to examine a time plot of various air quality values in the Atlanta area (below). It is clear that in the week leading up to July 4th, there is degraded air quality. While other factors also contribute to the increased PM2.5, it is not unreasonable to hypothesize that increased firework activity is a contributing factor as many public and private fireworks activities were held during that week.

Kudos for my son, his original question was correct and "sparked" my curiosity too.

Dr. Marshall Shepherd, Dir., Atmospheric Sciences Program/GA Athletic Assoc. Distinguished Professor (Univ of Georgia), Host, Weather Channel's Sunday Talk Show, Weather (Wx) Geeks, 2013 AMS President.

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## **Texas companies penalized in less than 3% of illegal air pollution cases – report**

*Date: 07-Jul-2017 Source: The Guardian*



Texas companies involved in illegal air pollution releases were penalized by the state in fewer than 3% of all cases, according to a new report.

The figure underscores the need for strong federal oversight in a period when the Trump administration is seeking to slash the Environmental Protection Agency's budget and roll back rules, said Ilan Levin, associate director of the Environmental Integrity Project (EIP).

"Lax enforcement at the state level is a real problem at a time when EPA is being gutted," he said.

The report, Breakdowns in Enforcement, was released on Friday by the EIP and Environment Texas. The advocacy groups' analysis of state records found that overall Texas imposed penalties for 588 out of

24,839 “malfunction and maintenance events” reported by companies from 2011 to 2016. The incidents caused the emission of over 500m pounds of pollutants and total fines amounted to \$13.5m.

In 2016 there were 3,720 unauthorised pollution events but only 20 times did the state regulator, the Texas commission on environmental quality (TCEQ), impose a penalty, the report found.

Texas is the US’s leading oil and gas producer, making it a template for others. “Other states follow Texas when it comes to environmental regulation,” Levin said. But environmentalists have long complained that the Republican-dominated state government is too soft on an industry that is vital to the state’s economy but a major source of pollution.

“The State of Texas claims primary responsibility for enforcing antipollution laws, but itself rarely takes action against companies for allowing dangerous amounts of soot, sulfur dioxide, benzene and other pollutants to escape from plants during what industry calls ‘upset’ events,” the report says. It adds that the pattern of modest, infrequent, fines discourages companies from investing in upgrades and repairs to their facilities.

The worst region for unauthorised air pollution releases during malfunction and maintenance events last year was Midland, the hub of Permian Basin activity, with Houston, home to one of the world’s largest petrochemical complexes, second. A TCEQ spokesman declined to comment on the report because the agency has not yet seen it.

The analysis also claims that many polluters, such as oil and gas wells, are escaping regulators’ attention by wrongly asserting that they emit under 25 tons of sulfur dioxide and volatile organic compounds each year, a tally entitling them to a permit exemption under state and federal law.

Allegations of slack controls in Texas come as Scott Pruitt, the head of the Environmental Protection Agency and an advocate for states’ rights and limited regulation, has tried to undo, delay or block more than 30 environmental rules in his first four months in the job, the New York Times reported.

Still, environmental advocates have enjoyed some victories. This week a federal appeals court stopped Pruitt’s agency from imposing a stay on the implementation of a rule requiring oil and gas companies to report and fix methane leaks.

Last April a federal judge in Houston fined ExxonMobil \$20m for emitting 10m pounds of unauthorised air pollutants over eight years at a plant near the city.

Harris County, which includes Houston, is suing a refinery owned by Petrobras, the Brazilian state-run energy company, alleging pollution violations.

But Texas’ government has passed laws in recent years that make it harder for local authorities to assert control and pursue cases in court. In one example, after the city of Denton, near Dallas, prohibited fracking, the state moved swiftly in 2015 to ban the ban.

## Air pollution is as unhealthy as secondhand smoke, a new study says

Date: 07-Jul-2017 Source: PRI



A survey by Carnegie Mellon University of 1,200 children living near some of the biggest polluters in the Pittsburgh area shows that children who live near sources of pollution run the same risk of developing asthma as those exposed to secondhand tobacco smoke.

US Steel's Edgar Thompson Works in Braddock, just outside of Pittsburgh, has been making steel for almost 150 years. Nearby residents, including

the children of the Woodland Hills School District, have been breathing in the pollution the plant spews from its stacks, and researchers are finding that it's impacting their health.

"For years we've had school nurses tell us a large percentage of children have asthma, that up to half the kids in our schools might [need] an asthma inhaler," says Deborah Gentile, an allergy and asthma specialist with the Pediatric Alliance. For two years, Gentile has been collecting data on asthma rates among elementary school children who live near sources of pollution, such as the steel mill, Cheswick Power Station in Springdale and Clairton Coke Works.

"It's running about 35 percent. Of those, about two-thirds of them, or 24 percent, actually know they have asthma," Gentile says. "We're diagnosing new asthma in about 10 percent."

In Allegheny County as a whole, asthma rates among children are about 13 percent. By comparison, the national asthma rate is about 8 percent.

Gentile's method is straightforward: She sends children home with a simple, four-question survey for their caretakers to fill out, asking how often the child has experienced symptoms such as wheezing, coughing or trouble breathing. Gentile compared the results of her survey with the Carnegie Mellon data and found that kids who live near sources of pollution are more likely to have asthma.

"The kids that are exposed to the highest level of PM 2.5s, as well as the highest level of black carbon, are twice as likely to have a diagnosis of asthma as those who are exposed to lower levels," she explains. "That really has to be a call for public policy change to clean this air up."

PM 2.5 is particulate matter that is two-and-a-half microns in diameter. For comparison, a human hair is about 60 microns in diameter. PM 2.5 is the main ingredient in black carbon, a byproduct of burning fossil fuels.

"Particulate matter is solid or liquid material that floats around in the air. They're actually little particles. They're not gas molecules, they're little solid or liquid drops," says CMU professor Albert Presto. "Particulate matter is made up of literally thousands of different components."

Because these particles are so small, they embed deep into the lungs. Particulate matter has been linked to health problems such as lung cancer, asthma attacks and even premature death, according to the American



Lung Association. Nitrogen dioxide also contributes to kids developing asthma or having more frequent attacks. Gentile says she's particularly troubled by another aspect of the data.

"Near these point sources of pollution, we tend to see more minority families, as well as more [people of] lower socioeconomic status, and that's what researchers find in other cities as well. These are the people who can't afford to live elsewhere," she points out.

Gentile says pollution, and the asthma it causes, can have far-reaching consequences in a child's life.

"As a doctor who takes care of children with asthma, I see them missing school, not being able to participate in activities, they're not sleeping at night, their parents aren't sleeping at night. It has a tremendous impact on their life," she says.

Gentile and her team are currently compiling all of the data from her surveys and expect to put out a full report later this year, with the goal of spurring government action. To start, she'd like to see asthma screenings mandated in schools. She's hopeful the data showing a third of children near these pollution sources have asthma will be the push policymakers need to clean up the air in Allegheny County.

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## Campaigners take to the streets after finding 'alarming levels' of air pollution in Darlington

*Date: 08-Jul-2017 Source: The Northern Echo*



ENVIRONMENTALISTS are calling on a council to clean up the air as they claim to have discovered alarming levels of pollution across the town.

Darlington Borough Council say they are committed to improving air quality and insist results from their air quality monitoring have consistently shown compliance with national objectives.

However, The Friends of the Earth say findings from their Citizen Science Investigation reveal pollution levels higher than the legal maximum, representing a threat to the health of the town's

residents, particularly those with respiratory problems.

The investigation saw thousands of people across the country monitor the quality of air where they live, with ten stations established to monitor pollution in Darlington.



Results from one month of monitoring found two areas – around Yarm Road and Broadway and at Woodland Road and Hollyhurst Road – had levels of pollution higher than the legal limit, while seven other areas had levels close to the maximum.

The council say their own monitoring – recorded over a longer period of time – shows levels falling “mostly within the low index band, where effects are unlikely to be noticed even by individuals who know they are sensitive to air pollutants.”

Campaigners took to the streets recently to call on the council to tackle the issue and establish ‘clean air zones’.

FoE member Matthew Snedker said: “We have been tracking air pollution in Darlington for some time and have challenged the council to draw up plans to cut air pollution and tackle the health effects of dirty air.

“I hope councillors responsible for the health of Darlington citizens will now listen to the evidence and take the necessary steps to give everyone clean air.”

Cllr Chris McEwan, cabinet member for economy and regeneration, said the council had no need to declare an air quality management area in the town because it has consistently shown compliance with air quality objectives.

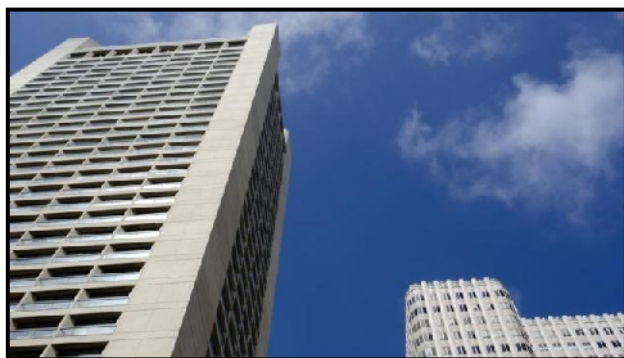
He added: “Whilst air quality in Darlington is generally good in public areas and complying with national air quality objectives, there is no complacency in this and the Council is committed to improving air quality.”

He said the council’s plans to improve air quality had been approved by Defra.

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## **New research suggests waste concrete may help reduce air pollution**

*Date: 09-Jul-2017 Source: Hindustan Times*



The researchers found that sulfur dioxide, a major contributor to air pollution, can be removed from the air by concrete surfaces.

Air pollution is the world’s single biggest environmental health risk. A new study may have just provided a roadmap to tackle the problem.

The Stony Brook University researchers revealed that sulfur dioxide, a major contributor to air pollution, is removed from the air by concrete surfaces.

Researchers Alex Orlov and colleagues discovered how concrete interacts and eliminates sulfur and nitrogen oxides. Their findings could be a significant step toward the practice of using waste concrete to minimise air pollution.

According to the World Health Organisation, as many as seven million premature deaths of people worldwide may be linked to poor air quality and pollution. Sulfur dioxide emissions are among the most common pollutants into the air globally, with power plants emitting the most sulfur dioxide. Cement kilns also produce approximately 20 percent of all sulfur dioxide industrial emissions.

“Even though producing concrete causes air pollution, concrete buildings in urban areas can serve as a kind of sponge adsorbing sulfur dioxide to a high level,” explained Orlov. “Our findings open up the possibility that waste concrete coming from building demolitions can be used to absorb these pollutants.”

He added that concrete remains the most widely used material in the world and is inexpensive. Because of this, Orlov emphasized that “the strategy of using pollution causing material and turning it into an environmental solution could lead to new thinking in urban design and waste management.”

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## Waste concrete may help curb air pollution: study

*Date: 09-Jul-2017 Source: Live Mint*



New York: Concrete surfaces can help tackle air pollution as it absorbs sulphur dioxide—a major pollutant, scientists including one of Indian origin have found.

The strategy of using pollution causing material and turning it into an environmental solution could lead to new thinking in urban design and waste management, researchers said.

This could be a significant step toward the practice of using waste concrete to minimise air

pollution, they said.

“Even though producing concrete causes air pollution, concrete buildings in urban areas can serve as a kind of sponge adsorbing sulphur dioxide to a high level,” said Alex Orlov, associate professor at Stony Brook University in the US.

“Our findings open up the possibility that waste concrete coming from building demolitions can be used to adsorb these pollutants,” Orlov said.

According to the World Health Organization (WHO), as many as seven million premature deaths of people worldwide may be linked to poor air quality and pollution.

Sulphur dioxide emissions are among the most common pollutants into the air globally, with power plants emitting the most sulphur dioxide. Cement kilns also produce about 20% of all sulphur dioxide industrial emissions.

Concrete remains the most widely used material in the world and is inexpensive.

Researchers, Girish Ramakrishnan from Stony Brook University, used various cement and cement-based building materials to conduct their experiments. They employed diffuse reflectance infrared fourier transform spectroscopy (DRIFTS) and X-ray absorption near edge spectroscopy (XANES) to identify the levels of sulphur dioxide adsorption on the materials.

Researchers cautioned that the capacity for concrete to adsorb pollutants diminishes over time as the material ages.

Crushing concrete, however, can expose new surfaces and restore its pollution removing properties. The study was published in the Journal of Chemical Engineering.

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## Kids need clean air

*Date: 10-Jul-2017 Source: Green Peace*



All across the country, kids are leading calls to clean our air. Children, parents, schools and nurseries are speaking out.

UK air pollution is now so bad it's been called a public health emergency, and has been breaking legal safety limits every year since 2010.

Just like kids need good nutrition to grow up big and strong, they also need good clean air to breathe.

Research has shown that breathing polluted air can have lifelong impacts on kids' health, and reduce their adult lung capacity by a staggering 10%. And yet we want these children to be able to grow up to be anything they want to be, even the Olympic medal winners of the future. We're falling at the first hurdle.

Our dirty air can cause children to develop asthma, as well as worsen and trigger asthma attacks in those children who are already sufferers.

Asthma is a horrible, terrifying illness for a child, as when an attack strikes it can feel like you are unable to take a breath. No child should suffer in this way, especially not when politicians can prevent this.

Mumsnet CEO Justine Roberts said: "It's notable that so many Mumsnet users are deeply worried about air quality – but perhaps it's not surprising. Mothers tend to be the ones organising healthcare

appointments, coping with the asthma diagnoses for family members, and trying to manage their routines to minimise the damage. Lots of them say they plan school and nursery choices using on air quality data, and plenty of others say they've moved to rural areas specifically to get away from polluted air."

Much of our air pollution comes from diesel vehicles on our roads. Many diesel cars are giving out much more pollution than they are meant to because car companies continue to cheat emissions testing.

In order to clean our air, we need to get diesel vehicles off our roads, and that means the diesel cars many of us drive (for which there are ready alternatives available), as well as trucks and buses. Diesel vehicles produce 90% of the air pollution coming from our roads, and diesel cars by themselves account for 40% of it.

In London, Mayor Sadiq Kahn is trying to tackle diesel pollution by introducing a much larger ultra-low emission zone as well as introducing strict laws on new buses being introduced to London's roads. His plans will gradually reduce diesel cars on London's roads and encourage drivers to switch to cleaner alternatives.

Across the rest of the country, many towns and cities are planning to introduce their own Clean Air Zones, replicating some of the work of London's Mayor.

But the extent to which each town and city is successful in reducing diesel pollution depends on the framework the government puts in place.

And so far, the government has failed to provide strong leadership for tackling pollution from diesel vehicles.

In fact, the government has been repeatedly ordered by the High Court to put in place a stronger framework to bring down illegal levels of air pollution in the UK.

It finally produced a draft plan in May, but it is widely seen as unfit to tackle the scale of the problem and the government is being taken back to court again as a result.

In order to tackle illegal and unsafe air pollution that's harming our children, we need the government and car companies to act.

The government must provide a solid national framework to encouraging towns and cities to tackle diesel pollution, as well as supporting the transformation of our roads away from diesel and to clean hybrid and electric vehicles.

And the car industry must also take responsibility for diesel pollution that's plaguing our streets and our nation's health. Instead of continuing to invest in new diesel technology which will never be clean, it should instead refocus all its energy into producing clean and affordable hybrid and electric vehicles.

## **Poor air quality from Alamo Fire a big concern for people with breathing conditions**

*Date: 10-Jul-2017 Source: KEYT*

SANTA MARIA, Calif. - Smoke still fills the sky above the Santa Maria Valley five days since the start of the Alamo Fire.

Since exploding into the largest current fire in California, the blaze has burned nearly 29,000 acres and remains just 20 percent contained.

The fire has created all kinds of issues, including hazardous breathing conditions for many like Tiffany Beaudet.

"I have asthma and I was diagnosed with it being allergic to smoke," said Beaudet. "This affects me a lot and little things like when the wind blows it just right the smell of it, I start to get sinus headaches, I start to get really bad running nose, I start to get the bad pressure under the eyes, really bad migraines and you the tightness in the chest and wheeziness and you start to panic because you feel like you can't breathe."

The smoke, which was especially problematic over the weekend, has been a big concern for the Orcutt resident since the Alamo Fire first broke out.

"It's just kind of changed the way I've been living my life a little bit and not for the better and it's just gotten a little bit like a hermit," Beaudet said.

As smoke and ash continues to linger in the atmosphere, the Santa Barbara Air Pollution Control District and Public Health Department are re-issuing an air quality warning.

"Right now we're at the moderate level and basically it's considered acceptable, however, as we high level of particulate matter from the two different wildfires, everyone needs to be paying attention to the air quality condition," said Air Pollution Control Officer Aeron Arlin Genet.

Genet emphasized physical activity outdoors should be curtailed especially when you can see or smell smoke.

"We're urging everyone to take caution and use common sense to protect yourself, as well as your family's health," said Arlin Genet. "We have the information on our website that provides the daily air quality index throughout the entire county, so you can go and see if we're still in the moderate category or have moved up to unhealthy for sensitive groups."

Similar conditions persist in San Luis Obispo County, where the Alamo Fire originated.

In the South County, places like Nipomo are experiencing the same "moderate" reading for the state air quality index, with particulate matter still above normal.

An air quality alert first issued by the San Luis Obispo County Air Pollution Control District and County Health Department on Friday remains in effect.

While smoke is visible in sky, conditions have improved since the fire roared to life on Friday afternoon. The improvement in air quality is a welcome sight for Beaudet.

"Today hasn't been as bad," Beaudet said. "The wind has been blowing here on the north side of town pretty good, so it hasn't been bad. I haven't had to use my inhaler today."

She's using that as a positive sign that the Alamo Fire and its smoke will hopefully end soon.

"I miss being able to go outside," said Beaudet. "So i just hope that it's something that gets contained soon so we can go about going about our daily lives again."

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## Warning to motorists over air pollution

*Date: 11-Jul-2017 Source: New Bury Today*



THE Newbury Friends of the Earth group encouraged motorists to turn off their engines while waiting at the Thatcham level crossing on Friday in a bid to ease pollution in the area.

The group opening a 'clean air and no idling zone' at the crossing follows a study by Newbury Friends of the Earth called Unmasked: the true story of the air you're breathing, which revealed several locations across the UK have higher levels of air pollution than previously thought.

Spokesman for Newbury Friends of the Earth Adrian Foster-Fletcher said: "Today we've highlighted the matter by showing how the majority of car drivers can't be bothered to switch off their engines even when they know it'll be several minutes before the barrier will be raised.

"A car can travel one mile for every three minutes that it's left idling.

"Air pollution is an invisible killer. We know road traffic in the town centre is the biggest problem – and diesel is the worst of all.

"This is exacerbated by drivers leaving their engines idling outside schools, the station etc.

"We need bolder and quicker action to address this and to get diesel vehicles off our roads and encourage people to walk and cycle more."

According to a new Friends of the Earth report, 40,000 early deaths occur in the UK because of health complications caused by pollution to conditions such as cancer, asthma, stroke, heart disease, diabetes, obesity and changes linked to dementia.



Air pollution is linked to heart disease, lung cancer, worsening asthma and poor lung development in children.

The Government has recently been ordered by the High Court to produce a new air quality plan to address illegal levels of pollution in the country.

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## **Link between air pollution and diabetes grows stronger**

*Date: 13-Jul-2017 Source: Geographical*



Scientists for Earth Sense, the University of Leicester and other institutions, have found a possible link between air pollution and a rise in type-2 diabetes, in a study published in *Environmental International*. They believe that exposure to traffic-related air pollutants can cause insulin resistance. The authors also concluded that demographic factors explained the possible relationship between the two.

Diabetes is a chronic disease which occurs when your pancreas stops producing the insulin that your body uses to break down glucose to get it into your blood cells. If not treated correctly it can cause issues with your heart, blood vessels, eyes, kidneys, nerves and teeth, and in many cases premature death.

With five million deaths a year, one in 16 people have diabetes in the U.K and 78.3 million people diagnosed in India – its reach is far, wide and serious. According to the World Health Organization, air pollution is the world's biggest environmental health risk, while King's College London reports that over 9,000 deaths in London alone can be attributed to unclean air.

Over the years, diabetes has become a disease associated with high-income countries. In reality, according to the International Diabetes Federation, 75 per cent of people living with diabetes are from middle to low income countries.

Dr Gary O'Donovan of Loughborough University, who led the research, said, 'High air pollution and low physical activity are two of the leading causes of disease and premature death in middle and high-income countries.'

The urgency of this study is evident in a plethora of recent research on urban migration and cities, such as the Migrants on the Margin field project led by the RGS-IBG which suggests that by 2050, 5.2 billion people are expected to be living in urban areas in Africa and Asia. A UN study estimates that by the same date, two-thirds of the world's population will be living in cities.

People in middle to low-income countries are already disproportionately suffering from both diabetes and pollution. Dr Mohga Kamal-Yanni, a senior health policy advisor at Oxfam UK explains, 'People living



on or below the poverty line tend to be diagnosed later. They have less access to treatment and suffer more acute and late complications than the rich.’

Meanwhile research led by Dr Glenn Althor, researcher at University of Queensland, shows the relationship between vulnerability and emissions. ‘This is a critical issue as the impact on the Earth’s climate from these emissions is felt by all nations, but on a disproportionate level,’ he says.

It is important to note that the study was inconclusive. Professor Roland Leigh, Technical Director of EarthSense, and Director of Enterprise at the University of Leicester’s Institute for Space and Earth Observation and co-author of the study highlights that there may be long-term exposure effects that will need to be understood.

‘We will continue to apply cutting-edge air quality research to unpick potentially connected long-term exposure factors,’ he says. ‘As innovators in air quality monitoring, the University of Leicester and EarthSense have fundamental contributions to make to the understanding of the complex issues of pollution exposure and health.’

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## MPs to ‘keep up heat’ on government over air pollution

*Date: 14-Jul-2017 Source: Air Quality News*



The re-elected chair of an influential House of Commons environmental select committee has said he will ‘hold the government’s feet to the fire’ over its plans to tackle air pollution.

Neil Parish the Conservative MP for Tiverton and Honiton was this week re-appointed chair of the Environment, Food and Rural Affairs Committee, following nominations by his colleagues in Parliament. He saw off bids for the post from Conservative MPs Zac Goldsmith and Bill Wiggin.

Mr Parish lists improving air quality as one of his ‘top priorities’ in office.

pollution which saw Transport Minister John Hayes and Defra Minister Therese Coffey jointly grilled over the government’s air quality policy (see [airqualitynews.com](http://airqualitynews.com) story).

Following the hearing in December 2016, Mr Parish wrote to the government to express his disappointment at the response provided by the two ministers (see [airqualitynews.com](http://airqualitynews.com) story).

Commenting on his reappointment, Mr Parish said: “I am delighted to have been re-elected as chair of the EFRA Committee.

“The coming months are crucial for Defra in preparing for the Brexit negotiations. My Committee has a vital role to play. I look forward to working with colleagues across the House to hold the government’s feet to the fire on issues such as Brexit preparations, post-Brexit agricultural policy and air quality.

“I am keen to continue our work listening to the concerns of rural communities and stakeholders in the agricultural and environmental sectors to make sure their voices are heard in Parliament.”

#### Audit Committee

Another high-profile MP holding government to account over environmental issues is Mary Creagh, the Labour MP for Wakefield, who has this week been confirmed as the chair of the Commons’ Environmental Audit Committee having taken over the role in February 2016.

She had served as Labour’s Shadow Defra minister between 2010 and 2013 under Ed Miliband’s leadership.

As Environmental Audit Committee chair she has led an inquiry into the future of environmental laws post-Brexit, in which she expressed a ‘lack of confidence’ in the government’s will to enforce air quality standards once the UK has left the EU.

On her re-election as chair of the Environmental Audit Committee, Mrs Creagh said: “I am delighted to be re-elected Chair of Parliament’s cross-party green watchdog, the Environmental Audit Committee. Solving environmental problems like air pollution, plastic waste and wildlife loss is vital if we want to leave a better world for our children.

“The environment was conspicuously absent from the Queen’s speech. I am determined it will not be ignored in the Brexit negotiations.”

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## Govt to set up four more air quality monitoring stations

*Date: 15-Jul-2017 Source: The Himalayan*



The government is set to launch four more air quality monitoring stations for effective measurement of air pollution in Kathmandu Valley.

With this, there will be a total of nine air quality monitoring stations, as five such stations are already functioning.

According to the Department of Environment, all the four new stations will be operated under the government starting August this year.

Information Officer and Senior Divisional Chemist at the department Shankar Prasad Paudel said, “We are ready for

launch of the four new air quality monitoring stations. The operation of new four stations will be started by August this year.”

He said the four new stations would be operated from Tribhuvan University premises in Kirtipur, Birendra Sainik School premises in Bhaktapur, Shankhapark in Kathmandu and Saibu-Bhainsepati Awash in Lalitpur. The Asian Development Bank had provided logistics support to set up those stations, Paudel added.

In August last year, the government had resumed air quality monitoring in Kathmandu Valley by installing one station at Ratnapark, seven years after previous monitoring stations were closed. Since then, the government has been running three such stations, in Ratnapark, Pulchowk and Dhulikhel.

Besides running its own stations, the government had sought access to the US embassy-monitored air quality data. After the government’s request, the embassy had been sharing with the government, air quality data from its stations based at Maharahgunj and Kantipath since the last four months.

According to the department, the stations have been sending data regularly to the central sever based at the department. The stations measure dust particles, especially particulate matter (PM 10 and PM 2.5), levels of carbon monoxide, sulphur dioxide, nitrogen dioxide and ozone in the atmosphere.

Although the practice of monitoring levels of air pollution began in Nepal in 2002 with the installation of seven air quality stations in the Valley by the Danish government, all stations were shut down by 2009.

After the stations were handed over to Nepal in 2008, the government entrusted the Environment and Public Health Organisation with managing the stations.

A misunderstanding between the government and the ENPHO led to closure of the stations in 2009. The department is in the process of installing 56 stations throughout the country in the long term.

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## **Air pollution causes more damage than we think**

*Date: 15-Jul-2017 Source: The Star Online*

MALAYSIA has four seasons — hot, very hot, hazy and wet.

The rainy season at the end of the year brings floods to certain states and parts of the country.

During the hot and very hot seasons, everything dries up and everywhere is dusty. Air pollution worsens as evidenced by the facial cotton turning black when one cleanses the face.

The hazy season starts in early September and people have been known to scramble to buy medical face masks, no thanks to the smog caused by illegal slash and burn practices in Indonesia.

The Air Pollution Index reading on a clear day is below 50, while air quality is regarded as moderate for readings between 51 and 100.

The haze over the last few years, however, saw hazardous readings of above 300.

The six ever-present pollutants in the air are ground level ozone, carbon monoxide, particulate matter, sulfur dioxide, lead and nitrogen oxide.

Air quality in cities tends to be poor due to large numbers of vehicles spewing exhaust smoke.

Other sources of air pollution are from combustion of cooking gas and due to smoke emanating from power plants, oil refineries, metal processing facilities and open burning.

## INDOOR POLLUTANTS

I used to think that my family was safe since we spend so little time out of home. But studies have discovered that indoor air is two to five times more polluted than the air outside. Indoor pollutants include tobacco smoke, emission from cooking, mycotoxins produced by certain fungi, plasticisers and pesticides.

All the while I thought air-borne pollutants were just irritants that caused respiratory problems like wheezing and asthma. I was wrong.

After much research on long-term exposure to air-borne pollutants, I have come to realise that they can lead to many diseases which I never thought could be associated with air pollution. And that children are more at risk than adults.

Studies reveal that millions of children in polluted cities are showing signs of respiratory and cardiovascular diseases and brain defects as well as Alzheimer's and Parkinson's disease.

The World Health Organisation assures that by breathing cleaner air we can reduce the risk of stroke, heart disease, lung cancer and respiratory diseases.

I have two very young children and the new knowledge I obtained was so compelling that it spurred me to search for a good air purifier.

## BLUEAIR REMOVES PARTICULATE MATTER

The Blueair air purifier appeals to me as it utilises patented Swedish technology that makes use of electrostatic and mechanical filtration to remove all airborne pollutants.

It can filter the air in the room five times in an hour and has a sensor that monitors the level of pollution and controls the speed of filtration.

Living in an environment with lots of plants, we have to close our doors and windows at all times to deter mosquitoes from entering our home. To circulate and cleanse the stagnant indoor air, the air purifier is set on automatic mode. It runs on its own and when odour or pollution is detected. For example, when a door opens, the unit automatically turns to high speed to clean the polluted air.

According to certain medical literature, the most damaging pollutant is particulate matter that is inhaled and gets lodged in the lungs.

A few days after installing the Blueair, however, I was relieved of my sinus and blocked nose issues and have slept soundly since.

It also clears smoke and smells, like when my husband roasted a whole lamb or when the interior of the house was being repainted.

Health and wellness have given me good reasons to invest in purifying the air in my home for my family, especially my two little cuties.

Living in a city, purifying indoor air is no longer a luxury but a necessity.

The views expressed are entirely the writer's own.

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## **Traffic jams worsen air quality—study**

*Date: 16-Jul-2017 Source: Business Mirror*



Here's more bad news about the pesky heavy traffic in Metro Manila. A recent study by technical experts commissioned by the civic group Kaibigan ng Kaunlaran at Kalikasan (KKK) said traffic jams continue to worsen air pollution in Metro Manila, exposing people to risks of acquiring cardiovascular diseases and various health problems associated with breathing dirty air every day.

But what is causing the traffic? Ed Alabastro, executive director of KKK said: Overpopulation and the sheer lack of discipline of Filipinos.

These two, he said, are the reason for Metro Manila's major traffic woes.

"Traffic is the reason for poor air quality but it's the population that is causing traffic in Metro Manila. We are over populated," he told the BusinessMirror in telephone interview.

Besides Metro Manila's huge population, "Filipinos lack discipline. That's another problem," he added.

He said like Metro Manila, highly populated urban centers, like Metro Cebu and Metro Davao, are sure to experience living with poor air quality sooner or later.

"Metro Cebu's traffic will lead to poorer air quality," he said.

The study commissioned by KKK, he added, confirms the problem caused by traffic congestion—which is poorer air quality.

"The more engines are running longer, the more pollution we get," he said in Filipino.

Based on the study, the congestion in Metro Manila is costing the country billions in lost revenues.

It is also contributing largely to respiratory and cardiovascular diseases, according to the study.

“Inhalation and ingestion of pollutants from mobile sources can cause diseases, such as asthma, chronic obstructive pulmonary disease, heart disease and stroke,” the study said.

Conducted for a period of two years, the study was completed recently with support from nonprofit group Clean Air Asia, scientific research institute Manila Observatory and independent professionals.

Other “area” sources, including burning refuse, street-side cooking and construction work, account for 20 percent of air pollution, while only 4 percent is attributed to “industrial” sources.

The project, “Modeling Particulate Matter Dispersion in Metro Manila”, used an internationally recognized mathematical technique to predict the pathways of pollution from various sources.

Factors that impact air quality were used as inputs to the mathematical modeling: air quality-monitoring data, topography, actual traffic count, type of vehicles and fuels, and meteorology, such as wind speeds and directions that vary in different months.

Due to variability of these factors, not all of Metro Manila experiences dirty air the same way, the study noted.

KKK, or “Friends of Progress and the Environment”, a nongovernmental organization that advances sustainable development by providing science-based research to policy-makers, said that traffic congestion is now a critical health issue.

The study specifically focused on particulate matter that can easily enter people’s lungs and cause coughing, sneezing and asthma in children. Such small particulates are also internationally recognized as causes of ischemic heart disease, cardiopulmonary diseases, respiratory dysfunctions and lung cancer.

According to the World Health Organization, around 3 million deaths per year are linked to outdoor pollution, with the majority occurring in Southeast Asia and the Western Pacific.

In the Philippines, the Department of Health has noted that the leading causes of death include cardiovascular and respiratory diseases, among them, lung cancer exacerbated—if not directly caused—by air pollution.

While the group lauded the national government’s drive to solve traffic congestion, it emphasized that a lot can still be done to address traffic and the critical risk it continues to pose to citizens.

To address the problem, the study recommended a “holistic” approach to solving air pollution and traffic congestion. It proposed greater coordination among agencies handling traffic and environmental issues; establishment of a traffic-management bureau to oversee the traffic situation.

Strengthening of the motor-vehicle inspection system and traffic-management efforts; installation of more closed-circuit television cameras to monitor both social and environmental concerns; and upgrading of traffic light system to deal with increased traffic volume; and lesser dependence on manpower to direct traffic.

The study also recommended that enforcers should undergo a uniform training program, implementation of the no-contact apprehension and stricter compliance to existing emission standards.

Motorists should also consider the quality of fuels they use, along with reliability and cost.

It recommended the enhancement of air-monitoring capability of the Department of Environment and Natural Resources, by putting up more monitoring stations in critical areas.

The group also called on government to lead a shift from cars to mass transit over the long term.

“A highly functional mass transport system, combined with land use and population management, would greatly support a drive for cleaner air in Metro Manila,” the study said.

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## **NGT notice to Centre on air pollution caused by ships**

*Date: 17-Jul-2017 Source: Money Control*

A plea alleging rising air pollution by diesel-run ships in the Indian territorial waters on Monday prompted the National Green Tribunal (NGT) to seek replies from the Centre and others.

A bench headed by NGT Chairperson Justice Swatanter Kumar issued notices to the ministries of Environment and Shipping, Central Pollution Control Board (CPCB) and Directorate General of Shipping seeking their replies before August 17, the next date of hearing.

The tribunal was hearing a plea filed by lawyer Shibani Ghosh seeking directions to monitor the pollution caused by ships and vessels entering the Indian maritime coastal waters and submit a report to the NGT.

The plea claimed that the ships were responsible for emitting a "significant amount of air pollutants into the atmosphere" by burning fuel while sailing or waiting in the docks.

"A survey was carried out to establish average fuel consumption. Fishing vessels consume about 20 litres of diesel per day and other vessels consume about 60-70 litres per day," it said.

The air pollution caused by ships has a severe impact on the ambient air quality of the coastal areas as they emit pollutants like particulate matter, sulphur oxides or nitrogen oxides which contribute to global air pollution as well, the petition said.

Referring to a CPCB study, it said that pollutants were also emitted when the "ships are waiting in the bay for docking space."

The lawyer contended that shipping emission was "rapidly rising" as trade through water-borne transport increased around the globe.

"According to the annual report 2016-2017 of the Ministry of Shipping, approximately 95 percent of India's trade by volume and 68 percent by value is moved through maritime transport," the petition said.

"Direct the respondents to place on record the various actions and steps initiated by them to regulate and control air pollution caused by ships," the plea said.

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## A first for Delhi: Vehicles and location to decide anti-pollution plan

Date: 18-Jul-2017 Source: Hindustan Times



Delhi could become the first city in the country to have its own 'driving cycle' and location-specific air quality management plans, which would help in tackling the city's rising pollution levels.

Driving cycle gives an idea as to how much pollution a vehicle is emitting and its fuel consumption while travelling from one point to another in a city. It depends on various factors such as road conditions, vehicular speed and

engine health among others. A better driving cycle denotes less pollution.

"The Central Pollution Control Board is planning to develop a Delhi-specific driving cycle and location-specific air quality management plans with the money which manufacturers and dealers have deposited with it over the past one year as Environment Protection Charge," said a senior official of the CPCB.

On August 12, 2016 the Supreme Court had directed all dealers and manufacturers to deposit 1% levy of ex-showroom price for every diesel car and SUV with engine capacity 2000cc and above sold in Delhi-NCR as environment protection charge. The CPCB was directed to open bank accounts where the money could be deposited.

"More than Rs 35 crore has already been deposited over the past one year. We have submitted a proposal to National Green Tribunal on how to use the money. As the entire money was collected from Delhi-NCR as per directions of the Supreme Court, it would be spent solely to better tackle air pollution in the region only," said the official.

Even though several countries in the US and Europe have already developed such city specific driving cycles to tackle air pollution, India is yet to come up with a driving cycle.

"This is a very good proposal. If we get to know the driving cycle of Delhi it would help us to bring down the pollution levels by doing away with those elements on the roads which cause pollution," said Kamal Soi member of the National Road Safety Council.

The CPCB is also planning to take the help of more advanced monitoring systems such as satellite imageries, sensor-based instrument and strengthen its existing ambient air quality and noise monitoring network with the accumulated fund.

According the proposal submitted to the NGT plans are also afoot to install LED display screens in some locations for creating awareness among the citizens on the rising air pollution levels of Delhi.

"We would also invite expression of interest where in research activities on how to retrofit vehicles with advanced technologies and alternate cleaner fuels could be funded," the CPCB official said.

## Denmark disputes ‘highly unfair’ air pollution limits on agriculture

*Date: 19-Jul-2017 Source: EURACTIVE*



Copenhagen voted against an EU decision to endorse an amendment to the Gothenburg Protocol on transboundary air pollution, saying it is being unfairly penalised for having taken early action to reduce ammonia emissions from its agriculture sector.

Being virtuous isn't always a paying tactic when it comes to EU-level negotiations. For more than forty years, Denmark has taken a leadership role in

tackling air pollution, taking early action to reduce emissions of ammonia from agriculture.

Now, the Scandinavian country believes it is being punished for being too successful.

Environment ministers from the 28 EU member states adopted on Monday (17 July) an amendment to the 1999 Gothenburg Protocol to reduce emissions of air pollutants globally.

But Copenhagen voted against the EU Council decision, saying it was “highly unfair” to Denmark.

“Denmark has at an early point initiated important efforts to reduce ammonia emissions from the agricultural sector. Furthermore, for many years Denmark had higher requirements for the reduction of ammonia than many other member states. Danish agriculture has thus consistently over the years delivered higher reductions than other member states,” the Danish delegation said in a statement attached to the Council decision, adopted on Monday.

“Against this background Denmark finds that the Gothenburg Protocol reduction target for Denmark on ammonia on 24% by 2020 compared to 2005 is highly unfair,” the statement added, saying Copenhagen will vote against the EU decision to endorse the revised Gothenburg Protocol.

The EU adopted new legislation last year aimed at halving air pollution-related deaths by 2030, with a revised National Emission Ceilings Directive. Nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), ammonia (NH<sub>3</sub>) and volatile organic compounds (VOCs) were all targeted under the revised directive, which also obliges EU member states to cut exposure to fine dust particles (PM 2.5).

An initial version of the revised directive also contained new emission limits for methane, a highly potent greenhouse gas. But after extensive lobbying from the agricultural sector, no limits were placed on methane emissions, a large proportion of which are generated by animals, like cow burps.

Agricultural air pollution comes mainly in the form of ammonia, which enters the air as a gas from heavily fertilised fields and livestock waste. It is instantly recognisable by its pungent smell.

Under the revised Protocol, the EU must reduce its emissions for 2020 as follows: sulphur dioxide -59%, nitrogen oxides -42%, ammonia -6%, volatile organic compounds -28%, and fine particulate matter -22%.

The effort is then subsequently shared between EU countries, with Denmark required to reduce ammonia emissions by 24%.

However, Denmark believes it must reduce ammonia emissions “disproportionately more” than other EU countries. “This is the reason why Denmark in 2016 voted against the adoption of the National Emission Ceilings Directive containing the same reduction target,” the Danish delegation said.

The revised NEC directive has more ambitious reduction targets from 2030 onwards: sulphur dioxide - 79%, nitrogen oxides -63%, ammonia -19%, volatile organic compounds -40%, and fine particulate matter -49%.

Denmark played fair, however, and accepted defeat, saying it “intends to remain loyal to the EU ambition” on curbing air pollution and “intends to accept the [Gothenburg] protocol on behalf of Denmark”.

The righteous will never be uprooted.

## BACKGROUND

Air pollution is considered as the number one environmental cause of death in the EU, leading to about 400,000 premature deaths each year due to elevated levels of fine particles and ozone, according to the European Commission.

European air quality laws are being flouted in more than 130 cities across 23 of the 28 EU member states, the European Commission found in a report published in February 2017.

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## DOJ seeks to waive Harley-Davidson air-pollution punishment

*Date: 20-Jul-2017 Source: Star Tribune*

WASHINGTON — The Trump administration agreed Thursday to waive part of the penalty Harley-Davidson Inc. agreed to pay last year to settle a case over air pollution involving racing tuners that caused its motorcycles to emit higher-than-allowed pollution levels.

The Justice Department filed a new consent decree with the U.S. District Court for the District of Columbia. It eliminated a requirement that the Milwaukee-based company spend \$3 million to curb air pollution in local communities by paying to replace conventional woodstoves with cleaner-burning versions.

Harley-Davidson would still pay a \$12 million fine.

Attorney General Jeff Sessions directed government lawyers last month to no longer seek settlements requiring offenders to pay third-party organizations to carry out pollution mitigation projects.

A judge must still approve the revision. Harley-Davidson declined to comment on the settlement change, referring questions back to the Justice Department and the Environmental Protection Agency.

Harley-Davidson executives met with President Donald Trump in February to discuss his push for "America First" trade deals. The White House did not immediately respond to questions Thursday about whether the legal tussle over the company's alleged environmental violations came up in the meeting or in subsequent discussions.

The company has denied wrongdoing in the case, which involved about 340,000 Screamin' Eagle Pro Super Tuners that allowed users to modify a motorcycle's emissions control system to increase power and performance, according to court filings. The racing tuners, which the prosecutors said were illegal "defeat devices" under federal law, also increased the amounts of such harmful air pollutants as nitrogen oxide spewing from the bikes' tailpipes.

Harley-Davidson said the offending tuners, which it no longer sells, were intended only for motorcycles ridden off-road and in closed-course competition.

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## Gurgaon's air marked 'good', but data on major pollutants not available for a week

*Date: 21-Jul-2017 Source: Hindustan Times*



Though Gurgaon's air quality has been marked 'good' for the first time in seven months, the data on the basis of which the assessment was made may not be entirely reliable.

It turns out that the data on the level of PM 2.5, a key constituent of air pollution, for the last seven days is not available. The daily average reading put out by the Central Pollution Control Board's (CPCB's) air quality index daily average in Gurgaon has only been displaying the city's Ozone (O3) data over the last week.

Since July 14, the air quality index hasn't put out data on the extent of major air pollutants that could present a clearer picture on the city's air quality.

"The ambient air quality monitoring station located at Rajiv Chowk has not been displaying data on major air pollutants owing to some technical issues. We are trying to fix it. However, their city's air quality has shown some improvement in the light of the recent monsoon showers. The data we received in the first week of July suggests as much," JB Sharma, regional officer, HSPCB, said.

While the city is in line to get three ambient air quality monitoring stations, the only one currently in operation has, of late, not been putting the necessary data that not only helps the HSPCB assess the city's air quality but also adopt measures to bring down the level of pollutants in the atmosphere as mandated by the Supreme Court.

In fact, experts said that the city's air quality could actually be a lot worse than what the data suggests. "Regular and timely updates on Gurgaon's PM 2.5 level is critical to assessing the city's air quality. The air quality had, of late, reached alarming levels and on July 6, the Environment Pollution Control and Prevention Authority had asked the pollution control board to take corrective measures. However, without timely and accurate data, such measures cannot be taken," Anumita Roychowdhury, executive director, research and advocacy and head of the air pollution and clean transportation programme, Centre for Science and Environment (CSE), said.

Experts said that timely count of three major pollutants — NO<sub>2</sub>, PM 10 and PM 2.5 — are critical for the air quality index (AQI) to put out accurate pollution data.

The index recently marked the city's air quality as 'good' on a scale of 0-100, moderate on a scale of 101-200 and poor on a scale of 201-300.

The index for individual pollutants at a monitoring location are calculated as per its 24-hour average concentration value (8-hour cycle in case of CO and Ozone) and health breakpoint concentration range. Overall, AQI is calculated only if data of a minimum of three pollutants is available.

Read I Gurgaon beats Delhi to worse air quality of day

PM<sub>2.5</sub> is suspended particulate matter, which is 2.5 micrometres or less in diameter and a major component of what constitutes air pollution. As it is very fine, it can settle in the lungs and lead to asthma and other respiratory problems.

According to the European Environmental Agency (EEA), high level of PM<sub>2.5</sub> is estimated to reduce life expectancy in the European Union by more than eight months. The permissible limit of PM 2.5 is 60 µg/m<sup>3</sup>.

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## 21 years after industrial ban, Agra still among India's worst polluted cities

*Date: 22-Jul-2017 Source: India Today*



Although the Taj Trapezium Zone Authority (TTZA) has placed over two dozen restrictions on industries in Agra to protect the Taj Mahal from pollution, but most of these restrictions remain more on paper than being practically implemented. As a result, the Taj Mahal remains engulfed in pollution year round.

If pollution data of Agra is viewed, the entire city is surrounded by polluted air and the condition is deteriorating every year, making it difficult for the

ad-hoc moratorium on new industries in Agra placed by the Environment Ministry to be lifted anytime soon. This has created difficulty in the expansion of existing industries in Agra, along with the setting up of new units.

The officials who are responsible for the protection of the Taj Mahal from pollution are not even able to prevent garbage from burning in the city and neither are they trying to control the levels of airborne dust. Agra ranks among the five worst cities in India in terms of average Air Quality Index (AQI).

An Archaeological Survey of India (ASI) official told India Today that from February to May, PM-10 particulate matter increased in the air around the Taj Mahal, which caused the AQI to reach dangerous levels. Taking a glimpse of the air quality statistics of Agra, in May 2017, PM-10 in Agra was at 203 while AQI was 169. In April, PM-10 was 170 and AQI was 147. In March, PM-10 was 141 and AQI was 127, while in February, the PM-10 particulate was at 148 and AQI was 132. All these levels are dangerously high and could give rise to various respiratory illnesses and even lung cancer, but the administration is yet to take any action on this matter.

Agra Tourist Welfare Chamber Secretary Vishal Sharma said that Agra remains one of the worst polluted cities of India despite the closure of hundreds of polluting industries. He said that there is a ban on setting up new industrial units in Agra but, the air pollution is not coming down. Instead, the air quality is becoming poorer with every passing year, making it difficult to avoid respiratory illnesses after breathing in this air for the tourists. A lot of them have taken to wearing masks when coming to Agra. The Hota Committee report on pollution was not implemented in Agra.

Sharma revealed that even Noida has a better air quality than Agra. He said that Agra has a major problem of PM 2.5 particulate in the air, apart from the dust in the air which originates from non-paved roadsides as well as the occasional dust storms that hit the city from the west including Rajasthan.

The project of creating a three-layer green barrier between Rajasthan and Agra was never fully implemented and consequently, the air quality drops significantly in the city during the summer months due to dust. While in the winters, the PM 2.5 particulate and NO<sub>2</sub> wreak havoc.

To protect the Taj Mahal from pollution, the Taj Trapezium Authority and local administration have placed several restrictions, but no efforts are being made to control the real factors that are causing such high pollution levels. Henceforth, India's industrial cities have better air quality than Agra, despite the fact that Agra let go of its polluting industries in the interest of the Taj Mahal about 21 years back.

The thermal power house that powered a large part of Agra was shut down and the use of coal in industries was banned. The petha (a soft candy popular in Agra) industry was shifted out of the city and petrol/diesel operated vehicles were banned from entering the restricted zone of 500 meters around the Taj Mahal. Despite all these measures, pollution hasn't gone down in Agra, which clearly indicates that it wasn't the industries alone that caused the most pollution in Agra.

## **Two more air pollution problem areas to be declared in Harrogate and Knaresborough**

*Date: 24-Jul-2017 Source: Harrogate Advertiser*

Residents and businesses affected by high levels of air pollution in two areas of Harrogate and Knaresborough are being asked to take part in a public consultation.

Harrogate Borough Council is proposing to declare two new Air Quality Management Areas (AQMA) in the district and is carrying out a public consultation over the size of the area that the AQMA will cover.

The proposed AQMA cover Woodlands Junction on Wetherby Road in Harrogate and York Place in Knaresborough.

Local councils are obligated by DEFRA to monitor the levels of nitrogen dioxide in their areas and ensure that they do not exceed the objectives set out in the National Air Quality Strategy.

If the objectives are not met in any one place, the council is obligated to declare an AQMA.

Councillor Phil Ireland HBC's Cabinet Member for Sustainable Transport said: "Declaring an AQMA is a positive and vital first step to improving local air quality and tackling pollution. It is important that the public have the opportunity to have their say on the proposed AQMA and I would encourage anyone who would like to comment to take part in our consultation.

"Once the AQMA is in place, we will work with local residents, businesses, partners and other interested parties to develop an Action Plan which will identify measures to reduce nitrogen dioxide levels and improve the local air quality."

Before the AQMA are formally declared, HBC is asking for views on the size and extent of the areas to be covered.

Letters have been sent to residents and businesses in and around the Woodlands Junction and York Place inviting their views.

To take part in the consultation [click here](#). You can also comment on the proposed areas by emailing the council's Environmental Protection Team at [EP@harrogate.gov.uk](mailto:EP@harrogate.gov.uk).

The consultation runs until Sunday 13 August.

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## **Britain to ban sale of all diesel and petrol cars and vans from 2040**

*Date: 25-Jul-2017 Source: The Guardian*

Britain is to ban all new petrol and diesel cars and vans from 2040 amid fears that rising levels of nitrogen oxide pose a major risk to public health.





The commitment, which follows a similar pledge in France, is part of the government's much-anticipated clean air plan, which has been at the heart of a protracted high court legal battle.

The government warned that the move, which will also take in hybrid vehicles, was needed because of the unnecessary and avoidable impact that poor air quality was having on people's health. Ministers believe it poses the largest environmental risk to public health in the UK,

costing up to £2.7bn in lost productivity in one recent year.

Ministers have been urged to introduce charges for vehicles to enter a series of "clean air zones" (CAZ). However, the government only wants taxes to be considered as a last resort, fearing a backlash against any move that punishes motorists.

"Poor air quality is the biggest environmental risk to public health in the UK and this government is determined to take strong action in the shortest time possible," a government spokesman said.

"That is why we are providing councils with new funding to accelerate development of local plans, as part of an ambitious £3bn programme to clean up dirty air around our roads."

The final plan, which was due by the end of July, comes after a draft report that environmental lawyers described as "much weaker than hoped for".

The environment secretary, Michael Gove, will be hoping for a better reception when he publishes the final document on Wednesday following months of legal wrangling.

A briefing on parts of the plan, seen by the Guardian, repeats the heavy focus on the steps that can be taken to help councils improve air quality in specific areas where emissions have breached EU thresholds.

Measures to be urgently brought in by local authorities that have repeatedly breached EU rules include retrofitting buses and other public transport, changing road layouts and altering features such as roundabouts and speed humps.

Reprogramming traffic lights will also be included in local plans, with councils being given £255m to accelerate their efforts. Local emissions hotspots will be required to layout their plans by March 2018 and finalise them by the end of the year. A targeted scrappage scheme is also expected to be included.

Some want the countrywide initiative to follow in the footsteps of London, which is introducing a £10 toxic "T-charge" that will be levied on up to 10,000 of the oldest, most polluting vehicles every weekday.

Sources insisted that while the idea of charges were on the table, there was no plan to force councils to introduce them, and that other measures would be exhausted first.

They hope the centrepiece of Wednesday's strategy will be the plan to ban diesel and petrol sales completely by 2040, in line with Emmanuel Macron's efforts across the Channel.

The French president took the steps to help his country meet its targets under the Paris climate accord, in an announcement that came a day after Volvo said it would only make fully electric or hybrid cars from 2019 onwards.

That decision was hailed as the beginning of the end for the internal combustion engine's dominance of motor transport after more than a century.

Prof David Bailey, an automotive industry expert at Aston University, said: "The timescale involved here is sufficiently long-term to be taken seriously. If enacted it would send a very clear signal to manufacturers and consumers of the direction of travel and may accelerate a transition to electric cars."

Britain's air quality package also includes £1bn in ultra-low emissions vehicles including investing nearly £100m in the UK's charging infrastructure and funding the "plug-in car" and "plug-in grant" schemes.

There will also be £290m for the national productivity investment fund, which will go towards the retrofitting, and money towards low-emission taxis.

The report will also include an air quality grant for councils, a green bus fund for low carbon vehicles, £1.2bn for cycling and walking and £100m to help air quality on the roads.

The strategy comes amid warnings that the UK's high level of air pollution could be responsible for 40,000 premature deaths a year.

A judge had said the government's original plans on tackling the issue, which included five clean air zones, were so poor as to be unlawful. The government was asked to present a new draft policy to tackle air pollution from diesel traffic before the election.

It was then called to court to explain why it had made a last-minute application to delay publication of its draft policy until after the election.

James Eadie QC, representing the government, said the policy was ready to be published but it would be controversial and should therefore be withheld until after the election.

"If you publish a draft plan, it drops all the issues of controversy into the election ... like dropping a controversial bomb," he said, adding that it could risk breaching rules about civil service neutrality and lead to the policy being labelled a Tory plan.

However, judges said the government did have to publish a draft plan with the final version needed by the end of July.

May's draft contained few concrete proposals and did not specify the cities and towns where polluting vehicles might face charges, the level of any charges or the scope or value of any scrappage scheme.

Instead, the plan put the onus for action on local authorities: "Local authorities are already responsible for improving air quality in their area, but will now be expected to develop new and creative solutions to reduce emissions as quickly as possible, while avoiding undue impact on the motorist."

Analysis in the documents showed increasing the number of CAZs from the current six planned to 27 would make by far the greatest impact in cutting pollution and provide cost benefits of over £1bn. The

CAZ policy would cut more than 1,000 times more NO<sub>2</sub> than a scrappage scheme, even if that scheme required old diesels to be replaced by electric cars.

But it required local authorities to exhaust all other options before introducing CAZ charging for diesel vehicles, such as removing speed bumps and retrofitting buses.

The coalition government had already set out a vision for almost every car and van to be ultra-low emission by 2050 – a move which the government acknowledged would require “almost all new cars and vans sold to be near-zero emission at the tailpipe by 2040”. So it is unclear to what extent the new pledge will further boost Britain’s ability to achieve air quality requirements.

ClientEarth, the campaign group that has successfully pursued the government through the courts over the UK’s air pollution crisis, gave a cautious welcome to the announcement but said ministers must take immediate action to tackle the UK’s air pollution crisis.

“The government has trumpeted some promising measures with its air quality plans, but we need to see the detail,” said CEO James Thornton. “A clear policy to move people towards cleaner vehicles by banning the sale of petrol and diesel cars and vans after 2040 is welcome, as is more funding for local authorities.

“However, the law says ministers must bring down illegal levels of air pollution as soon as possible, so any measures announced in this plan must be focused on doing that.”

The mayor of London, Sadiq Khan, has been calling for tougher measures to tackle air pollution, which kills 9,000 people a year in the capital.

A City Hall source was sceptical about the government’s announcement. “We need to look at the full details but what Londoners suffering from the terrible health impacts of air pollution desperately need is a fully-funded diesel scrappage fund – and they need it right now.”

Areeba Hamid, clean air campaigner at Greenpeace, said: “The high court was clear that the government must bring down toxic air pollution in the UK in the shortest possible time. This plan is still miles away from that.

“The government cannot shy away any longer from the issue of diesel cars clogging up and polluting our cities, and must now provide real solutions, not just gimmicks. That means proper clean air zones and funding to support local authorities to tackle illegal and unsafe pollution.”

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## **Air quality in Srinagar ‘highly alarming’, reveal SPCB’s monitoring devices**

*Date: 26-Jul-2017 Source: Kashmir Reader*

Srinagar: The Continuous Ambient Air Quality Monitoring Stations (CAAQMS) installed recently at five different locations in Srinagar by State Pollution Control Board (SPCB) has revealed that the pollution level in city has reached a “highly alarming level”.



As against the permissible level of 60 micrograms per cubic metre, the data collected by the board from these devices reveals that the pollution level has crossed 100 micrograms at all the four locations – Dalgate, Hyderpora, Rajbagh and Jehangir Chowk-Batamalo stretch. At Soura, where the device was installed few days ago, the data is yet to be collected for analyses.

“The pollution level is checked either every 24 hours or every year. The level where air quality is termed toxic is 60 micrograms during a 24-hour monitoring. But in our readings, we found that the level has crossed 100 micrograms at our four fully functional (monitoring) locations,” legal advisor at SPCB, M M Shah, told Kashmir Reader.

When analyzed for one year, the permissible level before terming the air toxic is 40 micrograms. “But given the level these devices have shown after 24 hours monitoring, the figures that will collect after one year will be much higher and alarming,” Shah said.

The devices monitor the ambient air for 8 parameters: Respiratory Suspended Particulate Matter (RSPM) PM10, PM 2.5, SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, CO, O<sub>3</sub> and benzene. Installed on July 1 this year, following the rising demands of checking air particulate matter, the devices replaced after equipment used by SPCB was ravaged by floods in 2014.

In April 2017, High Court of Jammu & Kashmir had sought the government’s response on the measures suggested by the Pollution Control Board to tackle air pollution in city. After informing the court that the pollution levels were rising, mostly due to vehicular effluents, the PCB had suggested a number of measures to deal with the problem, including the installation of Air Quality Monitoring Stations.

Shah whose wing acts as a monitoring and advisory body to check pollution in Kashmir, said that they have submitted a report to the HC for its response.

“We have recently submitted our readings to the HC where it was held that the major source that added to the deterioration of air quality is vehicular pollution. The pollutants released by these vehicles are more worrying than pollutants from industrial units because the pollutants produced at the former have less chances of absorbing with atmosphere whereas, the later finds a good space when emissions are released several meters above the ground,” he said.

To control pollution, the diesel vehicles older than 25 years have already been phased out following a HC order and the ones older than 10 years have to get a six monthly fitness certificate to ply on the roads.

“It (rising pollution) is because of lack of traffic management policy in Kashmir. We have roads potholed at every place. Traffic jams every now and then. No alternative roads in case of renovation or development of available roads. Absence of training to officials responsible for monitoring vehicles for any pollution,” Shah said.

## Foobot review: Can this air quality monitor save your life?

*Date: 27-Jul-2017 Source: alphr*



Air quality is big news right now. With pollution levels at all-time highs in our towns and cities, and some areas of London outdoing even Beijing for levels of particulates earlier this year, it's a big problem. It's so bad that even the government has taken notice, and has responded by setting out plans to ban sales of diesel and petrol cars by 2040.

That's a long way off, though, so what can you do if you're worried about it? As far as pollution

outside is concerned, the answer is not much, other than wait. However, when it comes to indoor air pollution – which it has been suggested is an even bigger problem – you can use a product like the Foobot.

The Foobot is an air-quality monitor – a smaller version of the devices government agencies use to keep tabs on and report on outside air quality – and it's packed with a variety of sophisticated sensors.

These enable it to keep tabs on three different types of airborne pollutants: particulates (the really dangerous pm2.5 particles typically kicked out by diesel vehicles); carbon dioxide; and VOCs (volatile organic compounds) – the sorts of chemical nasties released by chemical cleaning products, paint and even the glue used in furniture. It also has temperature and humidity sensors to help you correlate pollution “events” with changes in the local environment at home.

It works pretty well, too. When pollution levels are high, the LED at the front of the Foobot glows orange; when it's within acceptable levels, the light glows blue. That should be enough to put the frighteners on you, but it's fairly rudimentary in terms of the information it's capable of conveying.

In order to access more detailed statistics and graphs, you need to use the Foobot's companion app (available on both iOS and Android devices) and connect the Foobot to the internet via your Wi-Fi network.

This is relatively straightforward. The ‘bot has embedded Bluetooth, so scanning and connection are straightforward and, even more cleverly, putting it into setup mode is a simple matter of turning it upside down. An accelerometer inside detects orientation and does the rest.

Once everything is connected, you'll be able to see precise particulate levels, CO2 and VOCs, and compare those against global and safe levels. Select a segment and swipe up and you'll be able to access historically recorded levels by the hour, day, week or month.

In this way, it's possible to correlate pollution spikes with certain types of domestic activity or environmental trends, such as cleaning, cooking or a period of particularly hot weather, and it's also possible to manually tag spikes as you spot them.

It's all very interesting stuff, and living with the Foobot has been an eye-opening experience. I've been running the Foobot at home for a couple of months now, with the device set up in my kitchen most of the time, and I've noticed several interesting trends.

Whenever we cook, for instance, the particulate pollution levels rise dramatically. When the weather's cold and we keep the windows shut to trap the heat, the VOC levels ramp right up. I saw the highest VOC pollution levels when the heating came on during a particularly grey and drizzly Saturday, when the Foobot's orange LED hit maximum for several hours.

The most interesting trend I've noticed over that time, however, is that during a spell of hot weather, even with all the windows open, the levels of pm2.5 particulate pollution hardly rose at all. Given that I live fairly close to a part of the A406 that has eight lanes of traffic, I found this surprising, but at least it's one fewer thing to worry about.

However, with studies showing that indoor air pollution has been responsible for significantly more deaths than outside air pollution, that's perhaps not surprising.

A report published in February 2016 by the Royal College of Physicians estimated that indoor air pollution “may have may have caused or contributed to 99,000 deaths annually” across Europe, compared with outdoor air pollution having been responsible for around 40,000 deaths.

The question is, can you do anything about it? My experience with the Foobot indicates you can. Opening the windows while you're cooking and occasionally when the heating is on reduces potentially harmful levels of indoor pollution almost instantly, with the Footbot light switching surprisingly quickly from orange to blue.

It's also possible to automate various aspects of your smart heating, air purifier and ventilation systems based on Foobot-generated data thanks to IFTTT integration. And there's Alexa support as well.

What I would like to see more of, however, are more tips and advice on what to do in the event of a pollution event. There's plenty of information on the Foobot website's FAQ section, and you can even ask Alexa for tips, but little advice within the app itself.

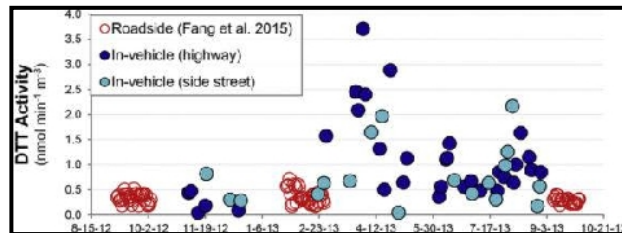
Even then, strictly speaking, you don't really NEED an air-quality monitor like the Foobot. Do your research and it's fairly obvious what you need to do to keep indoor pollution levels low: open your windows, buy a decent cooker hood (and use it), and keep your use of strong cleaning chemicals to a minimum. Also, vacuum: you know you want a robot vacuum cleaner – go on, treat yourself.

However, what the Foobot does is provide a handy reminder to keep up with those good habits and, if you already have smart home systems, it can integrate with those to take care of your air quality for you. It's pricey, but it's an intriguing and effective product.

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## In-Car Exposure To Particulate Air Pollution Twice As High As Previously Thought

Date: 30-Jul-2017 Source: Clean Technica



The levels of some forms of particulate air pollution (PM<sub>2.5</sub> in particular) present inside of car cabins while driving are up to twice as high as previously estimated, according to a new study that was performed as part of the Atlanta Commuter Exposures (ACE) Study.

To put that in way that's perhaps clearer, many earlier studies have relied upon traffic pollution sensors placed on the ground alongside the road for their data, whereas the new study utilized specially designed sampling devices placed into the passenger seats of cars during rush hour commutes in downtown Atlanta in the morning.

These in-car sensors detected levels of particulate air pollution up to two times higher than the levels detected by the roadside sensors. Interestingly, the sensors also revealed that the air pollution contained around twice the amount of oxidative-stress-causing chemicals as previously thought. The chemicals in question are known to be associated with the development of numerous cardiovascular, respiratory, and neurodegenerative diseases, as well as various cancers.

“We found that people are likely getting a double whammy of exposure in terms of health during rush-hour commutes. If these chemicals are as bad for people as many researchers believe, then commuters should seriously be rethinking their driving habits,” commented Michael Bergin, professor of civil and environmental engineering at Duke University.

The first author of the new paper, Heidi Vreeland, commented as well: “There are a lot of reasons an in-car air sample would find higher levels of certain kinds of air pollution. The chemical composition of exhaust changes very quickly, even in the space of just a few feet. And morning sun heats the roadways, which causes an updraft that brings more pollution higher into the air.”

That makes sense, and serves as a good example of why real-world testing and measuring is often so much more valuable than laboratory work — this being the case even when there isn't a clear intention to either commit fraud or look the other way as it happens, as with diesel vehicle emissions testing in Europe.

Green Car Congress provides some details on the research process: “For the experiment, Roby Greenwald, a research assistant professor at Emory at the time, built a sampling device that draws in air at a similar rate to human lungs to provide detectable levels of pollution. The device was then secured to the passenger seats of more than 30 different cars as they completed more than 60 rush hour commutes.

“Some drivers took highway routes while others stuck to busy thoroughfares in downtown Atlanta. While other details like speed and having windows rolled down varied, all of the sampling found more risk in air exposure than previous studies conducted with roadside sampling devices.



“Reactive oxygen species found by this study can cause the body to produce chemicals to deal with the reactive oxygen. Particulate matter causes the same response. In combination, the exposure triggers an overreaction that can be destructive to healthy cells and DNA.”

In turn, the damage caused by regale oxidative stress is seemingly involved in the development of numerous diseases and developmental disorders, including: too many cancers to name, Alzheimer’s disease, atherosclerosis, Parkinson’s disease, Asperger’s syndrome, ADHD, autism, various types of infections, sickle cell disease, depression, and chronic fatigue syndrome, amongst others.

Study co-author Michael Bergin noted: “There’s still a lot of debate about what types of pollution are cause for the biggest concern and what makes them so dangerous. But the bottom line is that driving during rush hour is even worse than we thought.”

It should be realized here that this is the case whether one is driving an electric car or not — you’ll be exposed to the pollution released by the cars around you and roadway under you anyways. So, while driving an electric car may be better from the perspective of the pollution that one releases themselves, it of course doesn’t shield one from the air pollution all around. A real solution would be to drive less, if possible (I’m aware that this isn’t close to being possible for many in the US). Or, at the very least, try to limit your driving to outside of “rush hour” ... if possible.

I suppose that some of those reading this will probably now make mention of high-end air filtering systems — the one available in the Tesla Model X, for instance — and, yes, if you’re rich enough to afford a car with such a system, then the issue doesn’t affect you as much. Everyone else, though...

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## German court orders diesel ban in bid tackle air pollution

*Date: 31-Jul-2017 Source: Business Green*



A judge in the German city of Stuttgart has ordered the most polluting diesel cars be banned from entering the city from January 2018 in a bid to curb illegal levels of air pollution.

The judge ruled on Friday that the government of Stuttgart must re-write its Air Quality Plan to include a ban on the most polluting diesels in the city from next year, after he deemed the current plan inadequate for bringing air pollution back within legal limits.

Stuttgart has some of the worst air pollution in Germany, with levels of nitrogen dioxide and particulate matter regularly breaching legal limits.

In response to the issue the Stuttgart government drew up a draft Air Quality Plan, but environmental lawyers ClientEarth took the government to court arguing that although it contained some positive measures it did not go far enough to restrict pollution.

The judge agreed, adding that restricting access to the city from the most polluting cars was unavoidable if the area was to meaningfully cut pollution in as short a time as possible.

The move follows similar rulings in Dusseldorf and Munich, and represents the latest in a series of victories for clean air campaigners across Europe.

"The judge has clarified that a diesel ban is unavoidable," ClientEarth lawyer Ugo Taddei said in a statement. "Stuttgart's authorities must now find rapid and effective ways to solve the region's air quality issues. This should include a more structured approach that acknowledges the emissions issues with diesel vehicles - it must also not put undue confidence in what retrofitting can achieve."

However, a wider court case later this year will determine whether cities have the power to ban diesels from their streets, or whether it must be up to the federal government to decide whether such restrictions can be enforced.

The move came just days after the UK government unveiled a new air quality plan, pledging to ban the sale of internal combustion engine cars by 2040 and instruct local authorities to take fresh steps to improve air pollution in urban areas.

The plan raises the prospect of local authorities charging some diesel vehicles if they enter polluted areas, but stressed that alternative measures need to be attempted first.

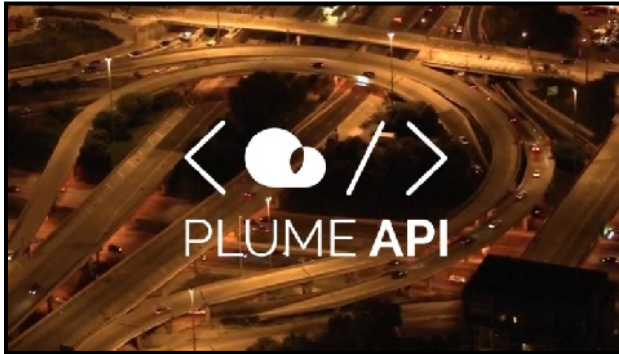
The move was widely criticised by green groups, including ClientEarth, who argued the government should act more urgently to tackle current air pollution and bring forward wider plans for charging zones.

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## August 2017

### **Plume Labs launches Plume.io, an API for air pollution**

*Date: 01-Aug-2017 Source: Techcrunch*



Plume Labs has been working on air pollution for a while. In addition to its mobile app and air quality device, the startup is launching a paid API called Plume.io so that anybody can add air quality to their own service. Think about it as Dark Sky's API, but for air quality.

Plume Labs has designed its own algorithm to predict air pollution around the world. The company relies on 12,000 environmental

monitoring stations in 60 countries. Many agencies and local authorities share air quality data.

The company then combines this data with other factors, such as the time of the day, weather conditions, weather forecasts, geographical specifics and human activities. Plume Labs can always compare its predictions with actual pollution levels by waiting and pulling data later in the day.

And it turns out that many companies would like to use this sort of forecast for air quality. That's why the company is opening up its API to third-party companies. You can get data for Particulate Matter (PM2.5 and PM10), Nitrogen Dioxide (NO2) and Ozone (O3) starting at \$500 a month.

Many companies are interested in Plume.io, such as companies working on smart homes and smart cities, real estate companies, fitness companies, healthcare companies as well as cosmetics makers. And Plume Labs will also give free access to Plume.io to researchers, activists, etc.

"We believe that environmental health is deeply personal and an important emerging vertical for personal health and wellbeing, so our Air Report mobile app and our consumer air quality tracker will remain our core focus," co-founder and CEO Romain Lacombe told me. "However more and more companies were reaching out to access our air quality forecasts, and opening the Plume API will give these corporate clients access to our advanced predictive platform. Working with API partners will also bring financial support to keep our core app free for consumers, and dramatically broaden our reach to raise awareness of the public health crisis of pollution."

So if you've been using Plume Labs' mobile app, it's not going away any time soon. And you'll also soon be able to pre-order a Flow, Plume Labs' own device. Plume.io is just a new service for developers who need air quality data. In the future, Plume Labs would like to extend forecasting data beyond 24 hours and add other data points, such as pollen level.

## The UK's motorways could get tunnels that absorb air pollution

Date: 03-Aug-2017 Source: WIRED



The UK, like the vast majority of countries around the world, has an air pollution problem. Climate studies have estimated 90 per cent of the population is breathing dirty and harmful air. The country's dirty air contributes to 16,000 UK deaths per year.

In response to the ongoing crisis, the government has been forced to publish its plan to tackle air pollution within the country. The air quality plan for nitrogen dioxide outlines a number of plans for

reducing pollution alongside roads.

Within the plans, The Times reports, is the suggestion that tunnels can be built around UK motorways to actively reduce the amount of air pollution that's being emitted from them.

This would involve introducing a pollution absorbing material over the top of roads. Similar efforts and technologies have been used in small-scale projects in China to reduce the amount of smog in Beijing.

The suggestion to adopt these methods for UK roads comes from the Highways Agency, which states that it is investing £100 million to test new ideas for reducing pollution. "We have identified that a cantilever barrier or canopy, which is a tunnel-like structure designed to prevent vehicle emissions, might be a possible solution," a spokesperson for the agency says.

"It's far better to get people to drive less," Tony Ryan, a professor of physical chemistry at the University of Sheffield, tells WIRED. He says a widescale plan to put tents or tunnels over motorways would be "bonkers".

"The real issue about air quality and air pollution are in the regions that have high population densities," Ryan adds. "You actually want to have an effect in cities". According to the Department for Transport there are 2.3 thousand miles of motorway across the UK. Even to cover a large part of these with pollution reducing materials would take a significant investment from politicians and government.

Despite this, there are also ongoing trials within the UK. The Highways Agency continues to say it is working with Dutch authorities to monitor a trial it is completing using a similar air sucking barrier. Wooden panels, between four and six metres high, have been fitted near the M62 in Manchester and a three-metre high fence capable of absorbing nitrogen dioxide is also happening.

However, there are a number of caveats from the Highways Agency: it says that the best way to deal with air quality around roads is to introduce more low-emission vehicles. At the end of July the UK government vowed to ban new diesel and petrol cars from roads by 2040 – the details were included in its clean air plan.

## UK roads could be covered with ‘tunnels’ to fight air pollution

*Date: 03-Aug-2017 Source: Euractiv*



Major roads in the United Kingdom could be turned into tunnels covered with pollution-absorbing material in an effort to cut emission fumes and improve air quality. EURACTIV's partner The Guardian reports.

Officials in the UK's Highways Agency are studying a Dutch scheme in which cantilevered canopies are constructed over the most polluted sections of road to prevent local residents

breathing in noxious car fumes.

Poor air quality is reported to kill as many as 40,000 people a year prematurely in the UK, and levels in many areas regularly breach European legal limits. The government has twice had its plans to tackle the issue ruled illegal by the courts.

The tunnel plans are outlined in an air improvement strategy plan to help reduce pollution. Officials say they are investing millions of pounds in new technology to improve air quality around roads in the next five years. The Department of Transport predicts traffic volumes are expected to increase by 55% between 2010 and 2040.

“The best solution to accommodating the extra traffic on our roads, without negatively impacting on air quality, is cleaner low-emission vehicles. In the meantime we are investing £100m to test new ideas including less-polluting fuels and road barriers which can absorb harmful emissions,” said an agency spokesman.

“We have identified that a cantilever barrier or canopy, which is a tunnel-like structure designed to prevent vehicle emissions, might be a possible solution, though the air quality benefits of this are still to be fully understood. We are now working with the Dutch Roads Authority to measure air quality around an existing cantilever barrier on their network.”

Highways officials said they have also trialled two different types of barriers. The first, featuring wood panels four metres and six metres high, were fitted on a section of road near Manchester.

A second trial, which is ongoing, features a three metre high fence coated in a mineral polymer material capable of absorbing nitrogen dioxide. “The results from the monitoring of this trial will help us understand if this has been a success with the potential to implement it on the rest of our network,” said a Highways Agency spokesman.

A Highways England spokesman said on Wednesday (2 August) they were also carrying out emission testing from a range of diesel vehicles using a new type of fuel believed to help improve emissions on both motorways and urban driving.



To help boost electric car use they will aim to ensure that 95% of the roads network will have a vehicle charging point every 20 miles.

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## Electric cars are not the answer to air pollution, says top UK adviser

*Date: 04-Aug-2017 Source: The Guardian*



Cars must be driven out of cities to tackle the UK's air pollution crisis, not just replaced with electric vehicles, according to the UK government's top adviser.

Prof Frank Kelly said that while electric vehicles emit no exhaust fumes, they still produce large amounts of tiny pollution particles from brake and tyre dust, for which the government already accepts there is no safe limit.

Toxic air causes 40,000 early deaths a year in the UK, and the environment secretary, Michael Gove, recently announced that the sale of new diesel and petrol cars will be banned from 2040, with only electric vehicles available after that. But faced with rising anger from some motorists, the plan made the use of charges to deter dirty diesel cars from polluted areas a measure of last resort only.

Kelly's intervention heightens the government's dilemma between protecting public health and avoiding politically difficult charges or bans on urban motorists. "The government's plan does not go nearly far enough," said Kelly, professor of environmental health at King's College London and chair of the Committee on the Medical Effects of Air Pollutants, official expert advisers to the government. "Our cities need fewer cars, not just cleaner cars."

Ministers were forced to produce an air pollution plan after being sued twice in the courts over illegal levels, but it was criticised as "woefully inadequate" and "lacking urgency" by city leaders and "inexcusable" by leading doctors. The government's own research showed the fastest and most cost-effective measure to cut the nitrogen dioxide (NO<sub>2</sub>) pollution largely caused by diesel engines is to charge dirty cars to enter urban areas.

Electric vehicles emit no NO<sub>2</sub> but do produce small particle pollution from the wear on brake discs and tyres and by throwing up dust from roads. A recent European commission research paper found that about half of all particulate matter comes from these sources.

"While governments don't currently pay much attention to particulate matter, it is in fact highly polluting, with strong links to cardiopulmonary toxicity," said Kelly in an article in the Guardian.

The Royal College of Physicians estimates that 29,000 people die early each year from particle pollution, more than the 23,500 premature deaths attributed to NO<sub>2</sub>. The combined total is 40,000 because some

people are harmed by both pollutants. NO<sub>2</sub> levels are illegally high in most urban areas, allowing legal action to be taken, but small particle levels are not.

The legal limit in England and Wales for particulate matter is two and a half times the World Health Organisation's (WHO) guideline set in 2005 and which has already been adopted in Scotland. London's air is above the WHO limit but below that in England and Wales, said Kelly: "So it's legal but unhealthy." In any case, both the UK government and the WHO agree there is no safe level of small particle pollution.

Kelly said enabling people and goods to move easily and cheaply around cities such as London is crucial, especially as their populations are growing fast, and backed better public transport as the solution: "The safe and efficient movement of people around the capital can only be achieved through a clean and expanded mass transit system – served by buses, overground train and the underground system – and by as much active transport in the form of walking and cycling as is feasibly possible."

"Encouragingly, attitudes toward car ownership do appear to be changing, with younger Londoners increasingly replacing little-used vehicles with car club membership and ride-sharing apps," he said.

Oliver Hayes, Friends of the Earth air pollution campaigner, said: "Electric cars are critical in the fight against climate change and deadly air pollution, but they're not a panacea. We must now build the infrastructure that reassures ordinary people that cycling and walking is safe, and invest in public transport that is consistently clean, cheap and reliable."

A government spokeswoman said: "Reducing roadside pollution is a priority for this government – which is why we have committed £3bn to help towns and cities take action against harmful [NO<sub>2</sub>] emissions caused by dirty diesels. Next year the government will publish a comprehensive Clean Air Strategy which will address other sources of air pollution."

Kelly said the traffic pollution problems facing the UK affect cities around the world, which are also increasing rapidly in size. "By 2050, nearly two-thirds of the world's population will live in urban areas. How we manage and plan for growing urbanisation will be key to so many global aspirations from improving air quality and human health, maintaining economic success and combatting climate change."

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## **Total car ban is the only way to beat air pollution in cities, expert warns**

*Date: 05-Aug-2017 Source: Independent*

The government must rid the UK's cities of cars to reduce dangerous levels of air pollution, according to a leading expert.

An influx of electric vehicles will not solve the toxic air crisis, which can only be beaten by ensuring there are "fewer cars, not just cleaner cars", Professor Frank Kelly claims.





The environmental health expert said that the Conservative Party's pollution strategy, which aims to ban the sale of new petrol and diesel vehicles by 2040, "does not nearly go far enough".

Mr Kelly urged the government to expand the public transport network rather than encourage a switch to electric cars.

The scientist, who chairs the Committee on the Medical Effects of Air Pollutants, explained that the brakes and tyres on electric vehicles produce "highly polluting" toxic particles.

Writing in the Guardian, he said: "Even zero-emission vehicles are not the complete answer to poor air quality.

"The capital's population grew at twice the rate of the UK as a whole between 2011 and 2015.

"The safe and efficient movement of people around the city can only be achieved through a clean and expanded mass transit system served by buses, overground trains and the underground system - and as much active transport in the form of walking and cycling as is feasibly possible."

This year London breached its annual air pollution limit, set by the EU, within a week.

A World Health Organisation report in 2016 found 10 towns and cities in the UK, including London, Glasgow, Leeds, Nottingham, Southampton and Oxford, had breached what are regarded as safe levels of tiny particles known as PM10.

Thirty-nine urban areas also breached the safe levels for a measure of even smaller particles, known as PM2.5.

The Royal College of Physicians estimates has claimed that particle pollution is linked to 29,000 early deaths in Britain every year, while NO2 emissions, largely from diesel vehicles, has been linked to 23,500 early deaths a year.

The total number of early deaths linked to air pollution annually is thought to be around 40,000, because some people are affected by both particle pollution and NO2 emissions.

Theresa May accepted that the government had failed to bring the UK into compliance with EU regulations following a High Court ruling that it was not doing enough.

ClientEarth, the NGO which took the Government to court over unlawful levels of air pollution, said the government must act to tackle the "urgent public health crisis".

Environment Secretary Michael Gove insisted he was taking immediate action to tackle polluted air, pointing to an extra £255m being handed to local councils to "accelerate their progress".

The cash will be spent on retrofitting buses and other public transport, changing road layouts and altering features such as roundabouts and speed humps.

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## **Air pollution issues require action from local authorities**

*Date: 05-Aug-2017 Source: ZO*



THE Richards Bay Clean Air Association (RBCAA) continues to provide excellent data relating to air quality in the city and surrounds and is also being well managed in terms of its financial standing.

These positives were shared at the Association's 20th annual general meeting last week, where only two items of concern were noted.

One is the ongoing concern over hydrogen fluoride (HF) levels. This follows a special monitoring project that began in 2014 when the RBCAA initiated a 12-month HF monitoring campaign in

the Richards Bay area at nine pre-selected sites

Highest concentrations were observed at ZCBF Community Park and the CBD Regional Sport Complex

Based on the findings, the RBCAA recommends that no schools or crèches should be allowed to operate immediately northwest of HF emitting industries and that existing facilities should be relocated.

A letter to this effect was sent to the municipality in October 2016, to which a response is awaited.

'We thank South32 and Foskor for their commitment to this project,' said RBCAA Managing Director, Michelle Boshoff.

'We are also still waiting for response from the Department of Environmental Affairs with regard to the Air Quality Monitoring and Health Impact Assessment study of the Richards Bay area, prepared for the then Department of Agriculture, Environment and Rural Development.

'Based on an independent peer review by Infotox, commissioned by the RBCAA, the association has lodged an official complaint on the grounds that in its current form the report is fatally flawed and therefore should be discredited at the highest level to prevent it being used as a benchmark for further studies.

'Internal investigations are underway and the RBCAA is awaiting the outcome,' said Boshoff.

At the AGM, the following persons were elected to serve on the RBCAA Board of Directors:

- Non-corporate – Sandy Camminga (Founder Member), Zululand Fire Protection Association.

- Companies – Richards Bay Minerals, South32, Mondi, Foskor, Richards Bay Alloys.

It was noted with disappointment that Tronox had withdrawn its membership of the RBCAA.

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## **Smoke eases in Pacific County but Air Quality Alert continues**

*Date: 06-Aug-2017 Source: Chinook Observer*

PENINSULA — Red air-quality warnings across the Evergreen state last week were “lighting up the map like a Christmas tree,” a state Department of Ecology blog post announced on Friday.

But, by Saturday afternoon, the thick wildfire smoke that had the region socked-in was lifting. And most people on the Peninsula, along with neighbors throughout Western Washington, were back to breathing green or “good” air again. That’s according to the color-coded system for smog monitoring used by state and federal agencies.

However, on Sunday, the National Weather Service in Portland continued an Air Quality Alert for Pacific County and much of the surrounding region, in effect through 7 p.m. Tuesday.

“Wildfires burning in the region combined with forecast conditions will cause air quality to reach unhealthy levels due to smoke and ozone at times through Tuesday evening,” the weather service said. “Pollutants in smoke can cause burning eyes, runny nose, aggravate heart and lung diseases, and aggravate other serious health problems. Limit outdoor activities and keep children indoors if it is smoky. Please follow medical advice if you have a heart or lung condition.”

### **Unprecedented pollution**

Smoke from raging wildfires in British Columbia left Washington with some of the dirtiest air in the country last week, U.S. Forest Service data show. It’s not uncommon for the state to issue health warnings for smoke in areas around burning forests during wildfire season. However, Ecology’s air-quality coordinator Mike Ragan said, it is unusual for such precautions to be called for throughout Washington.

“When the state’s cleanest air monitor hits very high levels of pollution, you know it’s bad,” he said in Friday’s blog.

The state’s least polluted air is usually measured at Cheeka Peak on the Olympic Peninsula. However, Ragan said, like other monitors across Washington, it too showed dense smoke that was likely making it hard for people to breathe.

### **Smogging through it**

Earlier last week, air pollution measured in Aberdeen and Longview reached well above the what is considered to be a healthy range.

Once the air becomes dirtier than a daily average of 12 micrograms of particle pollution per cubic meter, people who have breathing problems or certain illnesses are more likely to have trouble. Other sensitive

groups, such as children and the elderly, might also be affected as air quality worsens. Eventually everyone is advised to avoid activities and going outside.

Tests in Aberdeen showed air quality levels considered “unhealthy” for some on Wednesday and everyone on Thursday. Pollution levels fell back into a low-risk range by Friday.

The threat around Longview was lowered on Friday to “moderate” for those who have breathing difficulty or certain illnesses. The news came after air pollution caused increasingly unhealthy conditions in the area from Tuesday to Thursday, when everyone was advised to avoid the outdoors and take other precautions.

On Saturday, air quality improved throughout much of Western Washington on Saturday, including around South Bend.

Smokey says

Fire danger remains high in Pacific County, according to the state Department of Natural Resources. Restrictions that took effect on July 14 remain in place.

All debris burning is suspended and recreational fires are limited to approved pits. Fires can be no larger than 3 feet across and 2 feet high.

State officials suggest people check with local authorities before lighting any outdoor fire. For a list of burn bans in Washington, go to [waburnbans.net](http://waburnbans.net).

Caution: smoke may be hazardous

The haze in the air is made up of small solids and liquid droplets that carry dust, dirt, soot, smoke or other particles that can be inhaled. Even healthy people can be adversely affected. Symptoms to watch for include, itchy eyes and throat, coughing, headache, nausea, sneezing and trouble breathing.

To avoid potential health problems from breathing as wildfires burn across the region, state officials recommend people limit physical activities and stay inside with the windows closed when air quality is unhealthy. Wearing a mask can also help when going outdoors is unavoidable. However, as a general rule, if there’s smoke outside, find another day to wax the Subaru, hike that switchback or get rid of the moss on the roof.

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## **152% rise in private vehicles chokes air quality in capital**

*Date: 07-Aug-2017 Source: The Times of India*

HYDERABAD: Environmentalists attribute the prime cause of the city's dwindling air quality to the abnormal growth of private vehicles. According to experts, the vehicle growth rate in Hyderabad and the neighbouring Rangareddy district has been high compared to other districts of the state in the past few years.

A recent study, conducted by the Environmental Protection Training and Research Institute (EPTRI), revealed the increase in the number of vehicles in Hyderabad and Rangareddy is quite high. The major reason for pollution, they say, is due to the rise in the number of vehicles per 1,000 people. The rise, the experts note, has gone from 81.80 vehicles per 1,000 people in 2005 to 253 vehicles per 1,000 in 2016, an increase of 152.76% as compared to the estimated population increase of 113.57%.

As a result of the astronomical rise in the number of vehicles, the city's air is now laced with pollutants, including sulphur dioxide, oxides of nitrogen and carbon monoxide apart from the rising particulate matter (PM) 2.5 levels.

"The main cause of increasing air pollution is vehicular emission," Forum for Sustainable Environment convener S Jeevanand Reddy. "Though advancements in vehicular technology should have brought down the pollution levels, that has not happened in the city. Hundreds of goods vehicles continue to use adulterated fuel to cut costs, adding oxides of nitrogen to the atmosphere. When they react with other particles in the air, they increase the ground-level ozone content. This, in turn, leads to severe health complications. City buses, which are more than 15 years old, are also major contributors of pollutants," he added.

The EPTRI report, which studied vehicles and their impact on the environment between 2000 and 2015 over a three-year period, says "In Hyderabad alone, there is an increase of 241.5 lakh kilometres distance covered by TSRTC vehicles in a span of seven years (2007-08 to 2014-15)." In 2007-08, the RTC operated 3,180 buses and clocked 1.82 lakh km per bus, while in 2014-15 it operated 3,964 buses and logged 1.7 lakh kilometre per vehicle. In other words, each bus covered 15% less distance in Hyderabad, 4% in Secunderabad and nine percent in Rangareddy district. It is an indication of increasing congestion on roads and possibly the ageing of the fleet. On the other hand, in districts, the kilometres operated per bus has increased though the number of passengers carried per day remains the same.

The report says the air in the twin cities has the highest particulate matter. The contributors for PM10 were vehicular emissions and vehicles over 15 years old. "The PM10 is always higher than the standard 60g/m. We need to make serious efforts to control the particulate matter," it added.

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## BBQ ban returns along with smoky haze over Puget Sound

*Date: 08-Aug-2017 Source: My NorthWest*



Put those charcoal grills away, again. The Puget Sound Clear Air Agency says a new air quality burn ban is in effect for the Puget Sound region.

King, Pierce, Kitsap and Snohomish Counties are now under a stage 1 burn ban until further notice because of the smokey haze that has settled back over the area. The ban means no charcoal barbecues or similar solid fuel devices, no campfires or bonfires, no fire pits, and no

agricultural fires.

The agency says air quality should improve by Thursday and be back to normal by this weekend.

The ban comes as air quality in many locations around Puget Sound dropped to “moderate” or worse Tuesday. As of 8 a.m., many areas of Seattle and Tacoma were considered as “moderate” or unhealthy for sensitive groups, according to the Air Quality Index.

An Air Quality Alert continues through noon on Thursday.

Erik Saganic, Air Resources Specialist with the Puget Sound Clean Air Agency, warns residents may need to take precautions as pollution from the B.C. wildfires continues to be pushed south.

Saganic says we could see even more wildfire smoke build by Wednesday.

Forecasters say we have until the end of this week before the weather changes and the wildfire smoke clears.

Check the latest air quality index [here](#).

KIRO 7 reports there are indications that our weather will change beginning this weekend as clouds roll in temperatures cool. There is a possibility of light rain showers.

KIRO 7 meteorologist Kelly Franson says an upper-level ridge will move east of our region, which will also lead to southwesterly winds that could clear out smoke.

A long-term outlook doesn’t indicate a reversal to our current dry weather pattern. On Tuesday, Sea-Tac broke a 66-year-old record as we entered the 52nd day without measurable rain.

Cliff Mass, Atmospheric Sciences professor at the University of Washington, briefly addressed suggestions that the warm, smoky period is a sign of global warming. “I believe that many of them are seriously stretching the facts and trying to simplify a complex situation,” Mass wrote.

He promised to get into it more this week, but in short:

–Some global warming activists are “happy to ignore” that forests have been mismanaged in the past.

–Wildfire is a natural part of healthy forests.

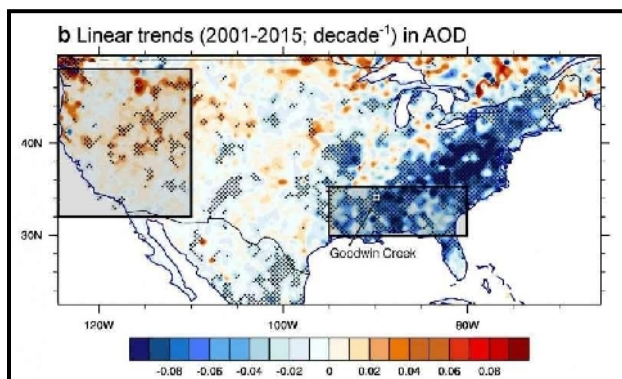
–More humans with flammable items is a factor.

–And the “meteorological situation of this event is not one of uniform warming, but localized warming.”

Mass pointed out that human-responsible climate change has warmed the temperature by 1 degree (F) in our region. The recent weather is responsible for a 15-20 degree anomaly.

## Can poor air quality mask global warming's effects?

Date: 08-Aug-2017 Source: PHYS ORG



During the 20th century, the average temperature of the continental United States rose by almost 1 degree Fahrenheit (0.5 degree Celsius)—everywhere, that is, except in the Southeast. There, until the 1980s, the temperature actually decreased slightly. Climate scientists dubbed this peculiar phenomenon the "warming hole," and it was the cause of much speculation. But beginning in the 1990s, temperatures in the Southeast began to warm again, and in the early years of the 21st

century this warming has accelerated.

A new study published in the journal *Remote Sensing* presents evidence that a significant improvement in air quality in the region may have contributed to the disappearance of the warming hole after about 1990—and that other polluted regions outside the United States, such as China and India, may experience the same phenomenon.

One major factor in poor air quality is airborne aerosols—tiny particles of dust, soot from wood burning, coal and oil combustion, or sulfates created by precursor gases emitted from factories and car exhaust, to name a few sources. Aerosols can decrease temperature by dimming sunlight at Earth's surface and by increasing the amount and lifetimes of clouds, which reflect sunlight back into space.

After the warming hole mysteriously disappeared, various studies proposed possible causes: changes in cloud cover, precipitation or in the amount of aerosols produced by air pollution. In 2006, the U.S. Environmental Protection Agency (EPA) began implementing a more stringent cap on the concentration of aerosol particles smaller than about 1/10,000th of an inch (2.5 micrometers) in diameter. To comply with the regulation, many U.S. power utilities and industrial companies began reducing their use of coal and installing filters to reduce emissions.

A similar change to temperature trends occurred in Europe in the 1980s after new regulations improved air quality there. Because reduced aerosol particle concentrations allow more sunlight to reach Earth's surface, the scientists hypothesized that the improvements in U.S. air quality could also be responsible for the temperature change over the Southeast.

To test this hypothesis, a team led by Mika Tosca, a researcher at NASA's Jet Propulsion Laboratory in Pasadena, California (who is now with the School of the Art Institute of Chicago), used three surface temperature data sets. The data sets were compiled by the University of Delaware, the University of California (UC) at Berkeley, and the Global Historical Climatology Network (which compiles surface temperature and precipitation data). They also used aerosol data from two satellite instruments: the Multi-angle Imaging SpectroRadiometer (MISR) instrument on NASA's Terra satellite, launched in 1999, and the Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP) on the Cloud-Aerosol Lidar and



Infrared Pathfinder Satellite Observations (CALIPSO) satellite, a joint mission between NASA and the French space agency, CNES, launched in 2006.

The data show that between 2000 and 2015, while summertime temperatures in the Southeast United States increased by roughly 1.5 degrees Fahrenheit (0.75 degree Celsius), significantly faster than the increase in the continental United States during the 20th century, the amount of summertime aerosols decreased overall by about 20 percent, with a much steeper decline after 2007. The timing of this decline coincided with the implementation of the new EPA standards.

To help determine how much of the temperature change was caused by the changes in aerosols, Tosca and colleagues used a model that simulates how the sun's energy travels through Earth's atmosphere, using the MISR and CALIOP satellite data as inputs. The increase in sunlight shown in the model results matches well with daily measurements taken at a National Oceanic and Atmospheric Administration (NOAA) solar radiation monitoring station in Goodwin Creek, Mississippi, suggesting that the decrease in aerosols is a plausible explanation for most of the disappearance of the warming hole.

Tosca acknowledges that linkages between aerosols and clouds could also play a role. The next step would be to run a more sophisticated climate model that takes into account clouds and the aerosols' effects on them. The team would also like to apply this kind of analysis to other areas with high air pollution levels, such as China and India. They hypothesize that these areas might have "warming holes" of their own—regions where the effects of climate change are being muted by the high concentrations of aerosols in the atmosphere. If these areas reduce air pollution in the future, they might experience a sudden temperature jump as well.

"Overall, the goal is to more accurately predict what will happen to our planet," Tosca said. "This type of observation-based research gives us better models, better models give us better forecasts, and better forecasts enable better policy."

The study is titled "Attributing Accelerated Summertime Warming in the Southeast United States to Recent Reductions in Aerosol Burden: Indications from Vertically-Resolved Observations."

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## High-rise forests in Italy are fighting air pollution

*Date: 09-Aug-2017 Source: The Verge*



Welcome to Home of the Future, a four-part video series co-produced by Curbed and The Verge. Each month, we'll take you inside one innovative home and explore how the technology of today informs the way people will live in the future. To follow along, stay tuned for new video episodes on our Facebook page. The first location? An inhabitable high-rise forest.

Air pollution is the single biggest environmental health risk the world faces today, with outdoor pollution linked to 3 million deaths every year. It's no wonder designers and engineers are racing to come up with all kinds of air-purifying solutions, from smog-sucking towers and bikes to moss-covered walls. But one of the most impressive ideas so far can be found in Milan, Italy — the design capital of the world and one of the most polluted cities in Europe.

The brainchild of Italian architect Stefano Boeri, Bosco Verticale (meaning “Vertical Forest”) is the concept of residential high-rises packed with greenery, which can help cities build for density while improving air quality. The first “vertical forests” were realized in 2014 in the Porta Nuova Isola area of Milan, where two towers — with over 100 apartments between them — together host nearly 500 medium and large trees, 300 small trees, 5,000 shrubs, and 11,000 plants.

The science is simple: trees are the cheapest and most efficient way to absorb carbon dioxide. The 20,000 trees and plants across this pair of towers can transform approximately 44,000 pounds of carbon dioxide into oxygen each year. Trees, a perennial gift from nature, can also keep temperatures cool indoors and filter out fine dust particles and noise pollution from traffic below.

The logistics of making it all happen, however, were a lot more complex. The process began with bringing together experts in structural engineering and botany to answer all the essential questions. For example: how can a tree resist extremely windy conditions at 400 feet in the air? Engineers then had to devise a way to secure the roots of the plants in their containers while making sure they could be properly watered and fertilized.

Laura Gatti, an architectural botanist on the project, also conducted a three-year study about local plants to determine which species would survive the conditions of the towers. And, of course, even after they've been planted, the trees need regular maintenance. That's done by a team of aerial arborists, who, like the familiar skyscraper window washers, make their way up and down the buildings, inspecting and grooming the vegetation.

As cities continue to grapple with air pollution, housing shortages, and climate change, these vertical forests could very well be the residential typology we need for the future. And you can certainly expect to see more of them.

“I really hope many other architects, many other urban planners, many politicians will be in condition to replicate and improve what we have done,” Boeri tells us.

His firm itself is currently working on new vertical forests across Europe and in China, including an ambitious “Forest City” in the city of Nanjing. Meanwhile, similar projects are being proposed and developed all the time, from a spiraling high-rise in Taiwan that is expected to contain 23,000 trees when complete to new tree-tower variations in Toronto and Bogota, to name a few.

Hear more from Boeri and Gatti about their vertical forest in the first episode of *Home of the Future*.

## Air pollution inside your home

Date: 09-Aug-2017 Source: *Inquirer.net*



We often think our battle against air pollution ends once we're inside the protective walls of our own home. What we don't know is it gets worse from there.

Apparently, indoor air can be more polluted than the air outdoors because pollutants that are existing indoors get trapped inside these spaces, build up, and turn into pollution. And consequently, we inhale these chemicals and substances each day of our life.

The only way to avoid this health-threatening situation is to know what the causes of indoor air

pollution are and reduce, if not eliminate their presence in our indoor environment.

### Causes of indoor pollution

Different types of pollutants are found indoors. These include:

#### 1. Molds

Molds are fungi that can cause allergic reactions and irritation. Indoors they are found in:

- Ceiling, floor, plumbing, roof, and wall leaks; and other moist surfaces
- Doors and window sills; unclean humidifiers
- Fabrics like beddings, carpets, clothes, curtains; and paper products

#### 2. Volatile Organic Compounds (VOCs)

VOCs are gases emitted by certain products used indoors and constant exposure to it can negatively affect different internal organs of the human body. VOCs are contained in:

- Aerosol sprays
- Cleaning products
- Dry-cleaned clothing
- Paints, solvents, and varnishes
- Pesticides and repellents

- Items with strong odors like air fresheners, perfumes, deodorizers, fabric softeners, scented candles

### 3. Carbon Monoxide, Nitrogen Oxides, Sulfur Dioxide

These gases are formed during an incomplete burning of carbon-containing materials like coal, gasoline, kerosene, oil, propane, or wood; and it's not ideal to inhale such toxic gases. They emerge from:

- Clothes dryers
- Charcoal grills
- Gas stoves and ovens
- Generators
- Heaters
- Wood stoves
- Tobacco smoke

### 4. Formaldehyde

Formaldehyde is an organic chemical that releases strong-smelling gas. It can cause allergic reactions and irritation to the respiratory tract. Formaldehyde is found in different household items like:

- Adhesives, glues, paints
- Carpets, curtains
- Cosmetics products
- Furniture fabrics
- Disinfectants
- Kerosene
- Paper products
- Pesticides
- Pressed wood products
- Urea formaldehyde foam insulation (UFFI)

### 5. Environmental Tobacco Smoke (ETS)

ETS is widely known as secondhand smoke. It refers to the smoke of burning tobacco and the smoke exhaled by someone else, and it can cause lung cancer. The only sources of ETS are:

- Cigarettes

- Cigars
- Pipes
- Tobacco

#### 6. Asbestos

Asbestos is a mineral rock widely used in building construction materials for its heat and deterioration-resistant properties. Exposure to asbestos doesn't cause instant allergic reactions and irritation; however, it's linked to many cases of lung cancer. Inside the house asbestos is found in:

- Deteriorating ceiling, walls, and pipe insulation
- Heat-resistant fabrics
- Paper products
- Vinyl floor tiles
- Thermal insulation

#### 7. Lead

Lead is a natural element used for paint. Due to its harmful properties, however, the use of this element for paint decreased over the years. But if by any chance lead-painted items like children's toys make it to your household, be informed that exposure to lead can cause brain, kidney, and nervous system damages to your little ones.

#### 8. Radon

Radon is a radioactive gas that originates from the ground. It becomes an indoor concern when it penetrates homes and buildings through floor and wall openings like cracks. Radon emits harmful gamma radiation, and it's been found to be the leading cause of lung cancer among nonsmokers.

How to improve indoor air quality

Now the question is, can we eradicate these unwanted harmful elements from our homes? We can't totally wipe them out since some involve natural processes, however, we can definitely choke them and minimize their chances of growing and staying inside our dwelling place.

Here are three ways how we can do so:

##### 1. Seek professional help.

Now that you know the air you breathe at home is not at all clean, the next thing you need to do is seek professional assistance. Find indoor air experts online that can help assess your home's indoor air quality. It's best to know what levels of carbon monoxide and radon you're dealing with so you can take the most appropriate actions.

## 2. Be clean.

Always clean everything.

Keep your floor, walls, appliances, furniture, fabrics, decors, and everything that can house molds clean

Dispose of unnecessary old items that only accumulate dusts

Don't allow smoking inside or at the entrances of your house

Minimize your use of cleaners and sprays that contain VOCs

Control moisture

Fix leaks

Renovate damaged parts of the house no matter how small it may be

## 3. Ventilate.

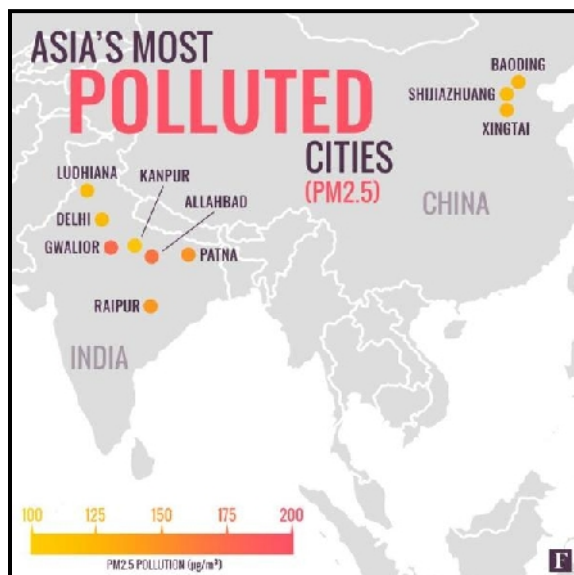
Install exhaust fans where needed, and open your windows and doors to let all these harmful pollutants out. Good ventilation is sure to make a difference.

Integrate these things into your routine and sleep in peace at night knowing you're doing something to manage and improve your indoor air quality. You can protect your family from indoor air pollution, and you can start doing it now.

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## The Asian Cities Battling The Worst Air Pollution Are Doing The Most To Combat It

*Date: 09-Aug-2017 Source: Forbs*



In many Asian cities, a generation of children is growing up that rarely sees blue skies. Air pollution penetrates their lungs and stings their eyes -- but they must keep breathing it in.

It is one of the most pernicious threats to health precisely because it is so pervasive. Every year, 6.5 million people die from diseases caused by indoor and outdoor air pollution, such as heart disease, stroke, respiratory diseases and lung cancer, the "noncommunicable" diseases that are the biggest health scourge of the 21st century.

More than half of these deaths occur in just two countries -- China and India -- where densely

populated and highly-motorized cities, such as Beijing, are surrounded by a lingering haze of polluted air most days of the year. Diesel-fueled transport, burning trash, coal-fired power plants and dirty fuels burned in simple household cook stoves all spew harmful air pollutants into the atmosphere -- including so-called “short-lived” climate pollutants such as black carbon and methane, as well as carbon dioxide, which persists for hundreds of years.

While the high pollution levels of Asian cities have captured global attention, few people realize that the region is greening quickly. In fact, of the cities WHO monitors for air quality, some 60% of high-income Asian cities already meet strict WHO air quality guidelines for one of the most-health harmful pollutants, fine particulate matter (PM2.5). This is a larger proportion than cities in almost any other region of the world, except North America.

The challenge now is to move the low- and middle-income Asian cities to safe levels. Adopting strategies and policies that have been used in these higher-income cities, such as cleaner transit systems or pedestrian-friendly paths, can help lead the way.

#### Cities lead the charge

Although the world gasped when the United States pulled out of the Paris Agreement, cities everywhere, including in the U.S., have rushed to make climate commitments rather than waiting for their national governments to take the lead.

Beijing, currently battling some of the world’s poorest air quality, is moving rapidly to cut air pollution. The city is adopting vehicle emission standards that are stricter than the national ones to reduce the impact of the 5.6 million vehicles already on the road. By 2020, the city plans to replace more than 70,000 gasoline and diesel taxis with electric vehicles and install 435,000 charging stations.

These efforts will not only drastically improve health, but they will also lead to economic growth and jobs and innovation in the automobile industry. Starting next year, the Chinese government will require nearly one out of 10 vehicles manufactured to be electric, and India is following suit with a plan to transition to an all-electric vehicle fleet by 2030.

#### 'Leapfrogging' ahead

Similarly, most new renewable energy capacity is being installed in developing countries. Much like the way cell phones overtook fixed telephone lines a decade ago, prioritizing renewable energy investments could enable developing regions to “leapfrog” over more conventional, air-polluting grid power production.

China has been the single largest developer of new renewable power and heat for the past eight years. With a solar revolution taking off in India, and 48 developing countries now committed to 100% renewable energy goals, the global share of total global renewable energy capacity is certain to increase.

Asia’s rapid urbanization is often pointed to as a cause of pollution (with more people come more emissions), but it also offers an unprecedented opportunity to create sustainable, liveable and dynamic cities.



Seoul is one well aware of that fact. South Korea's capital is rethinking how people move by adding 2,000 kilometers of bike paths, creating 250 pedestrian-only zones and increasing public transport use by 2030. A former downtown expressway has also been recently repurposed as a new urban park, taking space away from automobiles and giving it back to citizens. One million people already visited in the month since it opened.

### Sharing solutions

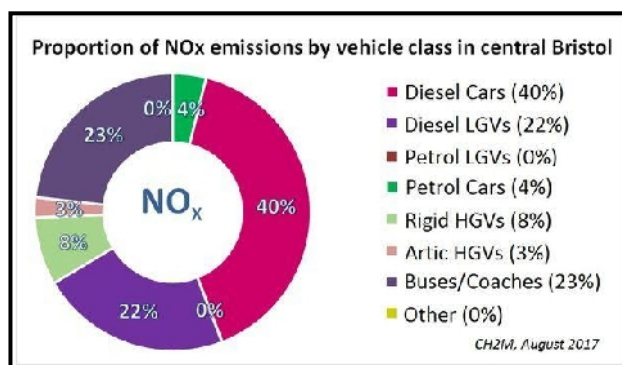
These are a good testament of what can happen when cities take matters into their own hands. The key is that other ones are made aware of possible solutions.

This is one goal of "BreatheLife," a global campaign led by WHO, UN Environment and the Climate and Clean Air Coalition. Not only are cities voluntarily committing to reduce air pollution in line with WHO air quality standards, but through regional gatherings, they can share information to build a deeper understanding of air pollution's health impacts.

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## Air pollution almost twice legal limit in central Bristol

*Date: 09-Aug-2017 Source: Bristol Post*



Air quality in Bristol is so poor that parts of the city centre are swamped in almost twice the legal level of pollution.

Bristol City Council cabinet papers reveal that parts of the city centre are being choked by illegal levels of pollution, which can cause lung issues, respiration problems and have even been found to contribute to premature deaths.

Colston Avenue, Anchor Road and York Road are among the worst places for nitrogen dioxide (NO<sub>2</sub>) levels, with Bedminster Parade, Upper Maudlin Street and the Horsefair also exceeding legal limits year on year.

The report found that Rupert Street, which leads on to the Centre, is the most polluted in the city. At its peak in 2007, NO<sub>2</sub> levels reached of 105 micrograms per cubic metre recorded there – 65mcg above the legal limit. Although levels have dipped since then, the road remains by far the worst for NO<sub>2</sub> levels in the city.

Data collected by Bristol City Council shows that diesel cars are responsible for 40 per cent of NO<sub>2</sub> emissions in the city, with buses and coaches contributing 23 per cent and diesel LGVs, such as vans, responsible for 23 per cent.

While not the only measure of air pollution, NO<sub>2</sub> is a major component due to the damaging effect it can have on the health of people who inhale it.

High levels of NO<sub>2</sub> can cause poor lung development and asthma in children and can contribute to early deaths from cardiac and respiratory causes in adults.

Council research estimates that around 300 deaths a year - 8.5 per cent of the total number of deaths in Bristol - are affected by air pollution.

Despite growing awareness and a push for environmentally friendly modes of transport, the latest report states that there is “no significant improvement in pollution levels” in Bristol, which remain above the legal limit.

While full of stark statistics, the paper has been welcomed by the Green Party, who made a successful motion for the development of a Clean Air Action Plan in November which gained unanimous cross-party support.

Green Councillor Jerome Thomas said: “This research is very helpful in identifying the sources of air pollution in central Bristol.

“The statistics highlighting the air pollution caused by diesel cars is a particular cause for concern and suggests that any plan to secure breathable air for Bristolians must include action on these polluting vehicles.”

As a result of November’s motion the council launched a joint ‘clean air zone’ feasibility study with South Gloucestershire Council.

Once complete next year, the study will inform the action plan which could see the introduction of a London-style congestion zone, where drivers of the most polluting cars are charged to drive in the city centre.

Council documents state the plan will also include measures to reduce the impact of freight, improve bus and taxi fleets and encourage the adoption of electric vehicles among others.

The latest council report recommends that Bristol Mayor Marvin Rees approves the development of a clean air zone for Bristol and applies for additional funding to create an action plan.

The motion will be heard at the cabinet meeting next Tuesday, August 15, which will take place from 4pm in City Hall.

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## **Pollution advisory continues, but cleaner air on the way**

*Date: 09-Aug-2017 Source: TDN*

A change in the weather will soon wash away the hazy curtain of smoke that has enveloped Southwest Washington for better than a week.

An air pollution advisory for Clark, Cowlitz, Lewis, Skamania and Wahkiakum counties will remain in effect until midday Friday, according to the Southwest Clean Air Agency.

But cooler temperatures and fresh westerly breezes should start chasing all the forest fire smoke out of the region by late week. In fact, the Weather Service is predicting that the Kelso-Longview area will get its first showers in nearly two months Saturday night.

Since June 18, rain has fallen only on one day — July 20, when a scant 0.05 inch fell at Longview's Mint Farm water treatment plant. Summer is typically dry here, but so far this one has been exceptionally arid.

Sunny and pleasant temperatures are expected to return Monday, with no outlook for scorching temperatures like those that cooked the area last week.

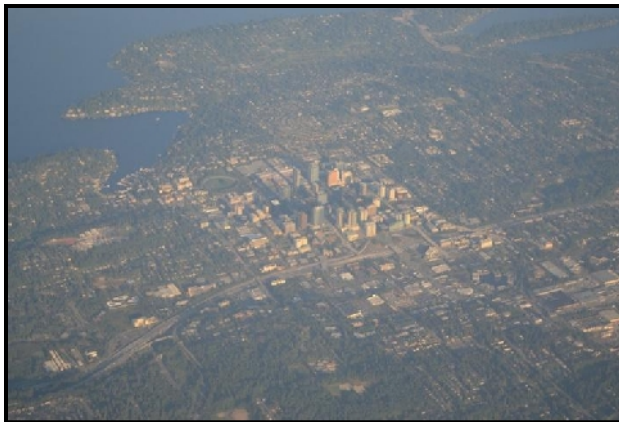
Until the weather scrubs out the air this weekend, area residents are advised to protect their health and help improve air quality by reducing pollution from cars, mowers, paint and aerosol sprays.

Commuters should consider taking public transportation or carpooling to work instead of driving, if possible. Smog-sensitive people, and those sensitive to wildfire smoke, should limit outdoor activities. This group includes older adults, children and people suffering from asthma or lung disease.

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## 4 Jurisdictions Craft Scalable Smart Solutions for Water Quality, Flooding, Air Pollution, Public Safety

*Date: 10-Aug-2017 Source: Govtech*



Tweaking chlorine levels or even knowing where the next possible waterline break will be in Bellevue, Wash., could get a lot easier once the city completes a new smart city application to address water quality.

Bellevue is developing a “smart city dashboard” to synthesize and highlight key pieces of water-quality information. The move is a first step in a vision to bring a host of data together under one dashboard application that will collect and analyze data in six areas: water, transportation,

connectivity, building, energy and public safety.

“There are times when we need to coordinate between departments. And building a dashboard allows us to have visibility into each other’s areas and better coordinate creating some efficiencies between our departments,” said Bellevue Chief Technology Officer Chelo Picardal. “So we’d start with water, and we’d specifically look at water quality. What we’re trying to do now is a piece of the overall dashboard vision that we’re trying to accomplish. And we know that it will take a while — many years to accomplish all the other pieces.”

The project is one of four “smart cities” initiatives to receive a total of \$350,000 in funding from the National Institute of Standards and Technology (NIST) during the 2016 Global City Teams Challenge,

which attracted about 90 applicants from across the country. Bellevue received \$75,000. Other recipients include Newport News, Va. (\$75,000); Montgomery County, Md. (\$100,000); and Portland, Ore. (\$100,000).

NIST's goal in offering this funding is to help communities and businesses connect to improve resource management and quality of life by using effective networking of computer systems and physical devices, often called the Internet of Things (IoT) or cyberphysical systems, said Chad Boutin, a science writer and spokesman for the institute.

Another priority for challenge grant recipients is having them come up with “smart cities” technology systems that can be easily replicated by other communities or agencies.

“Many established cities have similar goals of improving air quality or delivering better health care — and emerging regions want to be smart from the start,” said Chris Greer, director of NIST's Smart Grid and Cyber-Physical Systems Program Office, via email. “But those projects often address only one city or region at a time. The Global City Teams Challenge will help communities around the world work together on shared challenges.”

Montgomery County is developing its “Safe Community Alert” (SCALE) network as a new element of the public-sector safety net. Developers are installing Wi-Fi enabled sensors to detect smoke, carbon dioxide and monoxide, toxic gases, humidity, temperature, and particulates at a senior living facility. The network senses hazardous air and water factors, as well as some facets of the physical health and well-being of the residents. The county will now take the prototype platform into a new stage of development that will allow it to be replicated locally and in other communities.

Portland is conducting lab and field test deployments of low-cost air-quality sensors for measuring urban air pollution. The city aims to produce and share a framework for how to use such sensors, with the idea that other cities could use these guidelines to design their own air-quality sensing systems.

“The idea is that no one will have to reinvent any wheels,” said Boutin.

In Newport News, officials are developing urban hydrodynamic models to predict flood events. The system will contain three elements: deployment of 12 water-level sensors, development of models to predict flooding and an app to gather crowdsourced data.

The four projects “will identify standards and measurements to guide technology innovators in creating solutions that can work anywhere and lay the groundwork for a future of smarter cities,” said Greer.

Back in Bellevue, Picardal said the water-quality segment for the city’s dashboard is about 90 percent complete.

“We have all of the data identified. We are working, as part of this grant, with CH2M as the kind of developer and integrator for us,” she explained.

Brian Pugliese, smart water infrastructure and technology project manager for the city, said the team is “in the stage where we’re about to launch.”

## Bath handed funding to draw up air quality plan

*Date: 11-Aug-2017 Source: Air Quality News*



Bath & North East Somerset is among the first councils to have been handed funding from the government's £255 million Air Quality Implementation Fund, in order to assess options to tackle nitrogen dioxide emissions within the borough.

The council is one of 29 named within the government's nitrogen dioxide plan as having to draw up proposals to tackle air pollution locally, with a December 2018 deadline for proposals to be approved.

Funding was set aside for councils to implement measures needed to tackle air pollution, including around £40 million which has been made available to local authorities immediately.

Within Bath & North East Somerset an area around the A4 London Road has been identified as the area in need of action, and the council has said it will consider a "wide range of measures" in order to reduce emissions within the zone.

Council officers will be in talks with the Department for Environment, Food and Rural Affairs (Defra) over potential proposals within the coming weeks, before submitting a draft plan for approval by March.

### Resources

Councillor Bob Goodman, cabinet member for development, said: "I welcome the announcement by Defra of additional resources to help Bath & North East Somerset Council tackle air pollution across the whole area with particular focus on the A4.

"We know that there is increasing evidence that air quality has an important effect on public health, the economy and the environment and tackling vehicle emissions and improving air quality is one of the most urgent challenges in towns and cities across the UK.

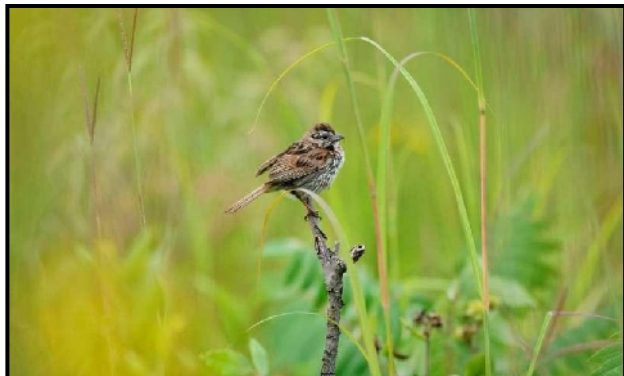
"We understand that congestion in the centre of the Bath and high levels on some arterial routes remain a particular problem but these are not the only cause of emissions as it is a complex picture there is no one simple answer and officers will be looking at a wide range of measures over the coming months."

Cllr Goodman also announced that, in addition to drawing up the plan and the business case, the authority would also be consulting on the planned review of the Bath Air Quality Action Plan.

This follows consultation and work with local stakeholder groups who were asked for their ideas on how to improve air quality in the city. The groups have helped to develop a list of proposals which will be published as part of the formal consultation process necessary to update the Action Plan.

## Canary in a coal mine: Survey captures global picture of air pollution's effects on birds

Date: 11-Aug-2017 Source: PHYS ORG



Famously, the use of caged birds to alert miners to the invisible dangers of gases such as carbon monoxide gave rise to the cautionary metaphor "canary in a coal mine."

But other than the fact that exposure to toxic gases in a confined space kills caged birds before affecting humans—providing a timely warning to miners—what do we know about the effects of air pollution on birds?

Not as much as you'd think, according to researchers from the University of Wisconsin-Madison.

"We know a lot about air pollution's effects on human health, and we know a lot about the impacts of air pollution across ecosystems," explains Tracey Holloway, a professor in UW-Madison's Nelson Institute for Environmental Studies. "We were surprised to discover how little we know about how air pollution affects birds."

Writing Aug. 11 in the journal *Environmental Research Letters*, Holloway, an expert on air quality, and her former graduate student Olivia Sanderfoot, sort through nearly 70 years of the scientific literature to assess the state of knowledge of how air pollution directly affects the health, well-being, reproductive success and diversity of birds. This work is part of Sanderfoot's ongoing National Science Foundation Graduate Research Fellowship.

According to the Wisconsin team's survey of the literature, only two field studies since 1950 have looked at any aspect of the health and ecological well-being of wild bird populations in the United States. Globally, there are only a handful of studies that assess the impact of direct exposure to air pollutants on bird health. Those encompass studies of just a few dozen bird species of the roughly 10,000 or so species of birds known worldwide.

Part of the problem, says Sanderfoot, are the many variables in play. Not only are studies of wild bird communities difficult to implement, but factors such as types and levels of air pollution, dynamic atmospheric conditions, species-specific responses, and the difficulty of teasing out direct versus indirect effects of air pollution can confound even the most basic efforts to assess how birds fare when exposed to chemicals in the air.

"There is a lot of work to be done in this area," says Sanderfoot. "Air quality is an ever-changing problem across the globe. There's a need to look at different types of air pollution and different species all over the world. We have a huge lack of understanding of the levels of pollution birds are exposed to."

Gaps in our understanding, according to the new study, include air pollution's effects on the avian respiratory system; toxic effects on birds, including elevated stress levels and immunosuppression;



behavioral changes; and effects on reproductive success and demographics, such as changes in population density, species diversity and community composition.

Holloway, who leads the NASA Health and Air Quality Applied Sciences Team (a multi-institutional team of researchers that serves as a nexus for analyzing environmental data from a constellation of Earth-observing satellites), notes that studying the effects of air pollution on humans is comparatively easier to assess as hospital records and mortality data are readily available to scientists. Air pollution, in fact, is one of the leading and most direct environmental threats to human health, she says.

Something that makes birds potentially more vulnerable to atmospheric contaminants is the efficiency of the avian respiratory system.

"Birds breathe unidirectionally," notes Sanderfoot. "They definitely breathe more efficiently than humans, and it has been hypothesized that because their respiratory system is so much more efficient than ours, they are going to more readily pick up air pollutants."

The study is a springboard for new research, Sanderfoot and Holloway argue, and may be especially important given birds' role as sentinel species in the environment.

"When you talk to bird ecologists, air pollution is not necessarily perceived as a high-level issue," Holloway says. "Things like climate and landscape changes are at the top of their list in terms of population densities, species diversity, ecological stress. But we know that air pollution is a major risk to human health, and from our study we see pretty clearly that there is an impact on birds, too."

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## **Air pollution to blame for soaring numbers of non-smokers who develop lung cancer**

*Date: 12-Aug-2017 Source: Evening Standard*



Doctors at leading cancer centres in London warned that high levels of pollution are causing a spike in cases of lung cancer.

They said, if the trend continues, the number of lung cancer deaths among non-smokers will overtake those who smoke within a decade.

According to The Times, there are more than 46,000 new cases of lung cancer every year in the UK.

And only one in 20 patients survives for more than ten years after the diagnosis.

About 90 per cent of cases are linked to smoking cigarettes but doctors at the Royal Brompton Hospital and Harefield NHS Trust have reported a spike in the number of operations they are performing on non-smokers.



This is despite the fact that smoking in the UK is at record lows.

Eric Lim, a consultant thoracic surgeon, said the number of patients treated at the centre between 2008 and 2014 remained constant at about 310 a year.

But, of those patients, the number of those who never smoked had risen from fewer than 50 to nearly 100 a year.

He said that the reasons for this change remained unclear but air pollution was a likely cause.

Cancer research groups have identified particles of soot in the air as being a carcinogen – something that causes cancer.

Some experts have argued that the study was too small to be reliable and suggested that the reason for the increase is improvements in machines that can detect smaller tumours.

Stephen Spiro, a former head of respiratory medicine at University College Hospital said: "There is no good evidence that lung cancer is becoming commoner in never-smokers.

"Lung cancer will become more frequent in never-smokers as a proportion, as smoking cancers begin to decline."

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## Turn on your car air conditioner to cut down air pollution

*Date: 12-Aug-2017 Source: Deccan Chronicle*



Yes, you have read the headline right, but this topic is not on how to reduce air pollution and save the earth — it is to save your health.

If you drive a car, and prefer to keep your windows rolled down while driving, we recommend that you stop this practice, unless you are concerned about your health. Driving in traffic, or stuck at a traffic light for long periods during your journey could have adverse effects on your

health — thanks to all the pollutants that your smog-prone city is making you breathe. However, rolling up your windows and turning on your air conditioner can help you cut down the amount of bad air you breathe in.

A research done by a few engineers at the Washington University in St. Louis has highlighted that air conditioners are the most effective method of keeping your cabin air as pollution-free for you and your family. They carried out their tests by fitting portable pollution sensors in both types of cars which have the AC kept on and with windows rolled down, as well as outside the respective vehicles. Their experiment was carried out for around four months and all the data that was recorded identified the different concentrations of pollutants in their location, the vehicles nearby, and do on. They also measured

in different conditions such as with windows up, with windows down, with AC on, with AC off, with fan only mode, etc.

In their research, they concluded that with the AC kept on, the cabin air was around 20 – 34 per cent cleaner than with the Windows rolled down. The AC in the car has a cold evaporator, which absorbs heat and produces cold air, and the intake fans for the AC also have an air filter, which can reduce the amount of suspended particles in the air.

However, there's one more thing to be noted, and it is equally important. While turning on your air conditioner will take care of your health, it is definitely adding on to the global warming issue. Your improvement on the cabin air will definitely add on to the environment at large. So do keep in mind that you should use this method only if you are in smoggy areas or heavily polluted areas where your health is important.

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## **Develop eco friendly farming practices to curb air pollution: HC to govt**

*Date: 13-Aug-2017 Source: Business Standard*



The Delhi High Court has directed the Centre to develop environment friendly farming practices to reduce stubble burning, a major cause of air pollution in the national capital during the autumn and winter months.

A bench of Justices S Ravindra Bhat and S P Garg issued the direction to the ministries of Environment, Science and Technology, and Agriculture asking them to coordinate with educational or technical institutions, if feasible.

The court also asked the Central government to explore possibility of creating a fund for innovation in farming techniques.

It told the secretaries of the three ministries to hold a meeting on this aspect and file a report of the proposals discussed on the way forward as well as the views of the central government.

However, the court left it to the central government to finally decide if it was necessary to create a fund.

The order of the court came last month while hearing a PIL initiated by it on the issue of rising air pollution in Delhi.

It also issued directions to Punjab, Haryana, Rajasthan, Uttar Pradesh and the Delhi governments to file status reports every alternate month on steps taken to educate and create awareness among farmers and agricultural workers against the ills of stubble-burning.

The status reports would also have to indicate any notifications issued, number of meetings held with their minutes, number of persons fined or booked for indulging in stubble-burning, the bench has said in its order.

The states also have to tell the court about the progress achieved, if any, by them with regard to exploring use of alternative technology or farming practice to eliminate stubble and giving incentives or subsidies to stop the practice of burning the crop residue.

The court will take up the matter on August 29.

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## **How to reduce indoor air pollution, and why dusting is the best way to detox your life**

*Date: 13-Aug-2017 Source: Vogue*

Indoor air quality can often be more polluted than the air outside. Here's to breathing easier.

Forest bathing is hot right now but the truth is that most of us spend 90 per cent of our time indoors in our homes, offices, schools, shopping centres and cars.

Unfortunately indoor air quality can be 100 times worse than the air outside, says naturopath and clinical nutritionist Tabitha McIntosh at Awaken Your Health who co-authored *One Bite At A Time: Reduce Toxic Exposure & Eat The Word You Want*.

"Any time you buy new linens, carpeting, and other home furnishings such as furniture, electronics, plus personal care and cleaning products, you also bring the chemicals used in their manufacturing into your house," McIntosh says.

"Even if you can't smell them, these chemicals: fragrances, particulates, solvents, flame-retardants and volatile organic carbons are present in indoor air as pollutants. Studies of human exposure to air pollutants indicate that indoor levels of many pollutants often are significantly higher than outdoor levels."

The effects of indoor air pollution

Little research has been done on the chemicals present in indoor air environments and their long-term health effects.

But there is strong evidence to suggest links between air pollutants and respiratory conditions such as asthma, lung cancer, and COPD (Chronic Obstructive Pulmonary Disease).

"In Australia, the CSIRO estimates that the cost of poor indoor air quality in Australia may be as high as \$12 billion per year," McIntosh says.

“In recent years, comparative risk studies performed by the United States Environmental Protection Agency and its Science Advisory Board have consistently ranked indoor air pollution among the top five environmental risks to public health.”

Other highly ranked concerns for public health include access to water quality and antibiotic resistance.

#### Why it gets worse in winter

Air pollution gets worse inside our homes in winter because we close the windows, turn on the heaters or air conditioners and get less air circulating from outside. Gas cookers and unflued gas heaters are also major culprits when it comes to indoor air pollution.

“Good air quality comes from good air flow,” says McIntosh. “Circulation of fresh air is critical to removing carbon dioxide, particulates, and air toxics such as mould, vinyl and plastics chemicals, synthetic fragrances, volatile organic compounds, flame-retardants, house dust, and mould.”

#### Make mould your enemy

Wet and damp winter weather makes things worse by encouraging mould in wardrobes, handbags, shoes, bathrooms, bedrooms and walls (if you live in a damp house check behind your artwork).

“Moulds reproduce by forming tiny spores that are not visible to the naked eye, however these spores produce mycotoxins that can be inhaled, causing health complaints such as headache, migraine, respiratory conditions, plus inflammatory complaints that affect the whole body - such as fatigue and joint pain,” says McIntosh.

Even just moderate exposure to mould in your home has the potential to unravel health. If your home has poor ventilation, roof or plumbing leaks, flooding, poor drainage, condensation build up in the bathroom or laundry, rising damp or high humidity, these problems need to be fixed.

McIntosh says she often sees patients move into a new house with mould problems (not visible to the naked eye), and subsequently develop fatigue disorders, headaches, recurrent infections such as sinusitis, or even develop asthma when they have never had it before.

“Exposure to toxic mould in a home may also cause croup, asthma, bronchitis, other lung conditions, and recurrent infections,” she says. “Infants and children are exquisitely vulnerable to the effects of mould (and other environmental chemicals) as their lungs, immune systems and neurological systems are still developing.”

#### Why dusting is the ultimate way to detox

And if you have ever lacked motivation to vacuum or dust, consider this: Recent research has identified up to 66 endocrine-disrupting compounds in household dust tests, including flame-retardants, home-use pesticides, cleaning chemicals and phthalates used in toys and vinyl flooring.

“Some of these can trigger headaches, sinus problems, and breathing problems such as asthma,” says McIntosh.

“Endocrine disrupting chemicals however have been implicated in numerous adverse health outcomes, including those of the endocrine, reproductive, neurological, and metabolic systems.”

McIntosh says regular exposure to these chemicals contribute to all aspects of the thyroid dysfunction, as well as infertility, reproductive disorders such as fibroids, endometriosis, polycystic ovarian syndrome, early puberty, and even prostate and breast cancer.

“These endocrine disrupting chemicals also interfere with normal sperm development,” she says. “Most alarmingly, these chemicals have potential to interfere with normal reproductive and neurological development of babies in utero, so they are a particular concern to people wishing to start a family, as well as young infants and children. The timing of exposure to endocrine disrupting chemicals is critical to the health outcome.”

Tabitha McIntosh’s tips for cleaner indoor air

Avoid the artificial

Avoid artificial fragrances in personal care products and air fresheners, synthetic candles (choose beeswax or soy with essential oils) and products free from phthalates, parabens, BPA, plastics, and other nasty chemicals.

Go barefoot at home

Adopt a no shoes policy inside your house to reduce outdoor pollutants being walked inside.

Suck it up

Vacuum weekly with a HEPA high performance vacuum filter (HEPA stands for high performance particulate air. A HEPA filter is a type of mechanical-mesh air filter that traps very fine and potentially harmful particles such as pollen, dust, dust mite, and pet dander) to remove air and dust pollutants.

Swipe right

Wet mopping and wet dusting (using a microfiber cloth) works well to collect smaller particles, paying particular attention to electronics and places where small children play.

Become an indoor gardener

Indoor plants help improve indoor air quality by absorbing carbon dioxide and releasing oxygen, filtering the air to pull out contaminants via the tiny pores in their leaves.

Shop smarter

To reduce exposure to EDCs (endocrine-disrupting or ‘gender-bending’ chemicals) avoid buying foam and mattresses, minimize your use of electronics and say no to flame retardant and anti-stain treatments offered on new furniture. Choose natural fibre carpets and rugs. Second hand furniture is another way to reduce your exposure.

Consider an air filter

If you live near a main road or can smell new carpet, consider using an air purifier equipped with high-efficiency particulate air (HEPA) filter in the room where you spend the most time to lower the amount of indoor fine particulate matter. Air filters are ideal for people with pre-existing respiratory condition such as asthma, COPD, or chronic respiratory infections.

If you work in an office

Ditch the air fresheners and synthetic candles. If possible open the windows and ask your HR department that the professional cleaners use natural cleaning products and a HEPA filter to vacuum regularly. Finally, pop a plant on your desk so you have your own personal air filter.

Find a greener dry cleaner

Tetrachloroethylene, also called perchloroethylene or ‘perc’ is a clear colourless liquid chemical widely used for dry cleaning of fabrics that has been classified by the Environmental Protection Agency as a probable human carcinogen. Perc can enter the body through respiratory or dermal exposure, and when inhaled - even low concentrations - is known to cause respiratory and eye irritation, headache, dizziness and vision problems.

Ask your dry cleaner what solvents they use and request a non-toxic alternative.

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## **The possible downfall of cleaning the air, according to JPL study**

*Date: 13-Aug-2017 Source: The Sun Smog*

Can smog be beneficial?

A new study says yes, sort of.

Tiny pieces of air pollution — also called fine particulates — contribute to human cases of asthma, lung disease, even premature death and therefore are a target for removal by state and federal air quality agencies looking to protect public health.

But researchers from the Jet Propulsion Laboratory in La Canada Flintridge and Caltech in Pasadena have discovered these same microscopic dirt balls fouling the air act as barriers that ricochet sun beams back into the atmosphere, blocking the rise in surface temperatures and possibly slowing global warming.

Known as aerosols, these microscopic pieces of diesel exhaust, dust, soot and factory emissions form what some dubbed “a warming hole,” meaning they create a cool spot over an increasingly warming Earth.

“I would never say air pollution is beneficial because obviously it is bad for human health. And I’m not going to say it has a positive effect, but it appears in some cases it slows down warming,” said Mika Tosca, lead scientist on the study released last week and published in the journal *Remote Sensing* in July.

Yes, there’s a catch.

The warming holes disappear once the concentration of pollution particles is reduced. Then, after that, surface warming accelerates, Tosca said. It's like putting a movie on pause and then fast forward.

Tosca and her team began the study by noticing that temperatures in the Southeast United States — Mississippi, Alabama, Georgia and parts of Louisiana — had remained steady as compared to the rest of the world. In the 20th century, this part of the country saw no temperature rises, while the average temperature in the continental U.S. rose by almost 1 degree Fahrenheit.

Temperatures actually decreased in the Southeast at times but began to rise in the 1990s. From 2000 to 2015, the temperatures rose sharply, by 1.5 degrees Fahrenheit, higher and faster than the rest of the country or the globe.

Using satellites launched by NASA in 1999 and one put into space in 2006 by NASA and the French space agency, CNES that measure atmospheric particles, her team found aerosols greatly decreased in that time frame. They noted the drop coincided with stricter air pollution controls on fine particulates imposed by the U.S. Environmental Protection Agency on coal plants and industrial companies beginning in 2006.

In short, the air got cleaner. But blue skies no longer blocked sunlight, so the surface temperatures shot up.

Is this what is happening in Southern California?

Tosca did not study California. But she did note the tremendous progress toward cleaner air in the L.A. Air Basin in the last 35 years and the rise in summer temperatures. (California recorded the hottest year on record in 2014 and nearly broke a record in 2015).

“It is possible some of the warming is part of that,” she said. “When you do clean the air, you suddenly see all this warming that should've been realized 20 or 30 years ago.”

Air pollution hides the warming only to unleash it hotter and more rapidly once the air gets cleaned up, Tosca said.

What happens to the sun's rays in the warming hole? While most are reflected, some may get absorbed in the oceans or in the clouds, she said. That may explain why the warming accelerates in the absence of particulate pollution.

“The aerosols are acting as an extra cloud,” she said.

Clouds could be another variable keeping away warmer temperatures. That is the subject of future studies, she said.

The research could give support to using geoengineering techniques to slow global warming, which is the warming of the earth due to heat that is trapped by excessive amounts of carbon dioxide, methane and other greenhouse gases from vehicles, utilities, landfills and cows.

One method involves shooting aerosol particles high into the atmosphere to block sunlight. Tosca does not endorse this approach, saying it could have a negative ripple effect on global weather patterns.



Instead, she hopes places with high levels of particle pollution, such as China and India, will adjust their climate change goals or at least consider her research when planning for greenhouse gas reductions in the future.

“Cleaning up the air there could give us more global warming than our models have shown,” she said. “It may change some of those targets.”

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## Air quality health advisory continues in Calgary

*Date: 14-Aug-2017 Source: Calgarysun*



It's S-S-S-S-MOKIN' Calgary and a haze of health concerns are increasing emergency visits and calls to health advice hotlines.

Smoke from the ongoing Verdant Creek Wildfire is pushing into cities across Alberta, including Calgary. On Monday, the Air Quality Health index placed the city at a moderate warning to develop health risks, such as coughing and irritation to

eyes, nose and throat.

Calgary resident Nolan Hill felt the effects late Sunday night.

"I've definitely been feeling a lot of soreness in my throat, tightness in my chest, and lots of coughing," said Hill. "I have mild asthma to begin with, and this has just made it worse."

He said it started around midnight and he noticed a strong smell of smoke coming into his apartment. At the height of his coughing nightmare, it was happening about every five minutes and didn't calm down until hours later. When he woke up, he was surprised to see the smoke still lingering.

"I was shocked last night that I could see the cloud of smoke even in the darkness and that some of the big towers downtown were shrouded," said Hill. "This morning, it was amazing how much it had hung around. I knew going into my day that I would have to be careful about going out and how much I might be affected."

His case is not unique.

Jason Cabaj, Alberta Health Services medical officer of health, said "during smoke events, both historically and this year, we typically see an increase in Health Link call and emergency room visits" — something he's seen since the smoke began to enter the city following the Verdant Creek blaze.

He's most concerned about individuals who are more susceptible to the impacts.

"In the case of air pollution, that's people with pre-existing chronic conditions, especially lung disease or heart disease, as well as young children or older adults," said Cabaj.

Early warning signs include irritation to the eyes, nose and throat followed by shortness of breath or coughing. He urges residents to play it safe and contact Health Link at 811 if they are concerned.

"There's good evidence that (air pollution) causes a significant number of severe illnesses and cases of death around the world and in Canada. But, it's quite challenging to know for any one individual how much air pollution has related to their specific case," said Cabaj.

All people can do is play it safe.

He recommends people avoid exposure to smoke as much as possible, be attentive to their symptoms and remain aware of the air quality by following Environment Canada and Air Quality Health Index updates.

The air quality advisory for Calgary was lifted late Monday afternoon and Calgarians are now at a low risk for health concerns.

The Air Quality Health index is a scale from one to 10 that indicates the risk of health concerns in relation to local air quality. The higher the number, the greater risk.

Under certain circumstances, like forest fire smoke, the rating can exceed 10.

Alberta Health Services recommend people stay indoors as much as possible to reduce exposure to air pollution, which can result in lung or airway irritation, trouble breathing or worsen pre-existing conditions like asthma.

Precautions that can be taken are closing all windows, turning down furnace fans or thermostats to a minimum setting, closing the fresh-air intake on air conditioners and closing all floor registers, which are grilles that open and close to direct air.

Additionally, residents should avoid running fans that bring smoky air inside their home, close their fireplace dampers on wood burning fireplaces and avoid using wood burning appliances.

When driving, people should keep their windows and vents closed and put fans on re-circulate mode to avoid drawing smoky air inside.

AHS also recommends people do not smoke tobacco to avoid unnecessary stress on the lungs and on people around them.

Individuals experiencing symptoms can call Health Link at 811 to speak to a registered nurse.

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## **Diesel car sale forecasts tail off amid air pollution fears**

*Date: 14-Aug-2017 Source: Business Green*

Industry forecasts for 2017 and 2019 suggest continued decline in demand for new diesel cars as public concern over air pollution mounts



Diesel car sales are set to see their market share eroded over the next two years as public concern over air pollution continues to mount, the latest industry forecasts suggest.

New car sales increased by 2.3 per cent last year compared to 2015, but are conversely expected to show a year-on-year decline of 3.7 per cent by the end of 2017, according to figures released late last week by the Society of Motor Manufacturers and Traders (SMMT).

Diesels are set to make up 43.2 per cent of annual demand this year, which is down from 47.7 per cent in 2016 and 50.8 per cent in 2012.

Moreover, SMMT expects market penetration of new diesel cars to further slump to 42.4 per cent next year, demonstrating a slowdown in demand as fears grow over air pollution from roadside transport.

Last month the government unveiled the first part of its strategy for tackling levels of air pollution which breach EU legal limits in many areas of the country. The plan focused largely on road transport, with proposals to consult over introducing a scrappage scheme to encourage consumers away from high polluting diesel cars.

The strategy also raises the prospect of charging schemes being introduced in some urban areas for diesel drivers, although the government insisted alternative approaches for curbing pollution would have to be tried first.

The government's own modelling has suggested charging schemes would represent the most effective way of reducing air pollution levels. Meanwhile, London is expected to introduce a Toxicity charge for the most polluting diesel vehicles this autumn.

Industry insiders have conceded that the wave of policy measures, coupled with the fallout from the 'dieselgate' scandal, has hit demand for new diesels.

Meanwhile, although SMMT does not provide forecast data for new electric and low carbon vehicles at present, contemporary market figures for sales of ultra low emission cars over the past few years show that, although still only representing a small fraction of the market, sales are beginning to surge.

SMMT figures for June showed sales of alternatively fuelled vehicles (AFV) reached a record market share of 4.4 per cent despite a drop in overall car sales, while the market share for diesel cars simultaneously fell to 43.7 per cent. Sales of electric and hybrid cars in particular grew 33.1 per cent in May compared to the same month last year.

The figures come alongside research by car dealing website Auto Trader showing fears over the impact of diesel vehicles on air quality may have stymied interest in purchasing these cars online, with 56 per cent of fuel type searches on the website for diesels in June compared to 71 per cent in November 2016.

The results came alongside a "significant spike" in searches for alternatively fuelled cars after the government announced plans to ban new petrol and diesel cars from 2040 last month, according to Karolina Edwards-Smajda, Auto Trader's retailer and consumer product director.

"Given the level of coverage it's not surprising there has been a decline in searches, but despite the ongoing negative rhetoric the impact on diesel has been fairly limited up to this point," she said.

Elsewhere, figures for new bus and coach registrations released today by SMMT show a decline in sales during the second quarter of 2017, leading the trade body's chief executive Mike Hawes to urge local authorities and bus companies to turn their attention towards low emission buses as they attempt to improve urban air quality.

"Having experienced a sustained period of significant growth, it's natural to see the market level out to steadier levels," Hawes said of the bus and coach market. "However, with buses so prevalent in our towns and cities, encouraging the uptake of the latest low emission Euro VI diesels and hybrids, as well as zero emission electric buses, will be vital to improving local air quality."

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## **Air pollution ups stress hormones, alters metabolism**

*Date: 15-Aug-2017 Source: Reuters*

NEW YORK (Reuters Health) - Breathing dirty air causes stress hormones to spike, new research suggests, which could help explain why long-term exposure to pollution is associated with heart disease, stroke, diabetes, and a shorter life span.

Dr. Haidong Kan of Fudan University in Shanghai, China, and colleagues looked specifically at the health effects of particulate matter (PM), small particles less than 2.5 micrometers in diameter, from industrial sources, that can be inhaled and become lodged in the lungs. While PM levels have gone down in North America in recent years, they are on the rise worldwide.

"This research adds new evidence on how exposure to PM could affect our bodies, which may (ultimately) lead to higher cardiovascular risk," Dr. Kan told Reuters Health in an email interview. "Our result may indicate that particulate matter could affect the human body in more ways than we currently know. Thus, it is increasingly necessary for people to understand the importance of reducing their PM exposure."

The new study, published in *Circulation*, included 55 healthy college students in Shanghai, a city with pollution levels in the middle range compared to other Chinese cities, according to Dr. Kan.

He and his colleagues put working or non-working air purifiers in each student's dorm and left them in place for nine days. After a 12-day period during which the filters were removed, the researchers did another nine-day test: the students in the original functioning-filter group got non-working filters, and those in the original nonfunctioning-filter group got filters that worked. At the end of each nine-day period, the researchers tested levels of a wide range of small molecules in students' blood and urine as indication of their exposure to PM.

Students' levels of the stress hormones cortisol, cortisone, epinephrine and norepinephrine rose with dirtier air, as did their levels of blood sugar, amino acids, fatty acids and lipids. Higher exposure to PM was also associated with higher blood pressure, a worse response to insulin, and markers of molecular stress on body tissues - all of which can, over time, increase the risk for heart disease, diabetes and other problems.

Air purification cut the amount of PM students were exposed to in half, from 53 micrograms per cubic meter of air to 24.3 micrograms per cubic meter – but that was still well above the World Health Organization's Air Quality Guideline of 10 micrograms per cubic meter.

Dr. Robert D. Brook of the University of Michigan in Ann Arbor, who co-authored an editorial accompanying the study, told Reuters Health by email that the stress responses triggered by these small pollution particles “are larger and more varied than previously known.”

He added: “Simple actions taken at a personal level, including usage of air purifiers with HEPA filters, can substantively reduce exposures and help lessen the harmful health effects of (PM) over a few days.”

Moving forward, he said, the findings “help set the stage for what we believe is urgently needed now - clinical trial evidence that personal-level actions (air purifiers, N95 respirators) can actually reduce hard cardiovascular events and mortality among high risk patients living in heavily polluted countries.”

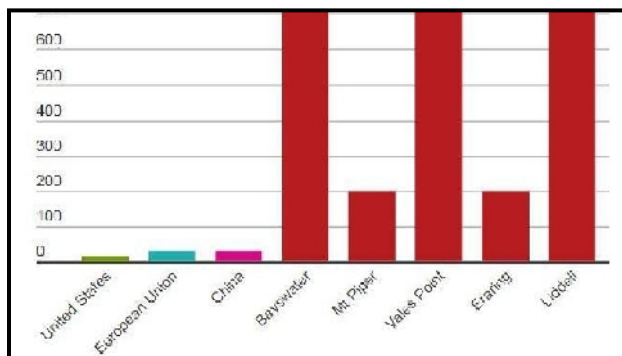
“This evidence-based proof is needed to help provide clinical recommendations for the millions of people with heart diseases living in regions where the poor air quality is not likely to significantly improve over the upcoming decades,” Brook said.

“Air pollution is a global threat to the health of all humans living everywhere,” he added. “We are all at risk to the hazards of air pollution and are all at least partially responsible. It is time to move forward with cleaner ‘green’ sources of energy and transportation - for our own good and for the benefit of everyone else on the planet.”

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## Report finds US, China and the EU have higher standards for air pollution caused by power stations than Australia

*Date: 15-Aug-2017 Source: News.com.au*



AUSTRALIA is trailing behind places like China when it comes to pollution standards and those living near coal-fired power stations are three times more likely to die a premature death, according to a new report.

Environmental Justice Australia (EJA) found Australian power stations are allowed to emit far more pollution than those in the US, China and parts of the European Union, and they are not

being regulated well enough to protect human health or the environment.

The toxins produced by coal-fired power stations can have a deadly impact on those living nearby. People who live within 50km are about three to four times more likely to die a premature death as those living further away.

The report looked at four pollutants that are extremely harmful to health and have been linked to asthma, respiratory problems, stroke, angina, heart attack and cancer.

It found coal-fired power stations emitted more than 30 toxic substances and are the biggest sources of fine particles PM2.5, sulfur dioxide and oxides of nitrogen.

“The mercury limits for some NSW power stations are 666 times higher than the US limits. This is unacceptable,” the report said.

“In almost all cases the emissions limits applied to Australian power stations are significantly less stringent than the standards in the European Union, United States and China.”

What controls that are in place are also not well monitored and rarely enforced.

The EJA has made eight recommendations including that the Federal Government commission an independent assessment of health impacts, develop national emission standards, ask for better monitoring and commit to not building, financing or approving any new coal-fired power stations.

When it comes to air pollution, the report suggested “ultra-supercritical” or “high efficiency low emission” (HELE) power stations were not very effective at reducing pollution.

“The best improvement ultra-supercritical technology can offer over subcritical is about a 14 per cent reduction in pollution emissions,” the report said.

NSW Central Coast resident Gary Blaschke OAM said a lot of the downside of living close to coal-fired power stations had been swept under the carpet.

“If pollution was purple, people would be up in arms. Because we often can’t see it — whether it’s in the air or on the ground — many people don’t even think about it.”

## THE INVISIBLE KILLER

The report *Toxic and terminal: How the regulation of coal-fired power stations fails Australian communities* mainly looks at four pollutants. They are coarse particles called PM10, fine particles known as PM2.5, sulfur dioxide and oxides of nitrogen.

In particular PM2.5 has been linked directly to health risks including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing, and premature deaths.

It’s been estimated that PM2.5 exposure has led to 1590 premature deaths each year in Sydney, Melbourne, Brisbane and Perth.

These particles can travel long distances so Sydney residents may feel the impacts of pollution produced by Hunter Valley power stations, but local communities are the most at risk.

People who live within 50km of coal-fired power stations face a risk of premature death as much as three to four times that of people living further away.

It's been estimated that 18 people living near the now-closed Hazelwood power station in Victoria died premature death due to air pollution in one year.

"The annual health costs of coal-fired power stations across Australia has been estimated at about \$2.6 billion a year," the report said.

"These costs are not factored into wholesale electricity prices or licence fees, and are therefore borne by the community rather than affecting the profits of the power station owners."

While power stations in NSW are required to pay a load-based licencing fee based on how much they pollute, Doctors for the Environment Australia has calculated that to properly reflect the health cost, fees would need to be 50 times their current levels.

One Hunter Valley resident Bev Smiles said there was huge concern in the area about the potential health impacts from coal-related activities.

"The way the air moves through the valley — it's a long valley with steep escarpments on either side — it picks up all the pollutants from the mines and the power stations together, so we've got this huge cocktail of air pollution," she said.

"Here in the Hunter Valley we have one of the highest incidences of asthma in Australia."

#### SEE NO EVIL, HEAR NO EVIL ...

There are national air pollution standards for six key pollutants, including PM2.5, but state governments are the ones that regulate this area and they don't have to do anything to reduce emissions if they go too high.

For example, NSW has exceeded national standards for yearly concentrations of PM2.5 since monitoring began, but the state hasn't introduced any extra controls on polluters and has even approved new polluting industries, the report suggested.

Unlike in the United States and European Union, there are also no national limits specifically for power station emissions.

So each state and territory in Australia regulates power station emissions differently, using different standards and limits.

This makes it very difficult to compare emission limits across different power stations in Australia and helps power stations to avoid scrutiny.



“This is unacceptable,” the report said. “The emissions limits set on power stations are critically important for human health — there is a significant difference in health outcomes from adopting higher or lower emissions limits.”

“In Australia there has been no national assessment by governments of whether our power stations have limits imposed on them to properly protect human and environmental health.”

The EJA believes binding national standards on pollutants should be introduced in Australia.

It compared emissions of 10 power stations from NSW, Victoria and Queensland using information from the National Pollutant Inventory, and found in most cases the emissions limits applied to Australian power stations were significantly less stringent than the standards overseas. The mercury limits were particularly striking.

Mercury can cause significant harm to humans, including death, and can build up in the environment. The US in particular has very strict limits for mercury that are 666 times lower than limits for some NSW power stations and 33 times lower than in the EU and China.

Even worse, Victoria and Queensland have no mercury limits at all.

#### MONITORING CAN BE ‘WILDLY IN ERROR’

Another problem is there’s very little independent monitoring.

Power stations monitor their own emissions but some stations only have to do this once or twice a year. Most don’t have to give this data to the regulator, although they do have to show they are complying if asked.

Power stations also provide an estimate of air pollution emissions annually to the National Pollutant Inventory but this figure is just an estimate and its calculation was developed by the industry. In some cases they are only released 18 months after the emissions happened.

The EJA found these reports were rarely checked or verified by government.

It found some reports appeared to be “wildly in error”, including one Mount Piper power station that reported a 92 per cent drop in PM2.5 emissions, at the same time energy output increased by 16 per cent.

In fact the EJA found reported emissions for all NSW power stations had dropped significantly since 2008/09 for no obvious reason.

None of these companies reported installing new pollution reduction technologies that could explain this drop.

But at least NSW monitors PM2.5, other areas don’t have to distinguish between larger particles or the finer and more dangerous PM2.5.

The EJA believes the lack of monitoring for PM2.5 is particularly concerning and something that the International Energy Agency has urged power stations to do.

Even in NSW the monitoring is problematic because they do this in nearby areas, not at the power station, which the EJA says is not ideal because it's hard to know how much of the pollution is being created by the power plant or some other source.

Those worried about pollution also have very little real-time information of emissions from power stations and EJA believes they should be changed.

#### NOTHING HAPPENS WHEN THEY ARE CAUGHT

Even if a breach is identified, regulators appear very reluctant to fine companies for non-compliance and fines are usually only issued when there is an outcry from the community or it is a very serious pollution event that can't be ignored.

The fines issued also seem very low in light of the pollution caused.

One example cited involved NSW's largest power station Eraring located at Lake Macquarie, which is owned by Origin Energy. It breached its licence conditions 23 times in the last 10 years, including an explosion that caused 8000 litres of oil to leak into the lake. But in this time it has only been issued one penalty infringement notice and fined \$15,000 for allowing toxic ash from an ash dam to escape and cover nearby neighbourhoods.

#### AGEING POWER PLANTS COULD BE A PROBLEM

Australia has 17 commercially operated coal-fired power stations located in NSW, Queensland, Victoria and Western Australia, and many of them are very old.

Half of Australia's power stations are at least 30 years old, the oldest one is located at Liddell in NSW and is 46 years old.

The EJA said regulators had generally not required power stations to reduce emissions since the 1970s and 1980s, despite the fact there was new technology that could be used to help them do this.

It found power stations had not bothered to install things like wet scrubbers, selective catalytic reduction methods and bag/fabric filters.

As power stations get older they often increase their toxic emissions because their older-style technology begins to fail, and more regular start up and shut downs of the power station are required to maintain the plant which emit excessive levels of pollution.

There could also be problem once a plant closes and it has to be decommissioned, which involves cleaning and dismantling equipment, disposing of highly toxic substances and preparing waste disposal sites for capping and remediation.

The funds required are huge.

Engie, the owner of now-closed Hazelwood power station and mine, estimated that decommissioning and rehabilitating the power station site would cost at least \$304 million.

But unlike miners, power station operators do not have to pay a bond or financial assurances to ensure the government can cover the costs of rehabilitation once a site closes if the operator fails to do this.

The EJA found no financial assurances have been imposed on any of the power stations currently operating in NSW, Victoria and Queensland.

“This is a huge concern,” the report said. “There are high risks of either a company abandoning its liabilities once a power station is closed — potentially by selling the asset, winding up or declaring itself insolvent — or of the costs of decommissioning and rehabilitation being significantly more than any assurance or the assets of the company.”

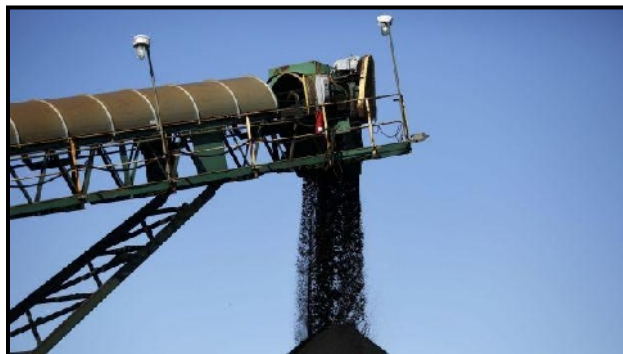
“Abandoned mines and other toxic sites around Australia are testimony to these risks.

This could be a massive cost.”

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## Poor air quality is the true cost of coal

*Date: 16-Aug-2017 Source: The Sydney Morning Herald*



Smoky Sydney skies this week are a reminder of the cost air pollution is having on our community. While toxic emissions from coal-fired power stations go into the air we breathe, they also fly largely under the radar.

We assume the regulators – the EPAs and state environment agencies – wouldn't allow pollution at levels that would harm us. Maybe we also assume the power station owners themselves – a

mix of huge multinational corporations, state-owned entities and household-name Australian companies – would not emit at levels that would harm their workers and the surrounding communities.

A report released this week by Environmental Justice Australia demonstrates otherwise. Australia has 17 commercially operating coal-fired power stations, located in NSW, Queensland, Victoria and Western Australia.

Australia's fleet of power stations is among the oldest and most inefficient in the world, with 89 per cent of our power stations classed as "subcritical" – the oldest type. Half of Australia's power stations are at least 30 years old. The oldest, Liddell in NSW, is 45-years-old. These power stations release more than a million tonnes of toxic pollution into the air each year.

A conservative estimate puts the health costs from power station emission at \$2.6 billion a year. Toxic pollution travels great distances, so the pollution from Australia's power stations is breathed in by millions of Australians, particularly those in Sydney who end up with a large chunk of the Hunter Valley's pollution. Much of the sulphur dioxide and fine particle pollution in Sydney's air comes from coal-fired power stations in the Hunter Valley and the central coast.

Power stations are the largest source of sulfur dioxide (SO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>) and fine particulate matter (PM<sub>2.5</sub>) in Australia – three toxic pollutants that cause death and disease in humans and harm the environment. Most people I talk to are extremely surprised when they hear the emissions limits imposed on Australian power stations are, for the most part, far less stringent than those in the United States, the European Union and China.

The most shocking we found was mercury limits for some NSW power stations are 666 times higher than those in the US. And that's just the tip of the iceberg. Because our emissions limits are so lax, power stations have not had to install pollution reduction technologies that are commonly used overseas to reduce SO<sub>2</sub> and NO<sub>x</sub> pollution.

As a result, communities are exposed to excessive and preventable levels of toxic pollutants that cause and make worse a range of health impacts, such as lung cancer, heart attack, stroke, asthma and respiratory disease.

Building new power stations is not the answer to Australia's energy issues – or to our toxic pollution woes.

"Ultra-super critical" power stations may boast newer technology than the existing old facilities, but they would barely reduce the level of toxic emissions and would still pour out more than a million tonnes of toxic pollution into our air, water and land.

Our research shows the current fleet of power stations should be regulated much more strictly, with stricter emissions standards applied, meaning power stations would have to install modern pollution reduction technologies and improve their operating practices. Strong regulation is critical to reducing the toxic burden power station pollution places on the community.

Communities, especially communities living in the shadow of power stations, have little control over the air they breathe. They rely on strong regulation to protect their health.

The International Energy Agency recently noted that in those countries where air pollution is being controlled, it is primarily because of strong government regulation.

There is no "safe" level of air pollution – health impacts are found even at low levels of pollution.

Ultimately the only way to avoid death and disease from power station pollution is to move to renewable energy generation, which produces no toxic pollution.

Even the highly conservative International Energy Agency notes in its recent report on energy and air pollution, "Policies and measures that lead to an avoidance of air pollution emissions tend to be associated with the broader transformation of the energy sector into one that is more efficient and less reliant on fossil fuels: over the longer term, the simplest way to tackle air pollution is not to produce the pollutants in the first place."

Nicola Rivers is a lawyer and director of advocacy and research at Environmental Justice Australia.

# Kenya: Invisible and Ignored - Air Pollution Inside the Homes of Nairobi's Residents

*Date: 16-Aug-2017 Source: All Africa*

## ANALYSIS

By Blessing Mberu

Air pollution is a visible problem in Kenya's capital, Nairobi. The city's poor air quality is evident in its congested streets where passenger vehicles, trucks and motorcycle taxis jostle for space while belching clouds of black smoke.

Nairobi's construction boom and practices like the burning of garbage only add to the levels of outdoor air pollutants. The World Health Organisation (WHO) reports that the level of fine particulate matter in the city's outdoor air is 17 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). This is 70% above the recommended maximum level.

This figure could even be higher given the absence of a robust monitoring system. Outdoor (ambient) air pollution causes more than 3 million premature deaths globally each year and increases the risk of respiratory diseases and cardiovascular conditions.

What's less discussed is the problem of indoor air pollution - the presence of air pollutants in homes, offices and classrooms. These could be gases like carbon monoxide and can come from various sources, such as fuels used for cooking and lighting.

Indoor air pollution is not so visible, even though it's estimated to cause 4.3 million premature deaths globally each year. Estimates of indoor air pollution levels in Nairobi's households are hard to come by. This is partly due to the complexities of setting up monitoring devices in people's houses.

The invisibility of the problem is exacerbated by the fact that it's seen as a private problem because it happens in a household setting. But it's an important environmental risk factor for our health given that we spend a large amount of our time indoors.

We have been conducting research to understand the levels and burden of household air pollution in Nairobi's informal settlements. Our research in Korogocho and Viwandani indicates that average levels of fine particulate matter within households are approximately  $76 \mu\text{g}/\text{m}^3$ . This is over three times more than the WHO recommended maximum level of  $25 \mu\text{g}/\text{m}^3$ .

## An urban problem

Household air pollution is primarily driven by fuels that are burnt for cooking and lighting. While it's been associated with rural communities, household air pollution is also an urban issue. Residents of informal settlements have little access to electricity or liquefied petroleum gas. They primarily burn firewood, charcoal and kerosene.

Some households even resort to burning plastic bags and containers when they can't buy charcoal or kerosene. Burning these fuels releases pollutants such as carbon monoxide, sulphur dioxide, nitrogen dioxide, poly-aromatic hydrocarbons as well as particulate matter of varying sizes.

Wood smoke has been shown to have similar pollutants as cigarette smoke, but at higher concentrations. This has health implications for firewood users. Poor ventilation in homes because of concerns about security or outdoor air pollution adds to the levels of pollution. The pollutants are associated with respiratory diseases, cancers and adverse maternal and child outcomes.

Women are more exposed because they are primarily involved in cooking and household work. A cross-sectional survey in Nairobi's slums indicates that females form 37% of the slum population, with those aged 20-29 years forming the highest proportion.

In the search for low cost and innovative solutions to the problem of indoor air pollution in poor urban households, three workshops were convened last year in Nairobi.

These involved policymakers, academics, researchers and NGO representatives. Also present were residents of Korogocho and Viwandani - two informal settlements in Nairobi. Together they developed a basket of potential policy interventions which were modelled in different scenarios.

The first involved changing the fuel mix used in cooking and lighting by increasing the price of kerosene and lowering prices for gas and clean cook stoves. This showed a marginal reduction in levels of household air pollutants.

In the second scenario, the price control measures were combined with stronger enforcement of pollution regulations. This resulted in a tripling of the reduction effect in comparison to the previous scenario.

The third scenario added increased health impact assessments and air quality monitoring to scenario two. This led to an even further drop in air pollutant levels.

The final scenario combined all the policy measures mentioned above with a reduction in outdoor air pollution and improved ventilation. This led to the greatest decrease in indoor air pollutant levels.

What the modelling tells us

The modelling showed that while price controls may be effective initially, sustaining gains in air quality and health outcomes will require a combination of different measures. The results also show that only targeting household air pollution isn't enough.

Because indoor and outdoor air pollutants constantly interact with each other as air moves in and out of people's homes, the greatest gains will only be realised when outdoor air pollution is addressed effectively.

But it's easy to focus on ambient air pollution which is more visible and ignore the problem within households. That's why policymakers need to ensure that both challenges are monitored and addressed. Reducing exposure to both indoor and outdoor air pollution is critical to improving health outcomes for vulnerable populations in the informal settlements in Africa's cities.

Chege Mwangi, the policy engagement manager at APHRC, also contributed to this article

#### Disclosure statement

The authors do not work for, consult, own shares in or receive funding from any company or organization that would benefit from this article, and have disclosed no relevant affiliations beyond the academic appointment above.

Blessing Mberu, African Population and Health Research Center and Kanyiva Muindi

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## Air pollution could spike with back to school traffic

*Date: 17-Aug-2017 Source: Turlock Journal*



The San Joaquin Valley Air Pollution Control District is hoping motorists can undertake some practices that will help keep air pollution levels from rising during the back to school period.

With school back in session the Valley Air District is asking the public to reduce vehicle emissions by carpooling or walking their children to school and to refrain from vehicle idling during school pick-ups and drop-offs.

Warm temperatures and multiple wildfires may begin to impact Valley air quality over the weekend and into next week, and the public's help is crucial in reducing the risk of spikes in ground-level ozone and exceeding federal air quality standards.

“Thanks to the vigilance and cooperation of residents and businesses throughout the Valley, we continue to see improvements in air quality every summer,” said Seyed Sadredin, the District’s air pollution control officer and executive director. “We urge the public to be even more mindful of their contributions to poor air quality during this crucial back to school window.”

To help minimize the spikes in air pollution during the back to school season, the Valley Air District may call for the public to take action when conditions such as increased emissions, high temperatures and stagnant air flow are favorable for ozone accumulation. Residents and businesses are urged to reduce vehicle emissions by driving less, refraining from idling their vehicles, carpooling or vanpooling and avoiding the use of drive-through services. Other measures, such as shifting ozone-creating activities, including lawn maintenance to early mornings, can also help offset rising ozone levels.

To help minimize pollution associated with school site vehicle idling, the District has partnered with hundreds of Valley schools through the Healthy Air Living Schools program. The program gives schools



tools and materials to encourage parents to “Turn the Key & Be Idle Free” when picking up or dropping off students.

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## **Urgent clarification on air quality plans required, says Client Earth**

*Date: 17-Aug-2017 Source: Fleet News*



Client Earth has written to the Government asking for clarification what it calls ‘disturbing holes’ in court-ordered plans to clean up illegal levels of air pollution.

The letter, which gives ministers 14 days to respond, highlights major questions which the Government’s plans leave unanswered, it says.

The plans, which were released on July 26, pass responsibility to 23 councils in England to find a solution to the air pollution crisis.

In the letter, Client Earth asks for immediate clarification about the guidance given to local authorities on how to evaluate the best ways of bringing air pollution down as soon as possible as well as how ministers will ensure that air quality limits are met across England.

The environmental law organisation also calls for clarity on how the Department for the Environment, Food and Rural Affairs (Defra) will assess plans from the 23 local authorities and how quickly this will be done.

Client Earth lawyer Anna Heslop, said: “We were extremely disappointed with the plans when they came out. They pass the buck to local authorities and leave some majors questions about process and funding.

“We are worried that ministers may be running away from their responsibility to ensure people across the UK are not breathing illegal levels of air pollution every day. We hope that the government’s answers will finally show a resolve to urgently tackle the UK’s toxic air. Up to now, that has been sadly lacking.”

Client Earth is also waiting for urgent clarification from the Scottish and Welsh governments as to their and DEFRA’s plans to clean up illegal levels of air pollution in the devolved nations.

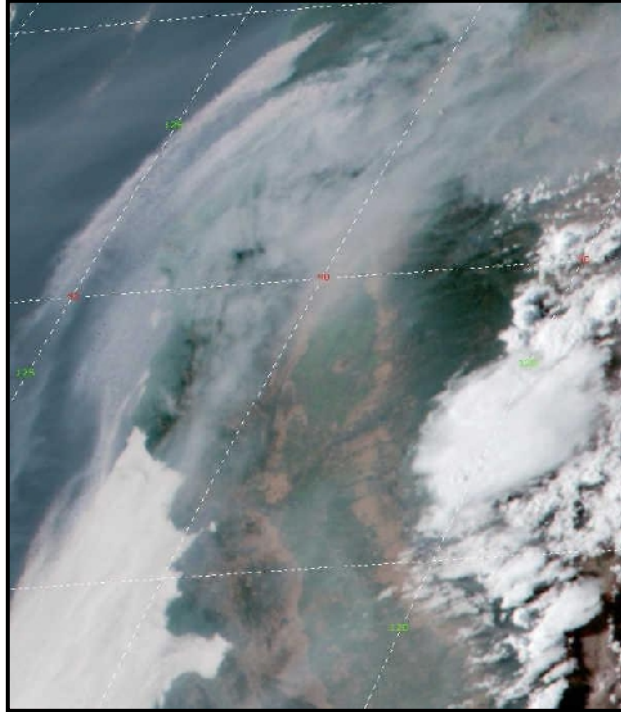
The plans released by the Government were the result of Client Earth’s second successful court case against ministers to clean up illegal levels of nitrogen dioxide (NO<sub>2</sub>) air pollution in the UK. There are illegal levels of NO<sub>2</sub> in 37 out of 43 zones in the UK.

Client Earth has called for a national network of clean air zones, which would keep the most polluting vehicles away from the most polluted areas of our towns and cities. This, it says, should be accompanied by a diesel scrappage scheme and other incentives to help people move to cleaner forms of transport.

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## Air Quality Management District reports on smoke conditions over Lake County

*Date: 20-Aug-2017 Source: Lake Country News*



LAKE COUNTY, Calif. – The Lake County Air Quality Management District issued a late Saturday report on the source of heavy smoke that has filled the county’s air basin.

The report from Air Pollution Control Officer Doug Gearhart said that the smoke and haze currently visible throughout Lake County are primarily the result of transport smoke from numerous fires in Northern California and Southern Oregon.

Gearhart said those fires include the Orleans Complex, Eclipse Complex, Salmon August Complex, Ruth Complex, Umpqua North Complex, Chetco Bar, Miller Complex, High Cascade Complex and Falcon Complex.

Altogether, the fires are currently estimated at more than 45,000 acres and are burning in timber

and brush. Gearhart said the fires are burning primarily in National Forests where access is limited.

Satellite imagery shows extreme levels of smoke generation drifting into Northern California and Lake County.

Smoke can be expected to intrude in all of Lake County with potential for moderate to unhealthy levels through the weekend, Gearhart said.

He said the district is actively monitoring the transport smoke impacts.

Current air quality in most of the county is generally considered good to moderate, though Gearhart said the county has experienced significant smoke impacts for several hours that was moderate to unhealthy.

Conditions in localized areas could reach unhealthy levels if the smoke continues to settle in the basin, Gearhart said.

Gearhart said the “moderate to unhealthy” air quality forecast results from higher levels of fine particulates from the Northern fires and the possibility of increased ground-level ozone.

Ozone is generated when combustion products in the smoke combine with the high temperatures, sunlight and humidity, he said.

Health officials advise that when smoke is present in the Lake County Air Basin, individuals with asthma, bronchitis, emphysema, and other lung or heart diseases should carefully adhere to their medical treatment plans and maintain at least a five-day supply of prescribed medications.

They should limit outdoor activity and unnecessary physical exertion. Air conditioning that recirculates indoor air should be used, when available. Drinking plenty of water to avoid drying of the airways is recommended unless restricted for medical reasons, officials said.

Dust masks are not protective against fine particulate, which is the pollutant most detrimental to health caused by wildfire smoke. Such masks are only useful in filtering out the ash and larger particles that are encountered in burn areas, according to Gearhart's report.

Air purifying respirators, such as N-95 filtering face pieces, may be effective in reducing harmful particulate matter, but also increase the work of breathing, can lead to physiologic stress, and are not recommended as a general protective measure, Gearhart said.

With the potential for significant smoke from the northern fires, individuals planning to enjoy the outdoors should consider avoiding certain higher elevation areas when smoke is present as they may be more heavily impacted, Gearhart said.

With air quality in the "moderate to unhealthy" range, Gearhart said people are recommended to use caution and be prepared for rapidly changing conditions.

He said localized areas of unhealthy air, regional haze and particulate from the fires are expected to continue throughout Lake County through the weekend until the weather pattern changes.

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## **Mumbai's blue dogs: Pollution board shuts down dye industry after HT report**

*Date: 20-Aug-2017 Source: Hindustan Times*



The state pollution control board shut down the Navi Mumbai-based private company that was releasing untreated industrial waste into the Kasadi river at Taloja, and was discharging residual dye powder into the air and in the water, which was turning dogs in the area blue.

HT first reported on August 11 about the dogs mysteriously turning blue, after residents spotted the canines. After local activists filed a complaint with the Maharashtra Pollution Control Board (MPCB), it was discovered that a private company

was releasing blue dye into the air and the river water.

Officials from the Maharashtra Pollution Control Board (MPCB) told HT that a closure notice was issued on Friday night and the Maharashtra Industrial Development Corporation (MIDC) has been asked to cut water supply to the firm.

The pollution board issued a show-cause notice on Wednesday. However, after witnessing that there were no pollution abatement measures being followed by the firm, it was shut down.

“There are a set of norms that every industry needs to follow. After our sub-regional officers confirmed media reports that dogs were indeed turning blue due to air and water pollution, we conducted a detailed survey at the plant,” said Anil Mohekar, regional officer, MPCB Navi Mumbai, adding that once they found out that none of the directions under the Water (Prevention and Control of Pollution) Act, 1974, and Air (Prevention and Control of Pollution) Act, 1981, were being followed by the private company, closure directions were issued.

“Ducol Organics Pvt Ltd. is harming animals and birds in the area. We cannot let such an industry function. We will ensure that the plant does not function from Monday and the decision sets an example for other polluting industries, which may not be following pollution abatement measures,” he said.

According to MPCB, the fur of five dogs from the industrial area had turned blue. Veterinarians from a hospital examined all five dogs and admitted one of them to the hospital for pathology tests. A blood report revealed that the dog was healthy, did not have any infection and the blue dye was water soluble.

However, animal welfare activist Arati Chauhan from Navi Mumbai Animal Protection cell, who first identified the problem through the pictures of a dog, said shutting down the industry was not a solution as it was not addressing the larger issue of other polluters in the area. “Shutting down one industry, as MPCB has done, only results in daily wage labourers losing their bread and butter. There are many other industries in the area that pose a threat to the flora, fauna and a threat of more such cases is a possibility,” she said. “There is a need for pollution monitoring of all plants and development of adequate green cover around industrial sites.”

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## Hyderabad Pharma city project put on fast track

*Date: 21-Aug-2017 Source: Deccan Chronicle*



Hyderabad: The state government has decided to go ahead with the Hyderabad Pharma City project and has scheduled the crucial environmental hearing for September 18. The hearing will take place at the proposed site of the project in Medipalli in Yacharam mandal.

In its Environmental Impact Assessment (EIA) report, the government dismissed the apprehensions of environmentalists that the project

would spell doom for the local ecology and be highly polluting.

Pharma City, being developed by the TS Industrial Infrastructure Corporation, will cover 19,331.2 acres in Kandukur, Yacharam and Kadthal mandals of Ranga Reddy district. A major portion of land will be used for manufacturing while the rest will be used for setting up a pharma university, research and development and ancillary hub, and a township.

The HPC site is divided into six zones, for industrial and non-industrial development. According to the EIA report, the project area is degraded upland with undulating terrain and sparse vegetation.

There are reserve forests situated around the site. And while the government claims that there will be zero waste water discharge and thus no water pollution, the EIA report admits that air pollution is a major concern.

The EIA report says: “Boilers used to produce steam with coal as fuel is a big source of air pollution. Around 230 boilers, each of 10 tonnes per hour capacity, will lead to major pollutants sulphur dioxide and nitrogen oxide.

A 250 MW gas fuelled engine coupled cogeneration (power & cooling) plant will be another source of air pollution. Nitrogen oxide will be the only pollutant of concern. A three MW waste to energy plant has also been proposed which will also be another source of pollution.” The report, however, goes on to claim that the level of air pollution will be within prescribed limits.

“In Pharma City, domestic sewage from residential, institutional and commercial areas and industrial effluent from pharma industries are to be treated. Total municipal solid waste (MSW) generation in HPC in ultimate phase has been estimated at about 164 tonnes per day. As no waste water will be discharged into any outside water body, there will be no impact on the water quality of any surface water bodies of the area,” it said.

A Light Rail Transit system has been proposed for public transportation within the HPC. A rail spur line is proposed from the southern side of HPC to Shadnagar railway station, which is located at a distance of 48 km.

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## **Basingstoke will have illegal levels of air pollution 'by 2019', says Friends of the Earth**

*Date: 21-Aug-2017 Source: Gazette*

THOUSANDS of residents could be breathing dangerous levels of polluted air, according to new figures released.

Friends of the Earth, a campaign group which seeks to find solutions to environmental problems, has predicted that Basingstoke and Deane will have illegal levels of air pollution by 2019.



The charity has been calling on the government to introduce Clean Air Zones in all UK locations predicted to have illegal levels of air pollution beyond next year.

However, despite being predicted to have poor air pollution by 2019, there is no action planned by Basingstoke and Deane Borough Council to change this.

Head of environmental service at Basingstoke and Deane Borough Council, Colin Rowland said: “No

specific action is needed by Basingstoke and Deane Borough Council to meet the requirements of the government’s Air Quality Plan.

“However, we constantly review and assess air quality within our district and report these findings annually to the Department for Environment, Food and Rural Affairs (DEFRA). We also share this data on our website.”

Mr Rowland added: “Although as a borough council we have no powers to implement changes to the road network that could assist with air quality issues, we work closely with the county council who have this responsibility.

“We also aim to improve air quality by controlling and reducing emissions from industrial processes and by carefully considering air quality and air pollution issues for each planning application.”

Friends of the Earth has found that air pollutions leads to over 4,000 early deaths in the South East every year The charity is calling on prime minister Theresa May to provide a safety net for drivers by introducing a comprehensive diesel scrappage scheme funded by a ‘diesel-gate levy’ on manufacturers.

Jenny Bates, Friends of the Earth air pollution campaigner, said: “The government plans appear to wash their hands of doing anything to protect thousands of people in the south east breathing dangerous air.

“This is a despicable dereliction of duty. Ministers know as well as anyone that Clean Air Zones are essential to give us breathable air fast. The fact that they have not only not failed to introduce the best measure to protect people’s health, but put in place no new measures at all, is an absolute scandal.”

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## What Air Pollutants Are Hiding In Your Cabinets?

*Date: 22-Aug-2017 Source: Huffpost*

We spend most of our time indoors, so breathing healthy air where we live, work and play is critical. You may not know it, but the air in your home can be dirty and hazardous to your health. In fact, indoor air can be even more polluted than the air outdoors.





Indoor air pollution can come from many different sources. You probably know that cigarette smoke, pesticides, and mold are sources of indoor air pollution, but did you know that certain ingredients in common household products can pollute the air indoors as well? These household products or

processes emit gases into the air called VOCs, or volatile organic compounds, and contribute to indoor air pollution. These VOCs can also react with other gases and form other air pollutants after they are in the air.

VOCs are common ingredients in paints, varnishes, cleaning products and air fresheners – including formaldehyde, butane and propane. These VOCs can endanger your family’s health, especially children and anyone living with asthma, COPD and other lung diseases. Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some, like formaldehyde, can cause cancer.

The American Lung Association and Seventh Generation are partnering to raise awareness and share tips on how to help protect your family from VOCs and have a healthier home – including how to set up your child’s nursery, suggestions when getting a new coat of a paint and new carpet and furniture, as well as cleaning tips. For instance, many household and cleaning products—including soaps, polishes and grooming supplies—often include VOCs. Even products advertised as “green” or “natural” may contain ingredients that can cause health problems. To reduce your exposure, we recommend choosing products that either do not contain or have reduced amounts of ingredients such ammonia, fragrances and flammable ingredients. One place to start is to look for household products that meet the U.S. Environmental Protection Agency’s Safer Choice standards.

As you can tell, having information about the contents of the product helps you make better decisions. We encourage you to get into the habit of reading ingredient labels before you purchase household products. You might be surprised to learn that manufacturers are not obligated by U.S. law to list ingredients in household cleaning products. We believe that consumers have the right to know what is in their household products. Learn more about the #ComeClean campaign to require manufacturers of both consumer household and industrial cleaning products to disclose all intentionally-added ingredients on their product labels and websites.

It can be hard to keep up with all the ways we can keep our families healthy, but the American Lung Association is committed to work toward healthy air for all Americans. After all, there are more than 32 million Americans who live with a chronic lung disease and face greater risk to their health from irritants in our air. Learn more about VOCs and see how you can create a healthier home for you and your family.



## **Air pollution is a real, serious challenge: Deepika Padukone**

*Date: 22-Aug-2017 Source: Business Standard*

Bollywood actress Deepika Padukone says most people are unaware about indoor air pollution and the toll it can take on health.

The actress, who features in paint manufacturer Asian Paints' new advertisement campaign for its Royale Atmos product, feels air pollution is a real and serious challenge.

"Air pollution is a real and serious challenge. Most people are unaware of the existence of indoor air pollution and the toll it can take on your health. Through this campaign we hope to create as much awareness about this pressing issue," Deepika said in a statement.

To drive awareness and importance of tackling indoor air pollution, the ad campaign shows Deepika wearing a mask in different indoor spaces.

Amit Syngle, President-Sales, Marketing, Technology and Head-Home Improvement, Asian Paints Ltd, said: "We are happy to associate with her as we believe she can add the right support to our drive in building awareness around indoor air pollution."

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## **British drivers risk running foul of new French air pollution rules**

*Date: 23-Aug-2017 Source: ITV*



British holidaymakers in France have been urged to ensure they have a valid emissions sticker for their car or face a fine of more than £100.

A number of areas including Paris recently introduced new air pollution rules requiring vehicles to display an emissions sticker and banning the most polluting cars from entering clean air zones at certain times.

But only around a third of British motorists are aware of the new restrictions, according to research from the RAC.

Failure to follow the rules will result in a "near certain" fine of up to £125, it warned - a sum big enough to spoil holiday memories.

What are the new 'Clean air' rules?

The French clean air stickers - called Crit'Air vignettes in French - have been introduced by a number of major towns and cities under a drive to reduce air pollution.

Areas which have signed up to the scheme require all vehicles to display a sticker showing how heavily polluting they are.

There are six categories in all, ranging in colour from dark green for the cleanest cars to dark grey for those with the dirtiest emissions.

Details of the rules vary from area to area, but some towns are banning the most heavily polluting vehicles from entering some areas at certain times.

Simply failing to display a valid sticker will leave drivers at risk of an automatic fine of between €68 (£63) and €135 (£125), as will driving in zones where they are banned for being too polluting.

Which areas have introduced the rules?

A number of cities have signed up, including tourist hotspot Paris and a number of other towns and cities near the northern border closest to the UK.

The capital is using the sticker scheme on all weekdays, though the restrictions do not apply at nights or weekends.

The other three areas affected are Lyon, Grenoble and Lille, though they have all said they will only apply restrictions on vehicles on an "emergency" basis when pollution peaks.

More areas are expected to sign up to the Clean Air scheme shortly, with Bordeaux and Strasbourg expected to join by the end of 2017.

What vehicles are affected?

Every motorised road vehicle must have a valid sticker, from motorbikes to family cars, goods vans and coaches.

The rules apply to both French and foreign cars, and disabled drivers are also expected to comply.

What do motorists need to do?

Motorists should apply for a sticker from the official Crit'Air website, at a cost of €4.80 each.

Drivers will also need to know their vehicle's European Emissions Standard. The RAC has produced a table that helps identify the correct level, or otherwise contact your vehicle's manufacturer.

It should then be fixed onto the windscreen - or on a clearly-visible surface for vehicles that do not have windscreens.

The sticker is valid for the lifetime of the vehicle and does not have to be updated on future trips as long as it remains on display.

Some of the oldest and highest-polluting vehicles will not be eligible for any of the six stickers, and these cars are banned from driving in Paris between 8am and 8pm on weekdays.

Visitors should also check local rules in areas applying the scheme to ensure they don't drive in areas when they are barred under its restrictions.

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## China commits to cut northern air pollution by 15%

*Date: 24-Aug-2017 Source: Business Line*



China has pledged to cut average concentrations of airborne particles known as PM2.5 by more than 15 per cent year-on-year in the winter months in 28 northern cities to meet key smog targets, the environment ministry said.

In a 143-page winter smog “battle plan” posted on its website on Thursday, the Ministry of Environmental Protection said the new target, for the October–March period, would apply to Beijing and Tianjin, along with 26 other cities in the smog-

prone provinces of Hebei, Shanxi, Shandong and Henan.

China's efforts to control pollution have often roiled the prices of steel, iron ore and coal with output routinely curtailed as a result of emergency smog regulations and inspection campaigns.

China is under pressure this year to meet politically important 2017 air quality targets. It aims to cut 2012 levels of PM2.5 by more than a quarter in the Beijing–Tianjin–Hebei region and bring average concentrations down to 60 micrograms per cubic metre in the Chinese capital. But PM2.5 averages rose in the first seven months of the year as a result of near record-high smog in January and February, which China blamed on “unfavourable weather conditions”.

Experts still believe, however, that China remains on course to meet the 2017 targets set out in a groundbreaking air quality action plan published by the government in 2013.

“Actually, air quality from April to June was among the best over the last five years in Beijing and we still have confidence in achieving the target,” said Shelley Yang, a project manager at the Clean Air Alliance of China (CAAC), a non-profit organisation that includes academic, government and corporate organisations that “care about clean air”.

The extremely high PM2.5 levels in January and February will also make it easier for cities to achieve the 15 per cent cut in the new year.

The government is still leaving nothing to chance, with some of China's smoggiest cities under pressure to complete annual steel and coal closure targets by the end of September and implement tougher restrictions in the following months.

By October, big steel-making cities like Tangshan and Handan must have plans in place to cut output by as much as 50 per cent to limit smog during the winter heating season starting in November.

The region is also under pressure to eliminate thousands of coal-fired boilers, further restricting coal haulage on roads and ensure that power generators, steel mills and coking plants complete upgrades aimed at controlling emissions before heating systems are switched on.

Hebei is responsible for a quarter of China's steel output, with Tangshan alone producing around 100 million tonnes a year, more than the United States. Neighbouring Shanxi is China's biggest coal producer, with more than 900 million tonnes of annual output.

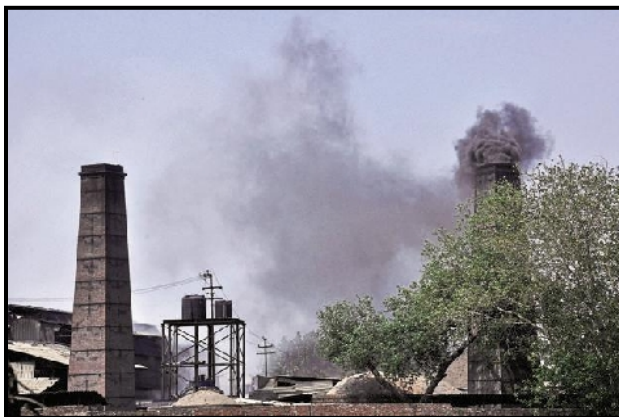
In a note this week, Bank of America Merrill Lynch analysts said the winter restrictions could also reduce primary aluminium output by 4,00,000 tonnes this year.

In a separate notice on Thursday, the Hebei government promised to use an “iron fist” to deal with air pollution over the winter.

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## **Air pollution at crisis level in north India, notes Niti Aayog, spells out three-year plan**

*Date: 25-Aug-2017 Source: Live Mint*



New Delhi: Noting that air pollution has reached crisis level in northern India, government think-tank Niti Aayog has recommended a slew of measures like imposing higher taxes on petrol in and around the more polluted cities to encourage commuters to share cars and take public transportation.

The Aayog, in its ‘Three Year Action Agenda to be implemented till 2019-20’ and released by finance minister Arun Jaitley, also suggested making public transportation faster and more

comfortable to discourage the use of private vehicles. It has identified coal power plants, brick kilns, vehicles, cooking and heating fires which burn biomass, rubbish burning and burning of crop residue and dust from construction as the “major” source of air pollution.

It noted that air pollution has reached crisis levels in Northern India and though it is much publicised in Delhi, it is also widespread in many other cities and as many as ten of the top 20 most polluted cities in the world are in India.

It recommended actions like finding alternatives to crop residue burning, reducing pollution from cooking fires and installing flu gas de-sulphurizers on all coal power plants in or close to densely populated areas except those less than 5MW capacity and those older than 25 years by 2020.

It also suggested switching to cleaner technologies to reduce pollution from brick kilns considerably within three years. “A number of complementary steps can be taken (to reduce in-city-vehicle pollution). First making public transportation faster and more comfortable will discourage the use of private vehicles.

“Metro or bus based rapid transit systems connecting suburbs and city centre and a dense in-city transport system will go some distance towards achieving the objective,” it proposed. It also talked about replacement of vehicles from petrol and diesel to CNG, infrastructure improvements which allow vehicles travelling long distances to bypass the cities without entering, higher taxes on petrol to encourage commuters to share cars and other measures to cut emissions.

“Higher taxes on petrol in and around more polluted cities would encourage commuters to share cars and take public transportation. Higher parking fees and park and ride facilities will have similar effects,” it recommended. As far finding alternatives to crop residue burning was concerned, the document noted that ‘Happy Seeder’, a machine developed by Commonwealth Scientific and Industrial Research Organisation (CSIRO Australia) and Punjab Agricultural University, allows planting of wheat through the residue.

It said that the machine was introduced about five years ago and has been shown to reduce field preparation costs marginally and maintain yields and profits of wheat, which has led some farmers to adopt it.

“In view of the urgency of the problem and the large benefit from putting an end to crop residue burning, a larger subsidy on the machine for limited time complemented by extension and information campaigns may eliminate the problem within the next three years,” it said.

It also suggested installation of Flue-gas De-sulphurizers on all coal power plants in or close to densely populated areas except those less than 5 MW capacity and those older than 25 years by 2020. The older power plants should be shut down and retired in a phased manner, it said while adding that this will cut emissions of Sulphur Dioxide (SO<sub>2</sub>) gas that becomes sulphate particles in the atmosphere.

“It will also reduce particulate (smoke) emissions directly. The average cost of doing this along with improvements in fly ash removal and control of Nitrogen Oxides (NO<sub>x</sub>) emissions has been estimated to be 35-40 paise/KWh, and could reduce the PM<sub>2.5</sub> concentrations by 30-40%,” it recommended.

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## **Fears over district's air pollution levels**

*Date: 25-Aug-2017 Source: Keighley News*

A DEBATE is raging over how to tackle the district's high pollution levels, now ministers have dropped plans to fund a clean air zone.

Air pollution is estimated to cause 222 deaths a year across the district, with air quality at illegal levels at a number of busy junctions.

Last month, ministers angered environmentalists by revealing that Bradford would no longer be one of those forced to set-up a Government-funded clean air zone, which can see “dirty diesels” barred from certain areas or charged a fee to enter.

This was because the Government now expects Bradford district's pollution levels to fall back to legal limits by 2021.

But Green Party councillors have warned that with Leeds still set to get a clean air zone, this could have a knock-on effect in Bradford by driving polluting traffic this way.

Green group leader Councillor Martin Love said: "We thought Bradford should be part of the clean air zone and that the whole of West Yorkshire should be included in it.

"The fact that Leeds is included and other parts of West Yorkshire aren't, could just make the problem worse in other areas.

"If the bus companies are encouraged to put electric buses in Leeds, what are they going to do with their older ones? They're just going to move their buses out and we are just going to end up with the dirty stuff from Leeds. As Leeds improves, everywhere else will deteriorate."

But Councillor Val Slater, who leads on air quality issues at the council, said: "The Green councillors are a little bit late to the table. I have been raising these concerns, particularly about buses, for a number of years."

Cllr Slater said there had been pros and cons to the idea of Bradford having a clean air zone. She said it would have allowed them to access a multi-million pound pot of Government funding to tackle pollution more quickly, but that any restrictions on vehicle movements could also have hampered local businesses.

Cllr Slater said they would continue to develop initiatives to tackle pollution.

She said: "We are keeping a very close eye on emission levels and we have recognised it is a health issue in Bradford."

A Government spokesman said: "Reducing roadside pollution is a priority for this Government – which is why we have committed £3bn to help towns and cities take action against harmful emissions caused by dirty diesels. Local authorities have access to a wide range of options as they develop plans to address roadside pollution in a way that meets the needs of their communities – both pedestrians and road users."

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## **FUMES RISK Babies born to mums in high air pollution areas suffer same health problems as smokers' children like smaller heads and shorter bodies**

*Date: 27-Aug-2017 Source: The Scottish Sun*

BABIES born to mums in high air pollution areas face similar health risks as smokers' children, scientists claim.

Experts found tots exposed to harmful fumes in pregnancy had smaller heads and shorter bodies.

Researchers at universities in Aberdeen and Edinburgh studied data on 14,000 newborns over nearly ten years.



Leader Dr Tom Clemens said: “A foetus with a non-smoking mother exposed to high pollution is only slightly better off than one with a smoking mother exposed to low levels.

“This implies exposure to the highest levels of pollution may be almost as bad as smoking. Our findings suggest that there may not be a truly ‘safe’ level of exposure during pregnancy.”

His team found strong evidence gases and particles from motors stunted growth by studying

the effect of microscopic specks of dust that enter tots’ lungs and blood in the womb.

And the experts urged the World Health Organisation and EU chiefs to review their definition of “acceptable” emissions levels.

Study co-author Chris Dibben said: “Most parents will be aware that smoking may harm their unborn child.

“We wonder whether there is equal awareness that air pollution can have a similar impact, even in a relatively unpolluted region like north east Scotland.”

The Scottish Government said we were the first EU country to pass laws based on WHO pollution guidelines.

## Air pollution alert extends to 2nd day for southern Solano as heat wave builds

*Date: 27-Aug-2017 Source: Daily Republic*



FAIRFIELD — Triple-digit temperatures and dirty, stagnant air prompted officials Saturday to issue the eighth air pollution alert of the summer for Sunday across the greater Bay Area.

The primary culprit is ozone – or smog.

It’s the second such pollution alert in as many days from the Bay Area Air Quality Management District and includes a large swath of Solano County. The forecast calls for a third consecutive day of unhealthy air quality Monday.

Saturday’s projected high in Fairfield was 100 degrees at Travis Air Force Base but reached 104 by 4 p.m.; and was projected at 102 degrees at the Nut Tree Airport in Vacaville but hit 106 by 4 p.m.,



according to the National Weather Service. The forecast calls for highs of 102 Sunday and 101 Monday in Fairfield; with highs of 106 Sunday and 105 Monday in Vacaville.

An excessive heat warning from the National Weather Service is in effect across the region, with widespread triple-digit heat expected from 11 a.m. Sunday through 8 p.m. Monday due to a persistent high pressure system over the western U.S.

Such heat in and of itself can cause moderate to high risk for heat-related illnesses, the weather service reports. This is especially true for the elderly, children, people who are sick and animals.

People should drink plenty of fluids, remain in air-conditioned rooms, stay out of the sun and check on relatives and neighbors. Those who work or spend time outdoors should, when possible, reschedule strenuous activity to early morning and evening hours; wear lightweight and loose-fitting clothes when possible; and remain hydrated.

Officials warn that young children and pets should never be left unattended in vehicles under any circumstances.

The excessive heat warning specifically includes the Fairfield-Suisun City area of Solano County, the Carquinez Strait and the Delta region, and Sacramento and the Sacramento Valley region that extends through Yolo County and into eastern Solano County.

Air quality Sunday is expected to be unhealthy for people who are sensitive to air pollution, such as people whose respiratory systems are somehow compromised.

The high-pressure system over the region, combined with hot temperatures, light winds and smoke from Oregon wildfires is causing unhealthy levels of smog in the South and East Bay regions, the air district reports.

Spare the Air alerts are called during the summer months when ozone pollution is forecast to reach unhealthy levels.

When an alert is called, outdoor exercise should be done only in the early morning hours when ozone concentrations are lower. People are encouraged to reduce air pollution every day by rethinking their commute and avoiding driving alone.

Southern Solano County, to include Fairfield, Suisun City, Benicia and Vallejo, is in the Bay Area Air Quality Management District. Northern Solano County, to include Vacaville, Rio Vista and Dixon, is in the Yolo-Solano Air Quality Management District and is not subject to the same restrictions.

Air quality in Southern Solano County was projected Saturday to remain unhealthy for people in sensitive groups through Monday, according to the Bay Area Air Quality Management District.

There was not an air pollution alert in place for communities in the Yolo-Solano air quality district.

## Air pollution 'nearly as bad' for baby as smoking during pregnancy

*Date: 28-Aug-2017 Source: The Herald*



AIR pollution can lead to babies being born with shorter bodies and smaller heads, according to Scottish research which found that high exposure to toxic fumes during pregnancy is nearly as harmful as smoking.

A study by Edinburgh and Aberdeen universities found that Scottish babies exposed to toxic gases and particulates breathed in by their mother, such as traffic fumes, were born with smaller heads and shorter bodies.

A similar outcome was observed in babies whose mothers smoked during pregnancy but were exposed to less pollution.

The findings are particularly worrying because the study — the largest of its kind so far conducted — only examined the effects of pollution in the northeast of Scotland, where air quality is relatively good compared with congested areas such as Glasgow, Edinburgh and London.

It comes just weeks after another study at Edinburgh University showed that nano-sized particles found in traffic fumes can damage the immune system's ability to kill viruses and bacteria. The emissions are also known to aggravate lung conditions, and have even been linked to an increased risk of dementia.

Dr Tom Clemens, who led the latest study, has called on the World Health Organisation (WHO) and the EU to urgently review their definition of "acceptable" emissions levels amid concern they are still too high.

He added: "Our findings suggest that there may not be a truly 'safe' level of exposure during pregnancy.

"A foetus with a non-smoking mother exposed to high pollution levels is only slightly better off than one with a smoking mother exposed to low levels of pollution. This implies that the effect of exposure to the highest They detected average concentrations of 7.2 micrograms per metre cubed — well below the annual average of 10 micrograms per metre cubed that is deemed acceptable by WHO."

Data on foetal growth was gathered from ultrasound scans and maternity records for almost 14,000 pregnancies in northeast Scotland between 2002 and 2011. Lifestyle factors, such as smoking, were considered. Air quality at postcode level was determined using dispersion models based on UK government data.

Unlike previous air pollution studies, the investigation by Clemens and his team looked at the effect on developing foetuses of microscopic specks of dust and soot that can enter the lungs and bloodstream.

Chris Dibben, a co-author of the study, added: "Although most parents will be aware that their smoking may be harming their unborn child, we wonder whether there is an equal awareness that air pollution can

have a similar level of impact on the growth of the child in the womb, even in a relatively unpolluted region like northeast Scotland."

The study is published in the scientific journal, Environment International.

In February, the European Commission admitted that air quality laws had been flouted in more than 130 cities across 23 of the 28 EU member states, including the UK. It is estimated to cut average life expectancy in Scotland by three to four months and causes 2,500 premature deaths.

The UK Government has pledged to ban the sale of new diesel and petrol cars by 2040 as part of efforts to reduce air pollution from traffic.

It has been estimated that 59 per cent of the British population are living in towns and cities where nitrogen dioxide pollution breaches the lawful level of 40 microgrammes per cubic metre of air.

In January, Hope Street in Glasgow was named the most polluted street in Scotland with average nitrogen dioxide levels which were more than 60 per cent above the legal limit.

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## Gurugram registers poorer air quality than Delhi once again

*Date: 28-Aug-2017 Source: Millennium Post*



GURUGRAM: Even the monsoon failed to clean Gurugram's poisonous air, which once again trumped Delhi by recording a worse air quality than the national Capital.

According to recent data, the presence of PM2.5 in Gurugram was recorded at 150 microgram per cubic metre ( $\mu\text{g}/\text{m}^3$ ), considerably higher than the safe limit of 60  $\mu\text{g}/\text{m}^3$ . In comparison, Anand Vihar – which on most occasions has worse air quality than Delhi – recorded PM2.5 levels at

100-115  $\mu\text{g}/\text{m}^3$ .

Intervention from the higher judiciary, strict action undertaken by public authorities and citizen participation is resulting in many initiatives being taken to improve the quality of air in Delhi.

In contrast, Gurugram – which is facing challenges due to repeated traffic congestions, rampant construction activities and weak regulations on burning of garbage waste – continues to grapple with air pollution caused due to dust and harmful gases.

Rising air pollution in Gurugram is showing its adverse effects, with the number of asthma patients rising in the city.

In the last three years, the number of asthma patients in the Millennium City has increased by nearly three times, according to recent data by the District Health Department. In 2015, a test conducted on 100 district public officials showed that over 57 per cent of the bureaucrats suffered from lung impairment disorder.

Meanwhile, taking cognisance of the shortcomings at pollution under control certificate (PUC) centres, it was announced that a special cell equipped with tools for testing emission levels of vehicles and technical staff would be constituted. Additionally, 19 more continuous ambient air quality monitoring stations would be established in Haryana to monitor air pollution levels.

"It is sad to see that pollution is still not being taken that seriously. There may be certain policies that may have been announced, but now they should be implemented as well," said Shruti Puri, a Gurugram resident.

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## Mobile lab measuring air pollution good to go

*Date: 28-Aug-2017 Source: The Jordan Times*



SAHAB — The public has now access to data on air pollution levels across the Kingdom after the Ministry of Environment on Monday launched a mobile lab measuring gases and fine dust concentrations in the air.

The mobile lab is part of the ministry's air quality monitoring system, which provides instant readings of air pollutant concentrations in different parts of the country via 12 air quality monitoring stations and the mobile lab.

The ministry launched its first mobile lab on air quality monitoring in Amman's southeastern town of Sahab, where industries cover 40-50 per cent of the town's 12-square-kilometre territory.

At a ceremony announcing the launch of the lab, Minister of Environment Yaseen Khayyat said that the ministry's choice of Sahab as the launching point of the lab signals its "keenness to address the environmental pollution that has worn Sahab down".

Khayyat said that the public can access the readings of air pollution detected by the lab on the ministry's website, noting that information collected by the lab will help the ministry pinpoint high pollution locations and sources.

He noted that the ministry has opened a new environment directorate at Sahab Municipality which will be dedicated to improving the town's environment.

The minister also announced plans for a two-year project to improve the environmental and living conditions of Sahab.

“An international project is now being formulated to improve the infrastructure, living conditions and cleanliness of Sahab with funding from the German Agency for International Cooperation...,” Khayyat said.

With a population of some 110,000 people, Sahab is home to more than 400 factories, in addition to 40 workshops that grind and shred scrap plastic located in residential areas.

It is also home to the King Abdullah II Industrial Estate, which is one of the largest industrial estates in the Kingdom.

In June last year, the municipality called on the government to relocate an industrial zone which it said is damaging the town’s environment and affecting the residents’ health.

The zone stretches over 150-200 dunums and houses 400 stone quarries and brick factories. It was set up 25 years ago when the area was vacant, but now the city surrounds the vocational zone, which is a major source of air pollution, Sahab mayor told The Jordan Times in previous remarks.

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## **Port of Long Beach (California) Accomplishes Significant Air Pollution Reductions**

*Date: 29-Aug-2017 Source: Clean Technica*



Through its Clean Air Action Plan, the Port of Long Beach in California has managed to greatly reduce local air pollution levels, according to the most recent annual Emissions Inventory.

Altogether, the Port of Long Beach has managed to reduce local diesel particulate matter air pollution by 88%, and nitrogen oxide air pollution by 56%. Local greenhouse gas emissions were also reduced by 22% — all compared to 2005 levels.

Much of these reductions are the result of the first phase of the zero-emissions Long Beach Container Terminal opening on Pier E last year.

Green Car Congress provides some background on the news: “As part of the first Clean Air Action Plan adopted in 2006, the Port’s efforts to improve air quality have included the Clean Trucks Program; low-sulfur fuel regulations for ships; increased use of shore power for container ships; and the Port’s Green Flag Vessel Speed Reduction Program.

“The Port remains focused on continued reductions through increased use of on-dock rail, advanced clean-air technologies, and joint efforts with Port of Los Angeles to finalize the latest update to the Clean Air Action Plan this fall. With the opening of Long Beach Container Terminal, 11% of the Port’s fleet of cargo-handling equipment is zero-emissions.”

Considering the massive amount of shipping traffic that goes through the Port of Long Beach, the air pollution reductions discussed above are pretty impressive — and should go a long ways towards reducing regional air pollution levels. To elaborate on that, the Port of Long Beach is the second largest port in the US, as determined by traffic volume.

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## **'Unseen Dangers' of Harvey: Petrochemical Plants Release 1 Million Pounds of Harmful Air Pollution**

*Date: 29-Aug-2017 Source: EcoWatch*

As some of the nation's largest crude processors and refineries shut down their facilities amid "unprecedented" rainfall and flooding from Harvey, residents nearby are reporting noxious, gaseous smells clouding the air.

"I've been smelling them all night and off and on this morning," Bryan Parras, from the environmental justice group TEJAS, told New Republic on Sunday.

Some locals are also experiencing "headaches, sore throat, scratchy throat and itchy eyes," Parras added.

Paris said that the chemical-like smells emanate from Houston's East End and are particularly strong in communities nearby the petrochemical plants. Problem is, the fence-line community cannot leave or evacuate as they are surrounded by devastating flooding, "so they are literally getting gassed by these chemicals," he said.

The source of the smell is likely caused by the abrupt shutdown of ExxonMobil, Petrobras, Shell, Chevron Phillips and other petrochemical facilities in the wake of Harvey's historic flooding, reports suggest.

A 2012 analysis from the Environmental Integrity Project found that "upsets or sudden shutdowns can release large plumes of sulfur dioxide or toxic chemicals in just a few hours, exposing downwind communities to peak levels of pollution that are much more likely to trigger asthma attacks and other respiratory systems."

Initial reports from Texas regulators indicate that more than 1 million pounds of harmful air pollution have been released into the air due to the closures, the Environmental Defense Fund noted in a blog post.

Furthermore, Chevron Phillips has already reported to the Texas Commission on Environmental Quality (TCEQ) that it expects to exceed permitted limits for pollutants such as 1,3-butadiene, benzene and ethylene during shutdown procedures.

"Air pollution is one of the unseen dangers of the storm," said EDF senior health scientist Dr. Elena Craft. "Poor air quality puts the most vulnerable among us, like children and seniors, at risk for asthma, heart attacks, strokes and other health problems."

Meanwhile, TCEQ has shuttered its air quality monitors in the Houston area to avoid water and wind damage from the storm, which leaves these plants and refineries to the "honor system" to report whatever gets emitted, the Houston Press points out.

Manchester resident Nayeli Olmos, who lives close to a Valero Refinery, noticed gas-like smells Saturday night when she stepped outside her house.

"We figured it would go away on its own, but this morning it was still here, and it feels like whenever it rains the odor gets stronger," Olmos told Houston Press. "Our neighbors were all talking about it and then I saw people from different neighborhoods talking about it on social media. That's when I realized it's not just us this time. It's all over East Houston."

Stephanie Thomas, from the nonprofit Public Citizen, also told the publication that the air "smelled like burnt rubber with a hint of something metallic thrown in" in the Second Ward near downtown Houston.

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## **Hong Kong residents told to limit time outdoors as serious air pollution hits city**

*Date: 30-Aug-2017 Source: South China Morning Post*

Environmental Protection Department says hot weather and light winds means pollution poses a serious health risk

Hong Kong authorities urged the public to limit their time outdoors on Wednesday as severe pollution hit the city's northern areas.

The Environmental Protection Department recorded higher than normal pollution levels in the city, with air quality in both Tuen Mun and Yuen Long measuring over 10 for health risk – the most serious ranking.

Air in a number of other areas – including Mong Kok and Tseun Wan – was rated as “very high” risk, the second highest ranking on the department's Air Quality Health Index.

The department expected other monitoring stations around the city to measure similarly poor air quality later on Wednesday.

According to the department, when the health risk is rated “very high” or “serious”, older people and children should keep outdoor activities to a minimum.

“The general public are advised to reduce, or reduce to a minimum, outdoor physical exertion, and to reduce time staying outdoors, especially in areas with heavy traffic,” the department said in a statement.

The pollution was caused by hot weather, which was forecast to reach a high of 33 degrees Celsius, combined with light winds, the department said. The sunny weather caused a higher ozone concentration, while the lack of strong winds meant air pollutants were not being blown away.



Higher-than-normal pollution levels are expected to continue until Friday, when the Hong Kong Observatory is forecasting showers.

Over the weekend, the city can expect more bad weather due to a tropical storm brewing in the region, an observatory forecaster said.

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## **NO<sub>2</sub> – not as bad as we thought?**

*Date: 30-Aug-2017 Source: The Conversation*

Air pollution has been found to cause hundreds of thousands of deaths every year around the world. As a result, there has been growing public concern about the health impacts of roadside air pollution – especially in the wake of the 2016 Volkswagen scandal, when investigations found that almost a million tonnes of excess pollution had been pumped into the atmosphere in the US alone.

Governments came under increasing pressure to act – and many drew up plans to reduce harmful pollutants below legal limits. In late July, the UK government published its own national plan for bringing down roadside nitrogen dioxide (NO<sub>2</sub>) concentrations. The plan was met by considerable criticism, on the basis that it lacked urgency and effectively dumped the problem on the worst affected local authorities, which would be required to implement Clean Air Zones (CAZ).

But what was perhaps even more remarkable about the publication, was that it revised the estimated value of minimising the damage to public health through these measures downward by 80%.

On the final page of the 155-page technical report which accompanied the plan, new estimates of the economic benefits from reducing damage to health through measures to reduce NO<sub>2</sub> were very substantially below those that had been published in a previous report. The previous estimated health benefit of a further 21 CAZs was costed at £3.6 billion, but is now £620m – an 80% reduction.

This huge reduction was attributed to new advice from the independent experts of the Committee on the Medical Effects of Air Pollution (COMEAP), which had found it difficult to disentangle the impacts of specific pollutants – in this case NO<sub>2</sub> – from that of the whole mix of traffic-related pollutants. Previously COMEAP had advised that for every 10ug/m<sup>3</sup> increase in NO<sub>2</sub> concentration, the increase in mortality risk would be 2.5%.

It now recommends that when measures are primarily targeting NO<sub>2</sub> emissions, this coefficient should be adjusted to account for possible overlap between the direct impacts of small particulates and NO<sub>2</sub>. This puts the increase in mortality risk at 0.92%.

My enquiries of the government's Joint Air Quality Unit (JAQU) confirmed that overall the updated damage costs of NO<sub>2</sub> for road transport are approximately 80% lower than those used during the consultation prior to publication of the new air quality plan. This splits into roughly 60% to 65% resulting from the revised COMEAP advice, with the remaining 15% to 20% resulting from the other updates, such as new dispersion modelling and population data.

The JAQU confirmed that the reduction in the road transport NO<sub>2</sub> damage cost primarily reflects a reduction in the estimated mortality impact associated with NO<sub>2</sub> alone.

Change is in the air

It is not yet clear what this means for the government's policy on air pollution. Current legislation stems from a European Union directive, which imposes a statutory limit for NO<sub>2</sub> concentration across all regions. In this context, the scale of health benefits from remedial measures is not relevant.

But with Britain on course to leave the EU, future regulation of air quality could be based on UK targets, set to reflect the balance of benefits in relation to costs. In this case, the downgrading of health benefits of policies such as Clean Air Zones would then be relevant, particularly given the expected reductions in pollutants from improved vehicle technology and the introduction of electric propulsion.

But ultimately, future regulation may depend on the outcome of the Brexit negotiations where the politics of air pollution may yet play a key role.

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## Tokyo to Paris: could city waterways ease air pollution?

*Date: 31-Aug-2017 Source: The Guardian*



Once bustling thoroughfares for boats of all kinds, to some entrepreneurs the rivers in major cities are a source of untapped potential.

They envisage passenger vessels expanding beyond sightseeing trips and becoming a daily means of travel for residents.

If successful it could ease the pressure on congested roads and crowded public transport and help tackle air pollution.

But boat operators face some major challenges. They have to be able to scale up their services to carry larger numbers of passengers, as well as trying to reduce the environmental impact of boats dependent on high-polluting diesel fuel.

French company SeaBubbles shows the challenge faced on scale. It has been testing its electric water taxi, powered by lithium batteries, along the Seine in Paris this summer. CEO Anders Bringdal says he wants to make waterway transport easier, as well as reducing its associated noise and pollution levels.

He says the company plans to build multiple docking stations at several piers so dozens of boats can be zipping along the river at any one time. However, the craft can only accommodate four passengers.

Some of those trying to grow also face administrative battles to use waterways.

In Japan, Tokyo Water Taxi is hoping to have a fleet of 60 yellow vessels on the network of rivers and canals flowing into Tokyo Bay in time for the capital hosting the 2020 Olympic Games, having launched its first two diesel-powered boats last summer.

“The Odaiba area of downtown Tokyo in particular could benefit,” says CEO Hajime Tabata. “The volume of traffic for land transportation is often at maximum capacity, so waterways could be used to alleviate the congestion.”

Despite its ambitions, however, the biggest challenge for Tabata’s company is the lack of available landing piers, with more than 100 wharfs along Tokyo’s waterways subject to a complex web of regulations and ownership disputes.

In other cities, travelling by water is already more commonplace. In Hong Kong, the Star Ferry fleet carries more than 70,000 people over the bay between Hong Kong island and Kowloon each day. And in Istanbul, around 300,000 people a day use a variety of private ferries and water taxis to cross the Bosphorus, the river that divides the city in two.

But this is still only a fraction of the commuters and holidaymakers travelling in both cities. And ferries and water taxis have not prevented Istanbul being rated one of the most congested cities in the world.

These ferries and water taxis are also all running on diesel fuel, part of a maritime industry that contributes a growing amount of nitrogen dioxide, sulphur dioxide and particular matter alongside carbon dioxide emissions.

In London, MBNA Thames Clippers has been slowly building a service geared toward daily commuters as well as tourists, helped by Transport for London’s decision to integrate ticketing, allowing Londoners to hop on and off boats by swiping their Oyster and contactless cards. It carried 4 million passengers in 2016.

But while the company claims its retrofitted catamarans have cut particulate emissions by 50% and nitrogen oxide emissions by 40%, the boats are still powered by diesel.

There are examples of boat operators changing this. In Hamburg, one operator has added a hybrid-powered ferry to its fleet crossing the Elbe river, a prototype vessel that uses both diesel and electric power sources.

And in Southampton, a company called REAPsystems has developed a hybrid system for water taxi boats, one able to switch easily between a fuel engine and electric motor.

The company will take their hybrid water taxi boat to Venice next year, where a hotel operator will run it on a passenger route through the canals and out to the airport throughout the summer.

“We wanted to show that a more sustainable system is possible – hybridisation is a step toward getting rid of diesel,” said REAPsystems’ founder Dennis Doerffel. “Ultimately we have to replace existing transport technologies, if they pollute, with more sustainable ones.”

However, without a growth in passenger numbers, the major investments in cleaner river transport technology are unlikely to come to fruition, says Rupert Fausset, a transport and energy expert at Forum for the Future.

“It remains very challenging to scale up river transport and make it sustainable too,” says Fausset. “But I’m an optimist, so I would not rule out people developing more sustainable systems using new kinds of propulsion and new fuel cells in the future.”

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## **Air pollution almost as bad for babies as smoking during pregnancy**

*Date: 31-Aug-2017 Source: Euractiv*



Dirty air can lead to women giving birth to smaller babies, according to new research which also warns that exposure to air pollution during pregnancy rivals the damage done by smoking.

A new study carried out by the universities of Edinburgh and Aberdeen has revealed that Scottish babies exposed to dangerous air pollution breathed in by their mothers developed smaller heads and shorter bodies.

The research also showed that mothers who smoked during pregnancy, but who were exposed to less pollution, gave birth to children with similar defects.

The study only took into account a sampling pool in the northeast of Scotland, where air pollution is less pronounced than in cities like Edinburgh and Glasgow. The highest average concentrations detected during the study were 7.2 micrograms per cubic metre, far below the annual average of 10 mcg per cubic metre recommended by the WHO.

Lead scientist Dr Tom Clemens explained that his team’s findings showed that “a foetus with a non-smoking mother exposed to high pollution levels is only slightly better off than one with a smoking mother exposed to low levels of pollution”.

Clemens urged the World Health Organisation (WHO) and the European Union to review their separate definitions of what emission levels are considered acceptable.

Another recent study warned that massive spending by the G20 nations on fossil fuel subsidies has racked up healthcare-related costs in the excess of two trillion dollars, largely due to complications caused by exposure to air pollution.

It was the first time that a study of this nature took into account the impact on developing foetuses of particulate matter, which can enter the lungs and bloodstream. Data was collected via ultrasounds and maternity records of births between 2002 and 2011.

Study co-author Chris Dibben warned that while most mothers are aware of the dangers smoking posed to their unborn children, many might not be as clued up on the impact of air pollution. This is particularly true of people who live in less polluted areas.

Earlier this year, the European Commission acknowledged that more than 130 cities across the member states have broken air quality laws. Several countries have recently announced intentions to ban combustion engines in the near future in order to combat air pollution.

The Commission has also taken steps to try and rein in pollution levels. New standards for power plants came into effect earlier this month, leading many energy firms to question whether it is economically more feasible to bring their plants up to code or simply shut them down.

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## September 2017

### **UK citizens are taking air pollution monitoring into their own hands**

*Date: 01-Sep-2017 Source: The Guardian*



A growing number of citizens are monitoring local air quality because of fears official figures are not capturing “dangerous” levels of pollution.

The environmental charity Friends of the Earth has said 70 local groups are now using their testing kits and noted a “surprising” increase in people taking monitoring into their own hands.

Oliver Hayes, a Friends of the Earth air pollution campaigner, said:

“We’ve been surprised by the high demand for our air monitoring kits. 4,000 people have used them in less than a year, uncovering worrying levels of pollution in urban and rural areas alike.

“Most people seem understandably keen to learn about air quality where they live, work, or where their children go to school. But more than 70 local Friends of the Earth groups have used multiple testing kits to uncover a more detailed picture of pollution, often in places lacking much in the way of official monitoring stations.”

Dr Benjamin Barratt, senior lecturer in air quality science at King’s College London, agreed that the numbers doing this had risen.

“Air pollution has moved from being seen as an environmental concern to a health concern but it’s both, of course,” he said. “As a health concern people are more worried about their own families and their neighbourhoods so that has led to a rise in people monitoring air pollution for those reasons.”

Barratt says he hopes local work, if done correctly, can help inform decision-making and provide evidence about local situations.

Air Apparent UK, a project in Bristol monitoring local area quality, has been running their work through the Luftdaten website, an open data project that gives advice on how to get monitoring kits and lets people upload their findings online.

Sam Prince, 38, from Bristol said that three UK sites feature on the website at the moment but he has built a further six that will appear soon, and a Leeds resident is also building a monitor that will be added in coming months.

Prince said: “A growing number are doing it ... not necessarily in the same way. I know a guy in Bristol who bought a wearable monitor from the US for \$200 and that lets him cycle through Bristol on his commute and shows the pollution levels.”

He added: “More people are tracking air quality partly because there is very little local data ... You’d think that in a first world country we would be well covered with sensors but there is hardly anything. The air pollution could be good where I am now and 300m down the street it could be bad.”

The data from the government is useless as far as I am concerned ... so people are trying to collect more evidence to show the big problem of air quality. What I want to build is a map showing the pollution levels all over Bristol so you could avoid a certain street or area, for example, if you were cycling to work.”

Other local groups who have started monitoring air quality include Clean Air Eastbourne in East Sussex and Clean Air Chorley in Lancashire. Residents in Lancing and Shoreham, West Sussex, have also teamed up to explore air pollution levels.

Another concerned group of Catford residents set up their own air monitoring tubes in July 2017 and say the results show “dangerous” levels of pollution.

Ted Burke of Clean Air Catford said they found that the air pollution levels were almost double the legal level in some locations in the area, including next to a number of primary schools.

“We have noted dangerous levels of pollution in some areas. We are now calling on the council to sort it out, want to work with them and know more about what they are doing already,” Burke said.

In Eastbourne, local resident Robert Price said it was finding out that his home town was among the most polluted in the country that got him monitoring air pollution.

“I wanted to get my own data to see if the air was bad where I live. I’ve been running it for a month now, and three of the past seven days alone have breached World Health Organisation guidelines. UK/EU limits for particulate air pollution require a year’s worth of data.”

He added: “Since starting monitoring the air quality where I live, numerous people have been in touch via social media asking how to get involved. I formed Clean Air Eastbourne, and members have contributed to buy another seven sensors to put up around the town.”

Price said that he was motivated by concerns of what air pollution might be doing to his young family and their health. “We need data to know what the condition of the air we breathe is like ... If this data isn’t being tracked, how can we know if there is a problem or not? Building and running our own sensors helps give us this information. This is a matter of vital importance and if the government won’t monitor it properly we must step in.”

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## **Heat wave, smoke help push Solano air pollution into unhealthy zone**

*Date: 02-Sep-2017 Source: Daily Republic*

FAIRFIELD — A persistent heat wave combined with smog – along with smoke from various wildfires – will once again cause unhealthy air pollution levels Saturday in Fairfield and nearby communities, Bay Area officials said in calling yet another pollution alert for the region.

Air quality was deemed unhealthy Friday and is expected to remain so Saturday across a portion of Solano County that includes Fairfield, Suisun City, Travis Air Force Base, Benicia, Cordelia and Birds Landing, according to the Bay Area Air Quality Management District. The stated cause is smog, otherwise known as ozone.

People are once again advised to take precautions to protect themselves from the effects of the dirty air. Active children and adults, and people with respiratory disease such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion, according to the air district.

The Bay Area region's air district also issued a smoke advisory Friday due to smoke from Northern California and Oregon wildfires that made its way into the area Thursday to contribute to the ongoing air pollution concerns.

Air quality is expected to improve to unhealthy for those in sensitive groups Sunday and Monday. That includes people with compromised respiratory systems.

Those who live in Vacaville, Rio Vista and Dixon as well as Winters, just across the Solano-Yolo county line, face air quality Saturday that's also projected to be unhealthy for people in sensitive groups due to smog and the inflow of smoke from the wildfires, according to the Yolo-Solano Air Quality Management District.

Meanwhile an excessive heat warning remains in place through 8 p.m. Monday.

The National Weather Service projects a high Saturday in Fairfield of 113 degrees, dropping to 100 Sunday and then 91 Monday and Tuesday. Friday's high was 110 degrees. Saturday's high in Vacaville is projected to hit 114 degrees, then dip to 103 Sunday, 94 Monday and 93 Tuesday. Friday's high was 112 degrees.

Beat the heat

Vacaville will open two cooling centers through much of the Labor Day weekend.

Three Oaks Community Center will have a cooling center in one of its assembly rooms. Three Oaks, 1100 Alamo Drive, will be open until 8:30 p.m. Saturday and Sunday.

The Ulatis Community Center will also have a room available for those who need a break from the heat or want a cool drink of water, the city said. The Ulatis Community Center, 1000 Ulatis Drive, will also be open until 8:30 p.m. Saturday and Sunday.

Solano County Library locations also serve as cooling centers during normal business hours. The county libraries are closed Monday in observance of Labor Day. The Aquatics Complex at Allan Witt Park in Fairfield is also open Saturday and Sunday, but closed Monday.

### Warning signs

People who have heat stress may experience heavy sweating; weakness; cold, pale and clammy skin; fast, weak pulse; and nausea or vomiting, the U.S. Department of Health and Human Services reports. Early signs include muscle cramps, heat rash, fainting or near-fainting spells, and a pulse or heart rate greater than 100.

People who have heat stress should be moved to a cooler location to lie down, according to HHS. Apply cool, wet cloths to the body especially to head, neck, arm pits and upper legs near the groin area where a combined 70 percent of body heat can be lost; and have the person sip water. They should remain in the cool location until recovered with a pulse heart rate that is well below 100 beats per minute.

Signs of the most severe heat-related illness, heat stroke, include a body temperature above 103 degrees; hot, red, dry or moist skin; rapid and strong pulse; and altered mental status which can range from confusion and agitation to unconsciousness, HHS reports. People who suspect someone has heat stroke should call 911 immediately and take steps to cool the person.

While children are especially vulnerable to heat illnesses, they may be unable to explain what is wrong but may act differently than usual. In extreme heat, consider changes in a child's behavior to be heat stress, HHS reports. Similarly, people with communication-related disabilities may have difficulty expressing a heat-related problem. In extreme heat, look for a change in behavior as a sign of heat stress.

Older adults face additional risk of heat stress and heat stroke, for a variety of reasons.

To help prevent heat-related illness:

- Spend time in locations with air-conditioning when possible.
- Drink plenty of fluids. Good choices are water and diluted sport electrolyte drinks (1 part sport drink to 2 parts water) unless told otherwise by a doctor.
- Choose lightweight, light-colored, loose-fitting clothing.
- Limit outdoor activity to morning and evening hours.

As air conditioning use increases, electrical grids can become overwhelmed causing power outages, HHS reports. In power outages, people who rely on electricity-dependent medical devices, like oxygen concentrators, may need assistance so check on family members, friends and neighbors who use this type of equipment.

## Combating air pollution: Delhi-NCR may get common air quality index

*Date: 03-Sep-2017 Source: Hindustan Times*

The National Capital Region, often claimed to be the one of the worst polluted zones in the world, would soon get a common Air Quality Index (AQI), which would give a more accurate picture of the air quality.

At present the ministry of earth sciences through its System of Air Quality and Weather Forecasting and Research (SAFAR) and the Central Pollution Control Board (CPCB) displays separate AQI. The Delhi Pollution Control Committee (DPCC) has its own real-time data.

In a review meeting held last week, the Supreme Court-mandated Environment Pollution Control Authority (EPCA) urged the CPCB to integrate the daily data on air quality from SAFAR, DPCC and other state pollution control boards in NCR and come up with a single air quality index.

“Discussions with officials from ministry of earth sciences have already been held and the DPCC data is already connected to our system. We can come up with a single AQI by month-end,” said a senior official of CPCB.

At present Delhi has around 18 monitoring stations while 20 would be added more by October this year taking the total to 38. Sources said that the NCR will have around 50 air quality monitoring stations by December 2017.

“With the winter season approaching when pollution levels are expected to shoot up, the new system would be of much help to the authorities and EPCA to implement the graded response action plan in Delhi-NCR,” said an EPCA member.

The air quality index or AQI is basically a figure and a series of colour codings shared by agencies on the level of pollution. For example, the one CPCB shares, ranges between 0 and 500.

An AQI between 0-50 is considered ‘Good’, 51-100 ‘Satisfactory’, 101-200 ‘Moderate’, 201-300 ‘Poor’, 301-400 ‘Very Poor’, and 401-500 ‘Severe’.

Each category comes with its own advisory. In case of ‘Moderate’, it warns of breathing discomfort to people with lungs, asthma and heart diseases while ‘Severe’ means the air quality is so bad that it may affect even healthy people and seriously impact those with existing diseases.

The CPCB has also formed around 40 teams for round-the-clock inspections at the ground level to check violations such as burning of waste in the open, dust from construction projects and visibly polluting vehicles on roads through the winter months when pollution levels in Delhi spike.

## **Danger in the Willamette Valley air**

*Date: 04-Sep-2017 Source: The Register Guard*

The meter that measures air quality tipped into the “hazardous” range in Eugene on Sunday, with Lane County receiving the most unhealthy air conditions in more than 25 years — and more of the same is forecast through 10 p.m. Tuesday.

Until then, Lane County remains under three alerts from the National Weather Service — for excessive heat, high fire danger and choking smoke.

But the forecast for later in the week holds a shift to westerly breezes that will blow away the smoke, bring a chance of showers and cool the daily high temperatures closer to the seasonal average of 80 degrees.

The National Weather Service had forecast triple-digit temperatures for Sunday, which threatened to break the record of 96 degrees set Sept. 3, 1949. However, the forest fire smoke was so thick that it blocked some of the sun’s heat, and Eugene’s temperature reached an unofficial high of 95 degrees at the airport weather monitoring station just before 5 p.m.

Monday’s high temperature is forecast to be 99. If realized, it would break the 97-degree mark set on Sept. 4, 2003.

The forecast also calls for unhealthy air conditions through Tuesday, when many local students will return to school.

According to the Lane Regional Air Protection Agency, the level of particulate matter and pollution in Eugene measured by its Air Quality Index registered more than 300 at about 3 p.m. Sunday afternoon — into the “hazardous” category not seen since the summer of 1991.

Lane County Public Health said the people most at risk are those with pre-existing lung conditions, infants and the very elderly, who all should remain indoors, preferably in air-conditioned places with windows and doors closed.

Those who hope to cleanse their indoor air need to use high efficiency particulate air filters (HEPA filters) or electrostatic precipitator filters (ESP filters).

The state’s unhealthy air contains superfine wood ash from more than 800 wildfires that were burning Sunday, according to the Oregon Department of Forestry’s fire statistics. Even smoke from forest fires in California and elsewhere in the West has found its way into the valley.

Total acreage burned in Oregon this year so far is now more than 460,000 acres, the agency reported Sunday.

LRAPA measures anything between 101 and 150 particulate materials as unhealthy for people who have sensitive respiratory systems. Readings of 151 to 200 are considered unhealthy for all; 201 to 300 is “very unhealthy,” and levels of 301 to 500 are considered hazardous.

While Eugene residents complained of headaches, coughing and dry, scratchy throats, it was the residents of southern Oregon's Applegate Valley, 20 miles west of Medford, which had the worst of the acrid smoke. Their Air Quality Index registered more than 400.

Yet in historic context, it wasn't the worst that Oregon has seen in recent history.

Lane County is geographically sited in a way that funnels smoke into Eugene and Springfield — as residents who remember the days of summer field burning can attest. Whenever westerly winds and high “mixing zones” — favorable for carrying billowing columns of orange-gray field smoke over the mountains — suddenly shifted or died, then the smoke fell to the ground and filtered like fog into Lane County.

And according to historical air pollution data from LRAPA, the highest particulate levels recorded were from field fires during the summer of 1986, which were at least three times Sunday's air pollution level.

When will the air cool and clear? The change is supposed to begin between 10 p.m. Tuesday or early Wednesday morning.

It will be Wednesday, according to the National Weather Service office in Portland, which predicts that western winds — and even a chance of showers — will return that day and linger for the rest of the week, when high temperatures will return to a more seasonable low 80s.

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## Delhi's air pollution puzzle

*Date: 05-Sep-2017 Source: Live Mint*



There were 4.24 million deaths globally in 2015 attributable to PM<sub>2.5</sub>—fine particulate matter with a diameter less than 2.5 micrometer—of which the share of India's 1.09 million deaths is 26%, according to the latest report of the World Health Organization (WHO). PM<sub>2.5</sub> are more harmful to human health than PM<sub>10</sub> (particles with a diameter between 2.5 and 10 micrometer) because unlike PM<sub>10</sub>—which only goes down to the lungs—PM<sub>2.5</sub> can enter the blood supply from the lungs and turn into invisible killers.

Among megacities—cities with the population of at least 14 million—Delhi has the worst air quality, according to the WHO report. Delhi witnessed widespread public protests in November 2016 after the city was engulfed in a toxic smog when the PM<sub>2.5</sub> level rose to 999 micrograms (mg)/metre cube (m<sup>3</sup>)—16 times higher than the Indian ambient air quality standard of 60mg/m<sup>3</sup>, and 40 times higher than the WHO standard of 25mg/m<sup>3</sup>—on a 24-hour average basis.

Terming Delhi's air "a public health emergency", the Supreme Court in 2016 had asked the Union government to prepare a graded response action plan specifically for the city—similar to what Beijing, Paris, and Singapore had done to improve their air quality. The plan, enforced on 12 January, describes a series of measures to be implemented by the court-mandated, environment pollution control authority (EPCA) in coordination with relevant state agencies. The measures range from shutting down schools to stopping construction activities to putting in place traffic rationing schemes—depending on the degradation in air quality.

The graded response programme is described as a big step forward because for the first time there is a legal framework for coordination among Delhi's various pollution controlling agencies and its neighbouring states. This is important because the sources of PM<sub>2.5</sub> air pollution in Delhi are both internal and external, according to a study by the Indian Institute of Technology, Kanpur (IIT-K).

The contribution of the neighbouring states of Rajasthan, Haryana, Uttar Pradesh and Punjab to Delhi's air pollution—mainly due to the burning of crop residue—is variable and depends on the time of the year: it is about 26% during winters and 12% during the summer.

However, several months after the plan, hailed as a panacea for all of Delhi's air quality woes, came into effect, official data from the country's top pollution watchdog, the Central Pollution Control Board (CPCB), indicates that the air continues to be unhealthy in Delhi. In the 182 days since the plan's launch, air quality has been healthy only for 20 days if we compare it with the national PM<sub>2.5</sub> health standards. Furthermore, it did not meet the WHO air quality guidelines of PM<sub>2.5</sub> even for a day.

If we look at the existing framework used to tackle air pollution in Delhi, the reasons for its continued failure become obvious.

The CPCB, which is responsible for developing air pollution guidelines at the national level, and the state pollution control boards (SPCBs) which enforce these guidelines in the states, face institutional, technical, and manpower constraints. All SPCBs have a combined manpower shortage of 35% to 40%. This hampers the ability of the EPCA to enforce the plan.

For example, if the air quality hits the "severe" mark (PM<sub>2.5</sub>>250 mg/m<sup>3</sup>), the plan requires the EPCA to direct the Delhi Pollution Control Committee (DPCC) to halt all construction activities, stop the use of diesel generators, and close brick kilns and power plants. But in the absence of adequate manpower, these actions become difficult to execute.

Delhi has 15 air pollution monitoring stations manned by the CPCB, of which only 10 are functional. In comparison, Beijing has 35 and London 100. Many of these stations are not properly calibrated, and there are quality concerns regarding the data they generate, former CPCB member secretary B. Sengupta said recently.

An air pollution forecasting platform is a prerequisite for efficient functioning of the graded plan. Think about this: The plan mandates to increase parking fee when the air quality becomes poor but doing so requires meetings among multiple levels of municipal administration, which can take up to at least a week's time for decision-making and coordination among relevant agencies. Air quality models, real-time data on emission sources, local meteorology, and characterization of size and chemical speciation of the

PM are needed for such a platform. At present these capabilities are limited and only a work in progress, says S.N. Tripathi, professor of civil engineering, IIT-K.

The graded plan requires coordination among at least 16 agencies of Delhi and its neighbouring states. These inter-state agencies often represent competing political interests but their coming together is critical for the execution of the plan. There is not much leverage with the Centre in such cases.

On the contrary, think of what the US—a successful example— does. Under the US Clean Air Act, the environmental protection agency has been given the ability to withhold federal dollars (e.g., for highways) if local authorities do not come up with plans to solve air pollution non-compliance situations. The cutoff of funds was never actually implemented, but the threat was enough. “That would get them moving on the problem fast”, says George Thurston, director of the programme in exposure assessment and human health effects at the department of environmental medicine, New York University.

Shekhar Chandra is the 2017 Lawrence E Susskind fellow and a PhD candidate in environmental policy at the Massachusetts Institute of Technology.

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## **Ghazipur landfill collapse: Mere shifting of site won't end air pollution, diseases; scientific disposal only way out**

*Date: 06-Sep-2017 Source: First Post*



New Delhi: Shamima is happy with the Delhi Lieutenant Governor's decision to ban the use of the landfill site near her home in Mulla Colony in the capital city's Ghazipur area. The stinking heap of garbage with the shape of a hillock as high as a five-storey building is the reason behind her misfortunes. She got infected by tuberculosis thrice during her teenage and lost two valuable academic years. All of her friends are studying in college now while the 19-year-old is still struggling to pass 9th standard with her frail health.

"If the garbage dump is removed from here, I hope none in Mulla Colony would be struck by misfortunes like me," she said. But she knows that the order banning the landfill site can do nothing to recover the loss she has already incurred in her academic career.

Shamima is one of the living examples of what the people of Mulla Colony with a population of more than 25,000 have gone through during the last 40 years after Municipal Corporation of Delhi (MCD)'s dumping ground was located here. Thousands of people young and old have fallen prey to toxic air that pervades in the locality near the Ghazipur landfill site.



The stench that emanates from the landfill has made life miserable for the people living in the colonies adjacent to it.

"Many young boys and girls have suffered deadly diseases like tuberculosis, typhoid, dengue, malaria and encephalitis. Lives both old and young have been lost to diseases. The main reason of these diseases can be attributed to the infections spread by the garbage dump," said Salim Khan, a health worker in the locality.

He said that 30 percent of the patients he receives daily are afflicted with tuberculosis and many of them are teenagers.

"Other diseases like dysentery, asthma, bronchitis are lifelong companions for many in Mulla Colony and other residential areas near the dumping ground," the health worker said.

Mulla Colony in Delhi's Ghazipur is resided mostly by rag pickers and daily wage laborers. The locality where breathing is always a struggle and life only means a fight against deadly diseases is in sharp contrast with the posh residential areas like Mayur Vihar in East Delhi where all the facilities of a metropolitan lifestyle are easily available.

There are a number of other localities near the Ghazipur landfill site that share the same fate with Mulla Colony. Ghaoli and Rajbir colonies are two among them.

No wonder the decision to ban the dumping ground was welcomed by one and all residing in these wretched localities. On 2 September the L-G ordered the ban on dumping garbage at the Ghazipur landfill site. The order which came a day after two people died due to the collapse of a mound of waste on them, also said that the garbage will be cleared within two years.

Though the ban is yet to be implemented due to non-availability of an alternative site, it was seen as a fulfillment of a four-decade old demand to stop dumping of waste in Ghazipur made by the local residents. But the cost of what the people living in these areas have lost during the last 40 years due to the ill-managed dumping ground is too high for such an order to fulfill.

The Delhi government itself clearly admits that the dumping grounds in Delhi including the one in Ghazipur are illegal. The Department of Environment said in a note on its website, "There are 3 landfill sites namely Bhalswa land fill site, Ghazipur land fill site, Okhla land fill site. Bhalswa Land fill site commissioned in the year 1994, whereas Ghazipur in 1984 and Okhla in 1996. In absence of availability of landfill sites, all the 5 Municipal Bodies are using these three sites for illegal disposal of MSW."

The landfill sites are seen in sharp contrast with the spirit of Solid Waste Management rules which said, "Land filling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing."

But none of the sites managed by the civic authorities follow this rule. All the landfills are heaped with both kinds of wastes resulting in an extremely high rate of air pollution caused by them.

As per a study published in 2015, the suspended particulate matter in Ghazipur was 1,124 micrograms per cubic metre, whereas the permissible limit was only 10 micrograms per cubic metre, reported The Times of India.

"Dumping of wet waste is the reason why often the landfills catch fire. Methane gas produced by bio-degradable waste causes fire and smoke emitted by it is extremely toxic," said Satish Sinha of Toxic Links, an environmental NGO.

Residents of the Mulla Colony say that they heard the sound of a blast from the Ghazipur landfill site before a huge mound of waste collapsed killing two people on 1 September and finally led the L-G to ban the site. They say that the blast might be caused by the gaseous substance in the garbage dump.

Not only the Ghazipur landfill site, all the dumping grounds in Delhi have caused similar hazards in public life due to mismanagement of the authorities.

"All the dumping grounds are on fire during the summer season due to the emission of methane gas from them. People living in the localities nearby such landfills are forced to inhale this poisonous gases," said Sinha.

The Ghazipur tragedy must have rung the alarm bell for the civic authorities to remind that it was high time to switch Delhi's solid waste management to a more scientific mode. But it is hardly the case.

"Rather than contemplating to opt for a scientific waste disposal system, the authorities are just trying transfer the dump yard from one place to another and also is facing public protest for it," said Chitra Mukherjee of Chintan, an NGO that has been working actively on solid waste management.

After the Ghazipur dump site was banned the East Delhi Municipal Corporation attempted to shift the site to Ranikheda. But the attempt was aborted after local residents resisted.

Though another site was proposed in Yamuna flood plains, that too faced protest from environmental NGOs.

"Shifting the dump yard is not a solution to the crisis. Rather the crisis should be used to bring in a solid waste management system, which is scientific," said Sinha.

He said that to adopt a scientific mode of waste disposal, the waste has to be segregated at the source into two parts -- dry and wet. The wet waste can be used for composting and the dry waste can be sent for recycling.

"But the MCDs till now has not made it compulsory for the households to segregate the waste, where lies the problem," Sinha said.

He also said that if the waste segregated at source are sent to processing units, a very small amount of non-recyclable waste will be left which can be dumped in a landfill.

"Everyday 8,000 metric tonnes of solid waste is generated in Delhi. If scientific waste management methods are used only 10 percent of this would reach the landfill," he said.

Mukherjee said that Bangalore has successfully implemented this method by making it compulsory for the gated communities to make provision for a composting unit within the compound. The recyclable waste and the manure produced in the composting units are sold in the market.

"This way only 10 to 15 percent of the waste generated daily goes to the landfill site," she said.

Sinha too said that much of the landfill used for dumping non-recyclable waste can also be recovered later on.

The solid waste management rules have also mandated segregation and treatment of waste, which has not been adopted by the MCDs yet.

Experts said that mismanagement of waste is a ticking time bomb for Delhi, which could explode if not dealt with care before it is too late.

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## **Air pollution advisory in effect for all of Southwest Washington through Friday**

*Date: 06-Sep-2017 Source: Camas-Washougal Post Record*



Residents urged to help improve air quality by taking public transit, not using mowers, aerosol sprays

The Southwest Washington Clean Air Agency's air pollution advisory is still in effect throughout Southwest Washington, including Clark and Skamania counties.

The agency reports: "Continued intrusions of wildfire smoke, stagnant conditions and hot weather throughout Clark, Cowlitz, Lewis, Skamania and Wahkiakum Counties and elevated afternoon ozone levels in Clark County will cause air quality to reach unhealthy levels at times" until mid-day Friday, Sept. 8.

The area could possibly see some relief by this weekend.

To view current air quality statistics, visit [www.swcleanair.org/burning/airquality.asp](http://www.swcleanair.org/burning/airquality.asp)

The SWCAA's air pollution advisory says local residents who suffer from asthma or lung disease, as well as older adults, children and those sensitive to the wildfire smoke should limit their time outdoors as much as possible this week.

The agency also advises local residents to "protect their health and help improve air quality by reducing pollution from cars, mowers, paint and aerosol sprays."

Commuters are being urged to consider taking public transportation or carpooling to work instead of driving solo.

For more information on how to best cope with the respiratory impacts of the smoke, visit the state's Department of Health site at [www.doh.wa.gov/CommunityandEnvironment/AirQuality/SmokeFromFires](http://www.doh.wa.gov/CommunityandEnvironment/AirQuality/SmokeFromFires).

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## Spokane choked with hazardous air quality for fourth straight day

*Date: 07-Sep-2017 Source: The Spokeman-Review*



For the fourth straight day, air quality in Spokane was measured as hazardous Thursday as smoke from regional wildfires continues to keep the Inland Northwest in a haze.

Five air monitors that measure particulate matter in Spokane County measured air as “hazardous” at 3 a.m., according to the Department of Ecology. That’s the worst reading in the six-category air quality scale.

Heavy smoke began blanketing much of the Northwest on Monday. It isn’t expected to lift until Friday. On Tuesday, Spokane had the worst daily air quality reading since records began in 1999.

Air quality monitors in North Idaho mostly showed slightly better readings. Rathdrum and Sandpoint had “very unhealthy” air at 4 a.m. Kellogg, St. Maries, Moscow, Plummer and Bonners Ferry had “unhealthy” air. “Hazardous” air was measured at Lapwai and Juliaetta.

The Spokane Regional Clean Air Agency listed air quality at the five Spokane County monitors as “very unhealthy” most of Thursday. The agency and the Department of Ecology use a different calculation using the same data to determine current air quality.

Air pollution agencies use a 1-500 scale to measure particulate matter. Numbers 300 or higher are considered “hazardous.” Numbers 200 or more are considered “very unhealthy.”

On Tuesday, air pollution averaged 254 during the day, the highest measurement on record and the first time since 1999 that a daily reading was in the “very unhealthy” category. That’s the same year records began to be compiled by the Spokane Regional Clean Air Agency.

Wednesday’s number was only slightly better at 245, said Stephanie May, the air agency’s spokeswoman. That’s now the second-highest daily reading on record.

A cold front is expected to start moving the smoke out of the Spokane area starting late Friday morning, said National Weather Service meteorologist Jeffrey Cote.

Southwest winds of 5 to 10 mph are expected, with gusts as high as 20 mph in the afternoon. It likely will be breezier on Saturday, Cote said.

As of the end of the day Wednesday, Spokane had gone 70 days without measurable rain. Without rain, Spokane will break the record of 73 days at the end of Saturday.

Cote said there's a 20 percent chance of rain on Friday morning.

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## **A Cheap, Accurate Machine-Learning Microscope Could Help Cut Air Pollution**

*Date: 08-Sep-2017 Source: Fururism*



### **LENS-FREE MICROSCOPY SYSTEM**

Researchers from UCLA have created a mobile device called c-Air that measures air quality in a cost-effective way. The device uses a mobile microscope connected to a smartphone and a machine-learning algorithm to analyze and determine the size and concentration of pollutants it detects in the air. The purpose of the device is to more accurately and cheaply detect dangerous airborne particulate matter, anywhere in the world, with ease.

This is a pressing need, given that 7 million people worldwide die annually due to air pollution, according to the World Health Organization (WHO).

The new device's air sampler and computer chip-sized holographic microscope take 30 seconds to screen 6.5 liters of air. The c-Air then generates images of the airborne particles to be sized and analyzed by a machine-learning algorithm.

The device sends the images wirelessly, requiring only a smartphone and a connection to a remote computer server to function. According to the researchers, the device is more adaptable than other detectors because of its machine-learning capability, which allows it to adapt rapidly to detect specific particles, such as different varieties of mold and pollen.

### **A GLOBAL PROBLEM**

Particulate matter, composed of liquid and solid particles suspended in air, is a core component of air pollution. According to the WHO, smaller particles are especially dangerous, with particles in air less than 2.5 micrometers in size potentially causing cancer. The need to detect these kinds of particles in the field, and at a low cost, is urgent.

Air quality testing is now frequently performed at air sampling stations, regulated in the US by the Environmental Protection Agency (EPA) and by comparable agencies in other countries. However, typically these facilities use highly advanced instruments that are cumbersome and cost-prohibitive,

priced between \$50,000 to \$100,000, and which demand maintenance at the hands of trained specialists. On the other hand, cheaper, portable particle counters are commercially available for \$1,000 to \$2,000, but they are neither capable of high-throughput processing nor as accurate as the larger units.

In contrast, the c-Air should cost tens of thousands of dollars less, while producing results that are just as accurate as higher-end equipment in use now.

According to Aydogan Ozcan —UCLA Chancellor Professor of Electrical Engineering and Bioengineering, and associate director of the California NanoSystems Institute — researchers have found that air pollution monitoring benefits from accurate, rapid, high-throughput quantification and sizing of particulates in air. Ozcan elaborated in a press release: “With lab-quality devices in the hands of more people, high-quality data on pollutants as a function of time from many more locations can be collected and analyzed. That can then help governments develop better policies and regulations to improve air quality.”

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## Wildfire smoke ramps up air pollution in Utah

*Date: 08-Sep-2017 Source: Daily Herald*



Polluted air hangs in Utah Valley as seen from the top of the Sundance Ski Resort Monday, Dec. 16, 2013. An orange air-quality alert was in effect on Monday with a red air-quality alert expected for Tuesday and Wednesday.

Wildfire smoke blanketing the West is leaving the skies hazy and ramping up soot levels in pollution-prone valleys of Utah.

Ashley Miller with the group Breathe Utah said Thursday that soccer practices are being canceled and people are suffering from itchy noses and runny eyes.

Utah air monitoring manager Bo Call says the pollution isn't hitting the highest levels seen during winter days when murky air gets trapped in the state's valleys, but the small particles now in the air are particularly visible because they reflect more light.

Call says ozone-pollution levels are also spiking in the afternoon, creating a double-whammy that's particularly difficult for people with breathing problems.

Fires igniting through the region in recent days included a fast-moving blaze in Weber County that destroyed three homes before crews got the upper hand.

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## Air pollution takes a toll on solar energy

*Date: 08-Sep-2017 Source: Science News*



origins, including cars, factories and coal-fired power plants.

Air pollution is a drag for renewable energy. Dust and other sky-darkening air pollutants slash solar energy production by 17 to 25 percent across parts of India, China and the Arabian Peninsula, a new study estimates. The haze can block sunlight from reaching solar panels. And if the particles land on a panel's flat surface, they cut down on the area exposed to the sun. Dust can come from natural sources, but the other pollutants have human-made

Scientists collected and analyzed dust and pollution particles from solar panels in India, then extrapolated to quantify the impact on solar energy output in all three locations. China, which generates more solar energy than any other country, is losing up to 11 gigawatts of power capacity due to air pollution, the researchers report in the Aug. 8 *Environmental Science & Technology Letters*. That's a loss of about \$10 billion per year in U.S. energy costs, says study coauthor Mike Bergin of Duke University. Regular cleaning of solar panels can help. Cleaning the air, however, is harder.

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## Gurgaon: City to get a new ambient air monitoring station by Oct 1

*Date: 09-Sep-2017 Source: Hindustan Times*



The proposed ambient air quality monitoring system station will be installed in Gurgaon by October 1.

The Haryana State Pollution Control Board (HSPCB) with the help of Central Pollution Control Board (CPCB) will install the new station in IMT Maesar area.

"The tender has been approved and all other formalities are fulfilled. It will take us three days to install the station," JB Sharma, regional officer,

Haryana State Pollution Control Board (HSPCB), said.

At present, the city only has one monitoring station as a result of which air quality from only one area could be monitored.

The air monitoring station is located at Rajiv Chowk, which is unable to give both PM 2.5 and PM10 pollutant levels, said experts.



The pollution watch dog is planning to install the second station in the city before Diwali festival, which falls on October 17 this year. “As the city air quality might get poor after Diwali, proper monitoring is required,” Sharma said.

The new station will cost Rs 1 crore and will provide a comparative data on various pollutants in the city.

The city’s air quality has been marked as ‘poor’ for most part of the year, because of the perennial construction work and unregulated plying of diesel autos. There has been a demand from experts to monitor air quality of various other areas as well.

Last year, after Diwali, the air pollutant level in the city rose to more than 13 times than the permissible level. On November 4, 2017, the HSPCB recorded the level of fine particulate matter (PM<sub>2.5</sub>) at more than 800 µg/m<sup>3</sup>. The safe threshold for PM 2.5 is 60 µg/m<sup>3</sup>.

Read I Gurgaon beats Delhi to worse air quality of day

Every year, it has been noticed that the pollutants such as sulphur dioxide, nitrogen dioxide and suspended particulate matter such as PM<sub>10</sub> are released in the air when crackers are burst.

“Every year after Diwali festival, the region witness rise in the level of pollutants in the atmosphere. The city with only one air monitoring station fails to provide a clear picture of the pollutants,” Anumita Roy Chowdhury, executive director, centre for science and education (CSE), said.

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## Britain flouting duty to protect citizens from toxic air pollution – UN

*Date: 10-Sep-2017 Source: The Guardian*



The UK government is “flouting” its duty to protect the lives and health of its citizens from illegal and dangerous levels of air pollution, according to the UN’s special rapporteur on human rights related to toxic waste.

Baskut Tuncak issued his warning after a fact-finding mission to the UK in January at the invitation of the government in a report that has been shared exclusively with the Guardian before it is presented to the UN human rights council this

week.

“Air pollution continues to plague the UK,” he said. “I am alarmed that despite repeated judicial instruction, the UK government continues to flout its duty to ensure adequate air quality and protect the rights to life and health of its citizens. It has violated its obligations.”

Such harsh international criticism will be embarrassing for the government, whose air pollution plans have already been ruled illegally poor twice. The latest plan forced by the courts was released in July but condemned as “woefully inadequate” by city leaders and “inexcusable” by doctors.

Air pollution causes an estimated 40,000 early deaths every year in Britain and was declared a “public health emergency” by MPs in 2016. Air pollution is worst overall in London, but many other places have illegal levels of nitrogen dioxide emitted by diesel vehicles, such as Leeds, Birmingham, Bournemouth and Northampton. Ipswich has higher levels of particulate matter than London.

London breached its nominal annual air pollution limits five days into 2017 at Brixton Road in south London. Other known pollution hotspots in the capital include Putney High Street in west London, Oxford Street, Kings Road in Chelsea and the Strand.

In his report for the UN, Tuncak assessed how well the UK protects human rights that are infringed by pollution, such as the rights to life, health and safe housing.

Vulnerable groups were worst affected by air pollution, he said: “Children, older persons and people with pre-existing health conditions are at grave risk of mortality, morbidity and disability, with magnified risks among the poor and minorities.”

A government spokeswoman said Brexit represented an opportunity to improve the UK’s air quality standards. “EU policies, from the common agricultural policy to vehicle emissions tests, have damaged the environment. Our £3bn air quality plan will address the dirty air caused by the EU’s failed testing regime, and in ending the sale of new diesel and petrol cars by 2040, the UK is more ambitious than most EU member states including Germany.

“We now have an opportunity to deliver a green Brexit, ensuring the UK is a global leader in environmental protection,” she said.

Anna Heslop, at ClientEarth, the lawyers who have twice defeated the government on air quality standards, said: “This damning report with regard to air pollution is unsurprising but no less shocking for that. The UK has illegal levels of air pollution and successive governments have fought us in the courts rather than tackling it effectively.

“We are glad the report says the government must listen to the experts, including its own, and develop a national network of clean air zones to keep the worst polluting vehicles out of the most polluted areas of our towns and cities. This should happen as soon as possible.”

A new, wide-ranging ClientEarth report argues the government’s claim that all EU environmental laws will be retained after Brexit is misleading. It also criticises the government over other aspects of environmental policy “loopholes” in fracking regulation; the loss of environmental staff due to austerity which has resulted in “serious governance gaps”; and the risks to environmental safety posed by Brexit.

Tuncak also warned of the risk that fracking, soon to start in Lancashire, poses to safe water. “UK regulations on fracking are complex, split between several regulators and do not appear to be sufficiently stringent,” he said. “Fragmented policymaking allows for loopholes.”

All the UK's environmental regulators have suffered due to budget cuts, he found: "The decreasing financial, technical and human resources due to austerity have created serious governance gaps." The Department for Environment, Food and Rural Affairs (Defra) has lost a third of its staff compared with 2007.

Another consequence of austerity was Defra's ending in March of capital grants to local councils for cleaning up contaminated land sites, which the UN report said posed "potentially serious health risks".

Tuncak warned that unless the UK's future green standards equalled those of the European Union, "the UK could risk becoming a haven for 'dirty' industries and a dumping ground for products failing to meet EU regulations".

Labour MP Mary Creagh, who chairs the environmental audit committee, said: "It is vital the government passes a new environmental protection act as soon as possible to protect the lives and livelihoods of millions of people." Tuncak backs that call in his report.

The committee warned in January that Brexit could result in key environmental protections being left as ineffective "zombie legislation". Creagh said the UN report highlighted the "government's lack of clarity about the future of environmental issues after Brexit and how they will stop the UK from becoming a dumping ground for dirty industries and a haven for bad practice".

Tuncak's report also asks the UK government to "reconsider national plans to increase reliance on nuclear energy, considering that long-term storage of nuclear waste is uncertain and poses significant risks to the population". He criticised the UK's cuts to legal aid and protection from legal costs which make it "extremely challenging" for victims of environmental harm to seek redress in the courts.

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## **Indoor air pollution causing lung diseases: Expert**

*Date: 10-Sep-2017 Source: The Daily Star*

Indoor air pollution caused by the use of unhygienic fuels in kitchens without proper ventilation has been billed as one of the prime reasons for high prevalence of Chronic Obstructive Pulmonary Disease (COPD) in rural Bangladesh.

"Our rural women usually cook indoor using an open-fire traditional cooking stove at a small kitchen with biomass fuel, like wood, cow dung and charcoal, without or insufficient ventilation that expose them hugely to COPD," Dr Shamim Ahmed, an associate professor of Pulmonology Department of Bangabandhu Sheikh Mujib Medical University (BSMMU), told the news agency.

Referring to a study on "Indoor Biomass Fuel Smoke Exposure as a Risk factor for COPD for Women of Rural Bangladesh", he said, one in five rural women was suffering from COPD in a stage of life for neglecting health issues.

The study, published in a medical journal of "Chattagram Maa-O-Shishu Hospital Medical Collage" last year, was carried out among 250 women over 40 years of age through random sampling.

"Though smoking is the most common cause of COPD all over the world, air pollution is playing a similar role in Bangladesh causing COPD," Dr Ahmed said.

The physician suggested using kerosene stoves for cooking at a properly ventilated kitchen to avoid suffering from COPD.

"Side by side, we should avoid use of tobacco, exposure to occupational dusts and chemicals and frequent lower respiratory infections during childhood to be freed from the disease," he said.

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## UN slams UK government over ‘plague’ of air pollution

*Date: 11-Sep-2017 Source: Inquirer*



LONDON — A UN report has slammed the UK for failing to tackle the “plague” of air pollution, while also warning of Brexit risks, ahead of the body’s Human Rights Council opening Monday.

“Air pollution continues to plague the United Kingdom,” read the report by United Nations expert Baskut Tuncak, to be presented at the rights council in Geneva which runs until September 29.

More than 40,000 premature deaths a year are linked to air pollution, noted the report which argued that through inaction the government has “violated its obligations” to protect children.

“The Special Rapporteur is alarmed that despite repeated judicial instruction... the United Kingdom Government continues to flout its duty to ensure adequate air quality and protect the rights to life and health of its citizens,” it said.

The British government has faced a series of legal challenges over its proposals, with a 2015 air pollution plan struck down by the courts for being inadequate.

New proposals, including a scrappage scheme targeting diesel cars, were unveiled in May after the High Court ruled against the government’s intention to delay.

But the UN report said the latest plan “does not convey the necessary urgency” and urged the government to implement a “robust clean air plan without delay”.

Published against the backdrop of Britain’s divorce from the European Union, the Tuncak report praised the bloc for having some of the highest environmental standards in the world which have positively impacted the UK.

Despite government assurances that it will maintain EU environmental standards after Brexit, Tuncak said a lack of clarity on how this will happen has led to a “real danger” Britain will be left without the necessary legal framework.

“The United Kingdom market could risk becoming a haven for ‘dirty’ industries and a dumping ground for products failing to meet European Union regulations,” without matching EU legislation, the report said.

Wading into the subject of Brexit talks, the UN report advised the British government to continue to abide by evolving EU standards despite its exit from the bloc.

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## **This is how much of your life air pollution is stealing from you based on where you live**

*Date: 11-Sep-2017 Source: Quartz*



Air pollution is the single largest environmental health risk humans face, according to the World Health Organization, but what does that mean for you? Researchers have put together a map based on new findings that show, depending on where you live, how many years of life that gritty air is stealing.

In China, the “airpocalypse” is shortening the Chinese lifespan by more than three years, while in

India, air pollution can cut a person’s lifespan by four years on average (and nearly a decade for someone in the capital New Delhi). Things aren’t looking good for the US either, if you live in California.

In a peer-reviewed study, published on Sept. 11 in US-based *Proceedings of the National Academy of Sciences* journal, a global team of scientists from the US, Israel and China examined pollution data from 154 Chinese cities 1982 to 2012 and compared it with mortality data covering 78 million people from 2004 to 2012. They found a strong link between reduced life expectancy and air pollution, as measured by PM10, a form of particulate matter that can lodge deep in lungs and cause respiratory disease.

The scientists drew on the effects of China’s well-intentioned Huai River Policy, under which the government has since the 1950s provided free coal for indoor heating in winter to households in cities north of the Huai River, to gauge the impact of sustained exposure to air pollution. Because of the policy, northern and southern Chinese cities have had quite different levels of particulate matter concentration over time, and the country’s restricted migration policies helped isolate the effects of this.

In the north, PM10 reached some five times the WHO recommended safe limit (20 micrograms per cubic meter of air,  $\mu\text{g}/\text{m}^3$ ). Compared to the south, the concentration in northern areas, which includes capital Beijing, was around 50% higher. Controlling for other life-reducing behaviors, such as smoking,

researchers found that led to an average reduction in life expectancy of 3.1 years due to cardiorespiratory diseases, such as lung cancer.

The scientists concluded that life expectancy is reduced by about seven months with every additional  $10\mu\text{g}/\text{m}^3$  of PM10 in the air. “The results greatly strengthen the case that long-term exposure to particulates air pollution causes substantial reductions in life expectancy,” said Michael Greenstone, an author of the paper and director of the Energy Policy Institute (EPIC) at the University of Chicago.

Using the metric, Greenstone and his colleagues at the institute developed the Air Quality-Life Index (AQLI), a tool that shows how much longer people in different countries would live if the local air quality met the WHO standard for another kind of fine particular matter, PM2.5, viewed as even more hazardous, and now a global indicator for air pollution. (The researchers estimate that an additional increase of  $10\mu\text{g}/\text{m}^3$  of PM2.5 shortens lifespan of around one year, compared with seven months for PM10.)

According to the AQLI, even in developed countries like the US, increased PM 2.5 concentration levels are shortening lifespan in New York by one month and in Los Angeles by eight months. Pollution estimates for the AQLI will be updated annually, Greenstone told Quartz.

The new findings are in line with a study in 2013 that concluded that life expectancy was about 5.5 years lower (pdf) in the Chinese cities covered by the Huai River Policy, according to Avraham Ebenstein, an author of both studies and lecturer in the environmental economics department at the Hebrew University of Jerusalem. The reduced number of years lost in the newer study could be a sign of improving air quality, noted the researchers of the 2017 study. China has been investing heavily in renewable energy and switching out fossil fuels, including by subsidizing electric vehicles and punishing firms that violate air pollution laws.

Greenstone told Quartz via email that pollution may also “have affected people’s well being while they are alive in important ways that are not captured by the study,” such as through rates of sickness, or affecting education and earnings as an adult.

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## Air pollution in Delhi: Breathing capital’s deadly air is robbing you of 6 years of life

*Date: 12-Sep-2017 Source: Hindustan Times*



It is well documented that poor air quality impacts health, for the first time the University of Chicago’s Energy Policy Institute (EPI) has developed an Air Quality-Life Index (AQLI) to measure by how much. If India met its own air quality standard for only PM 2.5 ( $40\mu\text{g}/\text{m}^3$ ) every Indian would live an average 1 year more. If India met the more stringent WHO standards for PM 2.5 ( $10\mu\text{g}/\text{m}^3$ ) Indians would live on average 4 years

longer.

National Capital Region residents are losing out on almost 6 years of life because of the dangerous air pollution levels. If WHO standards were met in NCR, people would live 9 years longer. In Kolkata and Mumbai better air quality would translate into almost 3.5 year longer life spans.

“The AQLI is the first tool of its kind to allow people to learn how much longer they could live in the areas where they live if air pollution is reduced to meet global or national standards,” Michael Greenstone, the director at EPI and one of the authors of the study, said. “It suggests that particulates are the greatest current environmental risk to human health, with the impact on life expectancy in many parts of the world similar to the effects of every man, woman and child smoking cigarettes for several decades.”

India’s last environment minister stirred controversy by suggesting that the link between air pollution and health impacts is yet to be established, and data about air pollution deaths is particularly problematic. A government effort to study the health impacts of air pollution has not taken off.

However, Indian scientists have argued that the link between air pollution and health impacts like respiratory disorders and cardiovascular morbidity. Elderly people and children are particularly susceptible.

“Epidemiological studies have shown that the smallest forms of particulate pollution (PM10 and PM2.5) are the most damaging to human health,” Greenstone said. “The study itself utilizes a PM10 monitoring network throughout China from 2004 - 2012, while the AQLI utilizes grid-level global estimates of PM2.5.”

The estimated average PM 2.5 concentration for population-weighted exposure increased from 59 in 1990 to 73 µg/m<sup>3</sup> in 2015 in India. The Global Burden of Disease 2015 report estimated that PM 2.5 contribute to 4.2 million deaths globally, a majority of which occur in India and China. The new report presents a different but no less distressing aspect of the problem.

“These findings are consistent with what has been found across the world,” Anumita Roychowdhury, at the Centre for Science and Environment, said.

The national capital has historically experienced severe pollution episodes during the winter season around the time of Diwali, because of crop burning in Delhi’s neighbouring states and also the stagnant air that prevents the pollutants from being dispersed.

“It is fine to do research, the bottom line is no level of population is not safe. The first strategy should be to bring down the pollution as low as possible,” T. K. Joshi, director, Occupational and Environmental Programme at the Centre for Occupational and Environmental Health, said.

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## How indoor air pollution is leading to stunted growth in India's children

*Date: 12-Sep-2017 Source: Hindustan Times*



Worldwide, as many as 4.3 million people die each year due to indoor air pollution. The conversation on air quality, however, has been focused largely on outdoor air pollution. As researchers at Evidence for Policy Design, we conducted an analysis of 2005-2006 National Family Health Survey (NFHS-3) data and found strong evidence that the exposure to indoor air pollution from burning solid fuels increases the probability of stunting among Indian children.

A child is regarded as stunted if her height-for-age is below certain thresholds set as per the WHO Child Growth Standards. Stunted children tend to have both physical and cognitive developmental delays, including delayed walking, impeded speech development, and diminished school performance. They also experience higher rates of mortality and morbidity, including diabetes and hypertension.

According to NFHS-3 data, as many as 43% of Indian children under the age of five were stunted, as of 2006. Despite high economic growth during the last few decades, India still has the highest prevalence of stunting among all South Asian economies with the exception of war-stricken Afghanistan. The sheer magnitude of the problem is apparent in the fact that India has 61 million stunted children, more than any other country.

While stunting is most commonly associated with poor nutrition, there is an emerging body of research that links exposure to poor air quality to stunting. In many households in India, solid fuels — such as coal, wood, crop residue and dung — are used for cooking. These fuels release particulate matter, carbon monoxide, formaldehyde and other toxins, at a much higher rate than non-solid fuels such as kerosene and LPG. Children's lungs are still developing and are therefore particularly susceptible to irritation and contamination from the fumes of solid cooking fuels; when children's bodies must repeatedly fight off the respiratory infections these fumes provoke, their growth suffers.

We analysed NFHS-3 data to identify the main drivers of stunting among Indian children. Controlling for nutrition, recent illnesses, and other socio-economic factors, living in a household that burns solid fuels is associated with 6.5% of stunting cases in Indian children below three years old. In fact, in our analysis, fuel type comes out to be almost half as influential as malnutrition in terms of impact on stunting.

In May 2016, the Indian government began providing below-poverty-line households with LPG connections. At the same time, many NGOs and local institutions are working to replace traditional cooking stoves with more efficient ones, which would reduce the total quantity of fuel consumed and emissions produced per hour of usage.

Although a transition to cleaner fuels and technology is perhaps the only long-term solution that addresses the indoor air pollution problem at its roots, there is a second option that has the potential to tackle stunting. Having appropriate ventilation mechanisms can considerably mitigate the negative impact of

solid fuel smoke exposure on child stunting. The simple presence of a window in households burning solid fuels is associated with a 3.4% lower prevalence of stunting. Having separate kitchen and living areas reduces the chance of stunting by 4%. As the data capture only whether households possess the different ventilation options and not their actual usage, so the benefits of using ventilation consistently and strategically are probably greater.

In order to be free of the health risks associated with air pollution, citizens need clean air both at home and in their communities. A permanent transition to cleaner fuels is perhaps the only solution that will improve India's air quality — both indoors and outdoors. In the meantime, low-cost ventilation solutions have the potential to mitigate the impact of solid fuel burning on stunting, and should be integrated into health promotion campaigns.

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## Air pollution from fire crackers: Supreme Court pulls up Delhi govt

*Date: 12-Sep-2017 Source: The Indian Express*



The Supreme Court on Tuesday pulled up the Delhi government for its “lethargic” response on pollution from fire crackers and said the steps taken so far by it were limited to issuing directions which was “merely paperwork”. The court, which lifted “for the time being” its earlier order suspending permanent licences for sale of fire crackers in the national capital region, said no specific action plan has been laid down by Delhi government to make children aware of the hazards

of bursting crackers.

“Have the steps already taken by the concerned authorities reduced air pollution during Diwali? It seems to us that the steps so far taken by Government of NCT of Delhi are limited to issuing directions, which is merely paperwork,” a bench of Justices Madan B Lokur and Deepak Gupta said. It observed that only general directions were issued in the past to schools to sensitise the students and staff about the ill-effects and health hazards of bursting fireworks.

“No specific plan of action has been laid down by the Government of NCT of Delhi to make children aware of the hazards of bursting fireworks and the existing awareness campaigns have been allowed to drift over the last one year,” it said, adding “there is no information on the success or failure of these campaigns”. The bench noted that the Delhi government’s response was “lethargic with the absence of any keenness to take proactive steps”.

“This is disconcerting. It is high time that governmental authorities realise that the cost of ill health (particularly among children) is far greater in psycho-social terms than in financial and economic terms. The adage that ‘prevention is better than cure’ is fully applicable in the present circumstances,” it said. The bench also noted that there was no response from the states within the NCR, which gave the

impression that air pollution was not a problem for them despite the ill-effects and health hazards of bursting fireworks.

“There must be a concerted effort by the powers that be to ensure awareness and sensitisation of the people in Delhi and NCR, particularly children, of the health hazards of indiscriminate use of fireworks,” it said. The top court said that unless urgent steps are taken, there could be an adverse impact on children’s health and it would be to “nobody’s benefit but to everybody’s detriment”. Referring to the dangerous levels of air pollution in Delhi after Diwali last year, the bench said persons living in Delhi during that time would have experienced choking effects of breathing in polluted air and tremendous increase in the use and sale of face masks and air purifiers.

“In the absence of any concerted plan of action implemented by the governmental authorities, the residents responded in an ad-hoc manner by purchasing face masks and air purifiers. There is no doubt that an effective and longer lasting solution is necessary,” the bench said.

It also observed that there was no doubt that residents of the NCR were entitled to breathe unpolluted air and protection of their health from the adverse consequences of breathing in polluted air caused by bursting of fireworks. The Delhi government, in its affidavit filed in the apex court, had said that school children were being informed about the hazards of indiscriminate bursting of fireworks and there were ‘anti-fire crackers’ campaigns also.

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## **If air quality in India meets WHO standards, people could live longer**

*Date: 12-Sep-2017 Source: Zee News*



New Delhi: If Delhi's foul air is cleaned up and made to meet the World Health Organisation standards, city residents stand to gain nine years in average in their life span, a study has said.

The Air Quality Life Index (AQLI) developed by the Energy Policy Institute at the University of Chicago (EPIC), when applied at the national level, translates to about four additional years over and above the existing average life span of Indians.

The study takes air borne particulate matter pollution, PM 2.5, into account and extrapolates it to see what impact any reduction in its volume would have on the life span of people.

Accordingly, it says that if PM 2.5 quantity in Delhi's air meets the WHO annual standard of 10 micrograms per cubic metre (ug/m<sup>3</sup>), people can live up to nine years longer and six years longer if it meets the national standard of 40 ug/m<sup>3</sup>.

The people of Kolkata, Mumbai could live roughly 3.5 years longer if the country met WHO standards and the life span of residents of Lucknow, Patna and Chennai could go up by 7.6, 6.9 and 1.7 years, as per the AQLI chart, which lists 50 regions across India that stand to gain the most.

Products of vehicular and industrial combustion, PM 2.5 are air borne ultra fine particulates, measuring less than 2.5 microns, which can cause irreparable harm to humans by entering the respiratory system and subsequently the bloodstream.

"The AQLI reveals that if India reduced its air pollution to comply with the WHO's air quality standard, its people could live about 4 years longer on average, or a combined more than 4.7 billion life years.

"Some of the greatest gains would be seen in the country's largest cities, such as Delhi. There, people could live 6 years longer if the country met its national standards, and 9 years longer if the country met WHO standards," the study says.

The AQLI arrives at the conclusions by translating the particulate concentrations into their impact on lifespans, "unlike previous studies that tend to rely on data tracking people's exposure over a short time period".

"It suggests that particulates are the greatest current environmental risk to human health, with the impact on life expectancy in many parts of the world similar to the effects of every man, woman and child smoking cigarettes for several decades," Michael Greenstone, Director of EPIC said.

Delhi has consistently ranked high among the list of most polluted cities in the world. The city is gearing up to tackle pollution that reaches perilous levels during the winter months.

According to the union health ministry, the average life expectancy in India is 67.3 years for males and 69.6 years for females.

The findings are based on a research work, published in the peer-reviewed scientific journal Proceedings of the National Academy of Sciences, on the harmful effects of a Chinese government policy to provide free coal to a region north of the Huai river.

The researchers found that people residing in the area situated north of the river were living 3.1 years less, in average, than people in the south due to air pollution concentrations that are 46 per cent higher.

These findings imply that every additional 10 ug/m<sup>3</sup> of particulate matter pollution (PM<sub>10</sub>) reduces life expectancy by 0.6 years, the paper says.

Subsequently, the results of the paper were generalized to quantify the number of years that air pollution reduces lifespans around the globe, not just in China, leading to the development of the AQLI tool.

"The AQLI uses the critical data and information gathered from our China research and applies it to every country, allowing the billions of people around the world who are exposed to high air pollution levels to estimate how much longer they would live if they breathed cleaner air," Greenstone said.

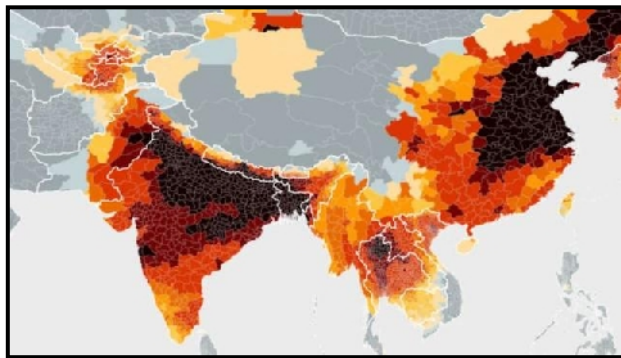
The State of Global Air report 2017, released in February, had claimed that surpassing China, India now accounts for the maximum number of premature deaths from ozone pollution and was second in terms of early deaths due to PM 2.5.

The government had disputed the findings. Late Environment Minister Anil Dave had expressed his reservations on the report and had announced that a study would soon be conducted by the Health Ministry on the issue but it has not yet taken off.

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## **Interactive Map Shows You How Many Years Of Your Life You're Losing To Air Pollution**

*Date: 14-Sep-2017 Source: IFL Science*



Climate change dominates most of the headlines when it comes to our unfortunate addiction to fossil fuels, but air pollution remains as deadly as it ever has been. Millions of people per year die from pollution-linked cardiovascular and respiratory ailments, and now a new map shows you exactly how many years of your life you're losing by breathing in your local particulates and aerosols.

A team of researchers, including those at the Energy Policy Institute (EPIC) at the University of Chicago, wanted to find a strong link between air pollution and life expectancy changes. Using smog-ridden China as a test bed, they found that when everything else is taken into account, such a correlation emerges.

The team looked at PM10, particulates emitted by vehicles and coal-fired power plants alike, whose individual particles are less than or equal to 10 microns in diameter – small enough to easily be inhaled and get lodged in the lungs.

As reported in the Proceedings of the National Academy of Sciences, for every 10 micrograms per cubic meter increase of PM10 in the air, a person will lose seven months from their life expectancy. For the even finer PM2.5, an identical increase shaves an entire year off your life.

With this metric, they developed the Air Quality-Life Index (AQLI), an interactive map which shows how much longer you should be living in a world where the strict air quality standards set in place by the World Health Organization (WHO) were adhered to.

At present, 4.5 billion people (about 60 percent of the global population) are breathing in air that contains PM10 concentrations twice that of what the WHO considers to be safe, and clearly, it's having a dramatic toll on human life.

Here are some of the worst offenders, with respect to the WHO Clean Air Act standards:

India – 4 years lost

China – 3.5 years lost

Pakistan – 2.5 years lost

The Democratic Republic of the Congo – 1.8 years lost

South Africa – 1.4 years lost

Chile – 1.4 years lost

Poland – 1.3 years lost

Indonesia – 0.9 years lost

Italy – 0.7 years lost

These are country averages, but the map also has a few spotlights on cities in China, India and the US. Here are some of the worst offending cities:

Los Angeles – 0.7 years lost

National Capital Territory of Delhi – 9 years lost

Agra – 8.1 years lost

Mumbai (suburbs) – 3.5 years lost

Shanghai – 5.5 years lost

Beijing – 6.4 years lost

Tianjin – 7.1 years lost

Although far from perfect, the US is doing a lot better in this regard than China and India. In Manhattan, for example, New Yorkers are losing almost none of their life to air pollution, thanks to the states strict air quality standards. Conversely, in China, 500 million residents in the north alone will lose 2.5 billion years of combined life expectancy.

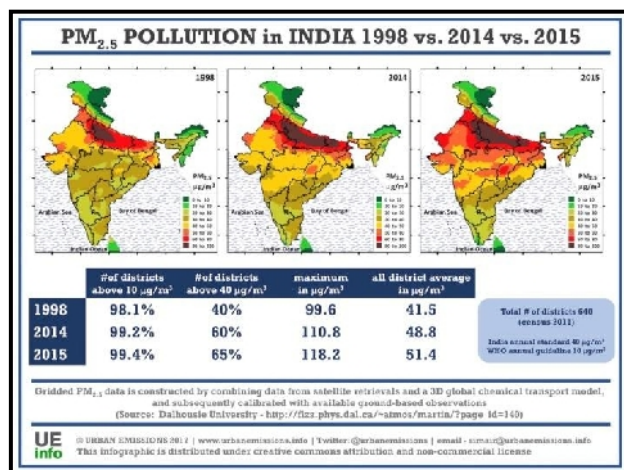
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## **It's About Time We Got Smarter About Monitoring Our Air Pollution**

*Date: 15-Sep-2017 Source: The Wire*

The quality of air in India is bad and is becoming a serious public health issue with huge repercussions to our quality of life and economy. We know this through anecdotal evidence and through the little data on monitoring that trickles down to the public. This limited information is not enough – to formulate policy, to understand seasonal and diurnal variations, to tease out patterns or to calibrate forecasting models. It is





the right of any citizen to have access to information on the quality of air she is breathing – monitoring data that is real-time, reliable and accessible to any citizen.

At present, the only study that estimates particulate pollution for all cities in India is the global burden of disease (GBD) study, which estimates ground level PM<sub>2.5</sub> concentrations for the period 1998-2015. The results paint a bleak picture for India. The number of districts that exceed the annual average standard of 40 µg/m<sup>3</sup> increased from 40% to 65% between 1998 and

2015. The annual average for all India PM<sub>2.5</sub> concentrations increased by 25%.

While the results of the GBD study do fill in this lacuna of information, it is not a substitute for real-time information. These results are obtained through a modelling exercise that combines satellite feeds, emission inventories and historical monitoring data to then estimate ground-based concentrations. Note that satellites neither measure one location nor take ground measurements at all times (orbital satellites create a snapshot of the entire planet every one or two days). These snapshots are interpreted using the global chemical transport models to better represent the vertical mix of these measurements (known as aerosol optical depth). Like any modelling exercise, this data also comes with uncertainty. While this process is very useful in establishing annual trends, these systems are not a substitute for daily on-ground monitoring.

What we need are ground measurements using reference methods approved by the environment ministry. This ensures that the monitoring information is reliable and conforms to the government's standards. Low-cost sensors do provide some information but because many of them are not recognised by the government or are not calibrated accurately, the data they generate cannot be used for policymaking.

The Central Pollution Control Board (CPCB) operates the National Ambient Monitoring Program (NAMP) in India. More than 90% of the stations under NAMP are manually operated, collecting 24-hour averages of key air pollutants (PM<sub>10</sub>, sulphur dioxide and nitrogen dioxide) twice a week to have about 104 observations per site in a year. There are three main drawbacks of these manual stations:

The data is not available for at least 24 to 48 hours after the samples are collected from the stations, The key pollutant measured is PM<sub>10</sub> size fraction – and not PM<sub>2.5</sub> size fraction, which was introduced in 2009 as a 'criteria pollutant' that is directly linked to human health, and Even this limited information is not available in full, because of large gaps in data due to operational issues.

From 2010 to 2017, more than 300 manual stations have been added to the program, bringing the total to over 600. However, we need to leapfrog from manually operated stations to continuous air monitoring systems for more reliable, more traceable, more accessible and more transparent information for real-time data analysis.



In 2003, the CPCB developed a criterion based on regional population size to calculate how many air monitoring stations are recommended for that area. Fourteen years later, the number of stations in operation are far less than their own calculated numbers. As part of an air pollution knowledge assessment program, we studied 20 cities in India to understand the current level of monitoring operations and assess the sources of air pollution. The table below presents a summary of the number of air monitoring stations in the city, a summary of the data from the manual NAMP stations between 2011 and 2015, and a summary of our estimate of the recommended number of continuous monitoring stations in the city.

Chennai, Bengaluru, Kanpur, Agra and Nagpur sample at 25-30% of the recommended capacity. Note that the results depend on where, when and how these measurements are made. However, given what information is available in the public domain:

For PM<sub>10</sub>, the annual average standard is 100 µg/m<sup>3</sup>. All cities, except for Coimbatore, exceed this value. Five out of 20 cities record more than three-times the annual standard. The sources contributing to PM<sub>10</sub> concentrations are everything that burns: coal, kerosene, petrol, diesel, biomass, cow dung, waste and dust.

For sulphur dioxide, the annual average standard is 50 µg/m<sup>3</sup>. All of the cities have sulphur dioxide levels within the standards, with Chennai and Pune recording the highest concentrations. This pollutant is created from the combustion of coal and diesel.

For nitrogen dioxide, the annual average standard is 40 µg/m<sup>3</sup>. Nine of 20 cities exceed this value, with Bengaluru, Chennai, Jaipur, Nagpur, Kanpur and Pune recording the highest concentrations. This pollutant is a by-product of petrol and diesel combustion (i.e., transport related emissions).

Can we afford to upgrade the monitoring program?

As of September, 2017, under the CPCB, there are 74 continuous air-monitoring stations operating in 16 states and 43 cities, with 19 of the latter operating in and around the Greater Delhi region (14 in Delhi and one each in Noida, Ghaziabad, Rohtak, Gurgaon and Faridabad). Most cities have one station to represent the full range of criteria pollutants. This is inadequate because it generates a statistically insignificant sample to represent the city or the range of sources contributing to the pollution problem in the city.

Let us assume, for the sake of feasibility, that we want to upgrade air quality monitoring in 60 cities (those with at least one million population as reported in the 2011 Census and those selected under the SMART cities program). These cities account for about 30% of the national population.

Here are some rough calculations for introducing and operating a continuous air monitoring program for 10 years. These calculations provide an estimate for the probable investment required for the program based on discussions with suppliers and subject to change over time.

The average cost of a continuous air monitoring station (measuring all the criteria pollutants and meteorological parameters) is approximately Rs 1 crore, plus 10% by way of an annual maintenance fee (as reported for a station to be commissioned in Gurgaon in 2017).

Based on our assessment for the 20 cities, we have an average requirement of 25 stations per city, which puts the required number of stations at 1,500 in 60 cities (it is given that a big city like Bengaluru can use >10 stations and a small city like Dehra Dun can use <10 stations). This translates to a required initial investment of Rs 3,000 crore (including 10% annual maintenance fees for 10 years). Cost of infrastructure, personnel and training could be an additional 100% (our guess is that this is on the high side, given that the CPCB already operates over 600 manual stations across these cities with the requisite infrastructure and personnel already in place).

Even if we assume a 50% additional miscellaneous cap on the prices and fees over time, this puts the tab at Rs 7,500 crore for 10 years or, on average, a distributed cost of Rs 12.5 crore per city per year for 10 years. For 60 cities to be environmentally smart and report air pollution and its severity in real time, for 10 years, this is not a big sum. For comparison's sake, the cost of the metro systems under construction and those operational is approximately Rs 100,000 crore in Delhi, Rs 40,000 crore in Bengaluru, Rs 16,000 crore in Hyderabad and Rs 64,000 crore in Chennai.

The Smart City Initiative is a program spearheaded by the Centre, where cities use “smart solutions that provide core infrastructure, give a decent quality of life to its citizens and provide a clean and sustainable environment”. Today, 60 cities have already been selected to participate in this initiative. The total anticipated investment is Rs 144,742 crore, with funds from the Centre and state governments. And monitoring air pollution falls squarely within the idea of this initiative. It is real time information that will provide much-needed direction towards improving the environment in any city. Monitoring is an urgent need – even when sanctioned, it will take some time to set up systems and to get the timeline of data required to map a conducive air pollution action plan. We have the rationale, the technology and the budgets. What then are we waiting for?

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## Commuting by metro? What you need to know about air quality

*Date: 16-Sep-2017 Source: Business Standard*



Four more major Indian cities will soon have their own metro lines, the country's government has announced. On the other side of the Himalayas, Shanghai is building its 14th subway line, set to open in 2020, adding 38.5 km and 32 stations to the world's largest subway network. And New Yorkers can finally enjoy their Second Avenue Subway line after waiting for almost 100 years for it to arrive.

In Europe alone, commuters in more than 60 cities use rail subways. Internationally, more than 120 million people commute by them every day. We count around 4.8 million riders per day in London, 5.3 million in Paris, 6.8 million in Tokyo, 9.7 million in Moscow and 10 million in Beijing.

Subways are vital for commuting in crowded cities, something that will become more and more important over time – according to a United Nations 2014 report, half of the world’s population is now urban. They can also play a part in reducing outdoor air pollution in large metropolises by helping to reduce motor-vehicle use.

Large amounts of breathable particles (particulate matter, or PM) and nitrogen dioxide (NO<sub>2</sub>), produced in part by industrial emissions and road traffic, are responsible for shortening the lifespans of city dwellers. Public transportation systems such as subways have thus seemed like a solution to reduce air pollution in the urban environment.

But what is the air like that we breathe underground, on the rail platforms and inside trains?

#### Mixed air quality

Over the last decade, several pioneering studies have monitored subway air quality across a range of cities in Europe, Asia and the Americas. The database is incomplete, but is growing and is already valuable.

For example, comparing air quality on subway, bus, tram and walking journeys from the same origin to the same destination in Barcelona, revealed that subway air had higher levels of air pollution than in trams or walking in the street, but slightly lower than those in buses. Similar lower values for subway environments compared to other public transport modes have been demonstrated by studies in Hong Kong, Mexico City, Istanbul and Santiago de Chile.

#### Of wheels and brakes

Such differences have been attributed to different wheel materials and braking mechanisms, as well as to variations in ventilation and air conditioning systems, but may also relate to differences in measurement campaign protocols and choice of sampling sites.

Key factors influencing subway air pollution will include station depth, date of construction, type of ventilation (natural/air conditioning), types of brakes (electromagnetic or conventional brake pads) and wheels (rubber or steel) used on the trains, train frequency and more recently the presence or absence of platform screen-door systems.

In particular, much subway particulate matter is sourced from moving train parts such as wheels and brake pads, as well as from the steel rails and power-supply materials, making the particles dominantly iron-containing.

To date, there is no clear epidemiological indication of abnormal health effects on underground workers and commuters. New York subway workers have been exposed to such air without significant observed impacts on their health, and no increased risk of lung cancer was found among subway train drivers in the Stockholm subway system.

But a note of caution is struck by the observations of scholars who found that employees working on the platforms of Stockholm underground, where PM concentrations were greatest, tended to have higher levels of risk markers for cardiovascular disease than ticket sellers and train drivers.

The dominantly ferrous particles are mixed with particles from a range of other sources, including rock ballast from the track, biological aerosols (such as bacteria and viruses), and air from the outdoors, and driven through the tunnel system on turbulent air currents generated by the trains themselves and ventilation systems.

### Comparing platforms

The most extensive measurement programme on subway platforms to date has been carried out in the Barcelona subway system, where 30 stations with differing designs were studied under the frame of IMPROVE LIFE project with additional support from the AXA Research Fund.

It reveals substantial variations in particle-matter concentrations. The stations with just a single tunnel with one rail track separated from the platform by glass barrier systems showed on average half the concentration of such particles in comparison with conventional stations, which have no barrier between the platform and tracks. The use of air-conditioning has been shown to produce lower particle-matter concentrations inside carriages.

In trains where it is possible to open the windows, such as in Athens, concentrations can be shown generally to increase inside the train when passing through tunnels and more specifically when the train enters the tunnel at high speed.

Although there are no existing legal controls on air quality in the subway environment, research should be moving towards realistic methods of mitigating particle pollution. Our experience in the Barcelona subway system, with its considerable range of different station designs and operating ventilation systems, is that each platform has its own specific atmospheric micro environment.

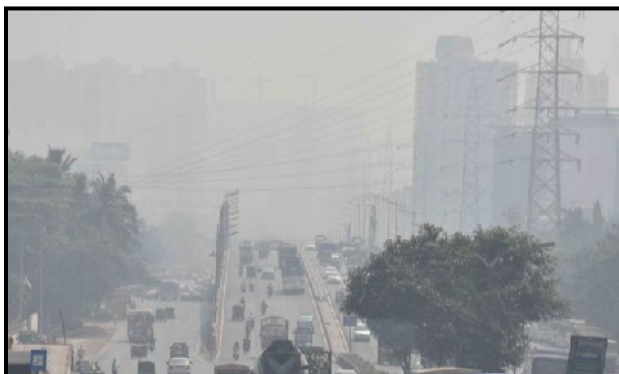
To design solutions, one will need to take into account local conditions of each station. Only then can researchers assess the influences of pollution generated from moving train parts.

Such research is still growing and will increase as subway operating companies are now more aware about how cleaner air leads directly to better health for city commuters.

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## Mumbai's air quality was second worst in the country last year: CPCB

*Date: 17-Sep-2017 Source: Hindustan Times*



The air you were breathing all of last year was the second-most polluted in the country, according to a 10-city air quality study by the Central Pollution Control Board (CPCB).

The study looked at the air quality annual average levels between 2013 and 2016 for sulphur dioxide, nitrogen dioxide, and particulate matter (PM10, PM2.5 — small pollutants less than 10 microns

and 2.5 microns that can easily enter our lungs and cause ailments).

While Delhi ranked first with the worst pollution levels for PM10 (268 microgram per cubic metre -  $\mu\text{g}/\text{m}^3$ ) and PM2.5 (111  $\mu\text{g}/\text{m}^3$ ), Mumbai ranked second for PM2.5 (72  $\mu\text{g}/\text{m}^3$ ) and third for PM10 (155  $\mu\text{g}/\text{m}^3$ ) after Jaipur (180  $\mu\text{g}/\text{m}^3$ ) in 2016. The annual average safe limit for PM10 is 60 $\mu\text{g}/\text{m}^3$  and 40 $\mu\text{g}/\text{m}^3$  for PM2.5.

Pune's air had the highest concentration of sulphur dioxide (SO<sub>2</sub>) at 26  $\mu\text{g}/\text{m}^3$  and nitrogen dioxide (NO<sub>2</sub>) at 73 $\mu\text{g}/\text{m}^3$  in 2016 owing to large number of vehicles (mostly two-wheelers) and industries in and around the city, said CPCB officials. The annual average safe limit for SO<sub>2</sub> is 20 $\mu\text{g}/\text{m}^3$  and NO<sub>2</sub> is 30 $\mu\text{g}/\text{m}^3$ .

PM10 levels at all 10 cities were above permissible standards while PM2.5 levels were above safe limits at five of the 10 cities including— Bangalore (60 $\mu\text{g}/\text{m}^3$ ), Hyderabad (54 $\mu\text{g}/\text{m}^3$ ) and Kolkata (68 $\mu\text{g}/\text{m}^3$ ) – apart from Mumbai and Delhi.

“The country faces a serious pollution problem when it comes to particulate matter, primarily dust pollution, which gets aggravated during the winter months,” said A Sudhakar, member secretary, CPCB. “Our analysis in 2017 so far under the National Air Quality Monitoring Programme (NAMP) has found that 94 cities in India have pollution levels for PM10 above safe limits, 16 cities above safe limits for PM2.5 and five cities for NO<sub>2</sub>. Delhi, Mumbai, Kolkata and Bangalore, are four cities that factor in all three categories.”

The cleanest air last year was recorded in Chennai with the lowest levels for all four pollutants, the comparative study found. “Meteorological factors play a significant role in dispersing pollutants in these cities. Chennai has lesser number of vehicles as compared to other megacities and high wind speed that allows faster dispersion. However, a city like Mumbai, which has similar weather conditions is not able to sustain clean air during winters because of the sheer volume of vehicles and high construction activity,” said Sudhakar.

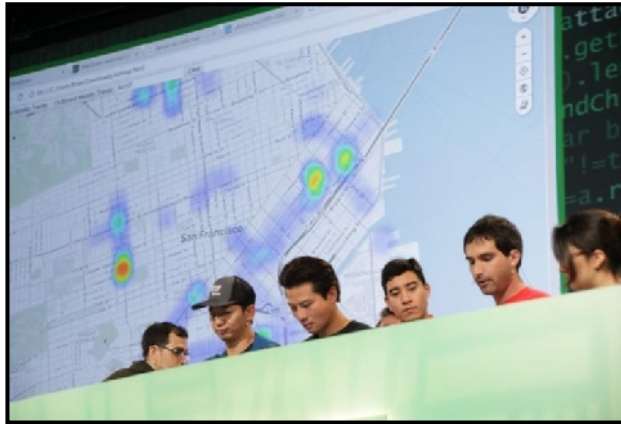
He also added that to find a faster solution to the pollution problem, the central government needs to sensitise citizens rather than pass resolutions and restrictions. “We need to move in a uniform direction as a society, work alongside the government and accept that India faces a serious threat from pollution. As a vibrant society, we like to celebrate festivals such as Diwali using firecrackers and are used to road dust on our city streets. At the same time, the government needs to develop policies taking the public into consideration to tackle this issue,” said Sudhakar.

India and China had the largest number of deaths owing to PM2.5 in 2015, a 2017 Lancet study had found. India ranked the second-highest in the world — 133.5 deaths per 1,00,000 people in 2015.

Scientists from CPCB said that a 10-city source apportionment study for pollution levels was underway and will be published in 2018. “Apart from vehicular pollution and construction dust, road dust from paved and unpaved roads is a major source of particulate pollution. During winters, landlocked and coastal cities are bearing the brunt of open burning and during summers fires at landfills are reducing the air quality,” said D Saha, additional director and in-charge of air quality monitoring, CPCB.

## Air Map helps you navigate your city through the best air quality spots

*Date: 17-Sep-2017 Source: Tech Crunch*



If you've walked down 4th Street in San Francisco these days, you've probably been hit with a massive dust cloud from all the construction — and seen a bunch of people trying to breathe through their shirts or covering their mouths.

Air quality is a huge issue these days and zeroing in on the worst spots in the city is probably one of the best things you can do to figure out how to dodge those kinds of zones. But instead of just memorizing those spots, a hack at TechCrunch Disrupt SF 2017 called Air Map is looking to help

figure out those spots that are the worst. Using Arduino quality sensors, Air Map can deploy a network that can figure out parts of the city with the best air quality so you can figure out the best way to get to and from work every day.

“We believe this kind of system would be more powerful in the future,” Brian Cottrell, one of the developers on the project and an engineer at DirecTV, explained. “As more progress is made on reducing air pollution, it becomes more difficult to make further progress. You can take care of all the easy problems, and then you're left with more difficult ones. You still have to get people from one place to another.”

It's partially inspired by some of the air quality problems in China, where there's a bit of a competitive incentive to try to improve the air quality in cities, Shinae Hong said. Hong's team put the hack together in 24 hours at the hackathon this weekend — so, of course, it's just a small project right now.

“Between government and government, they compete with each other to do better,” Hong said. “By installing the sensor in transportation, you can see in real time which locations have better air quality. They can regulate the manufacturing or any creepy stores burning garbage, so they can tune the law and enforce it.”

Still, it's a problem that's important to both of them and the rest of the people that worked on it. Hong and Cottrell say there's an opportunity to help with city planning, where it can figure out where people are coming and going in order to determine ways to improve the air quality in local areas.

“I think it's good to have this kind of system in place, and I think right now people are still focused on the easier challenges to solve,” Cottrell said. “They are working on older cars and things that are a little more obvious. This is a good framework for future fine-tuning cities to upgrade efficiently and get those air quality readings down even further. Between everyone, there'll always be some work going on.”

## India's top doctors on mission to tackle air pollution

*Date: 17-Sep-2017 Source: Deccan Chronicle*



New Delhi: To have a cleaner and safer environment, top medical experts, with different specialities across the country, came together on Saturday, for an inaugural meeting, to form a body known as Air Pollution Institute of Research (AIR) Council in Mumbai.

The platform is to establish the urgency of the impact of air pollution in India. The council aims to define and establish the need of recognising the health hazards of air pollution as a clinical issue and formulate a framework on how the common man can protect himself, his family and the community from its ill-impacts.

After a detailed discussion on the matter, the council will release a white paper based on their research and knowledge, formulate a structure for clinical conversation (for disease diagnosis) and come up with preventive solutions.

They will update about the do's and don'ts that can be adapted by people across the globe. The council aims to educate and enable both doctors as well as common man.

The AIR Council chaired by Dr. Ashok Mahashur, constitutes eight founding members from different parts of the country. According to WHO, 92 percent of the world's population lives in places where air quality levels exceed the actual limits. Almost one in four deaths of children under five years of age is attributed to polluted environment.

According to a recent WHO report, as many as 1.2 million deaths take place every year due to air pollution with Delhi being India's most polluted city. These alarming facts create an urgent need for an initiative like this to help humans cope with the effects of the situation at hand.

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## Beijing adopts tougher set of protocols to deal with air pollution

*Date: 18-Sep-2017 Source: Straits Times*

BEIJING (CHINA DAILY/ASIA NEWS NETWORK) - Work at construction sites in Beijing, including demolition and outdoor earthwork, which may generate dust, will be suspended from Nov 15 to March 15, the entire heating season.

The announcement of that ban follows the capital releasing its fifth emergency response protocols for air pollution last Friday (Sept 15), lowering the bar for manufacturing restrictions, amid other strict controls to tackle air pollution.





Compared with the previous four versions, released since 2012, the latest protocols reflect the trend towards tighter controls on polluters.

For example, for the first time, some construction work, such as spraying and painting, will now be banned when the lowest level air pollution alert, blue, is issued. These are the first compulsory measures for blue alerts.

In Beijing and other Chinese cities, the air pollution emergency response system has four

levels, from blue - the lowest - through yellow and orange to red. Each generates a set of responses, such as school suspensions and manufacturing and vehicle restrictions.

The revised protocols restrict production at some plants during yellow alerts to cut airborne pollutant emissions. Such restrictions previously began with orange alerts.

The emergency response system has been posted on the municipal government's website and took effect last Friday.

The criteria for red alerts have been reduced to a forecast of an average air quality index of 500 in a day. Previously, that level had to continue for at least one more day.

Red alerts generate the strictest controls. During the red alert issued in Beijing on Dec 16, which continued for five days, production was stopped at more than 700 plants and reduced at some 500 others. More than half the vehicles in the city were barred from the roads.

"The tough controls to cut emissions proved workable in lowering the peak of the pollution," said researcher Chai Fahe at the Chinese Research Academy of Environmental Sciences, adding that they cut the emissions by more than 30 per cent.

The Ministry of Environmental Protection has required joint controls including coordinated emergency responses against air pollution in the Beijing-Tianjin-Hebei region in winter.

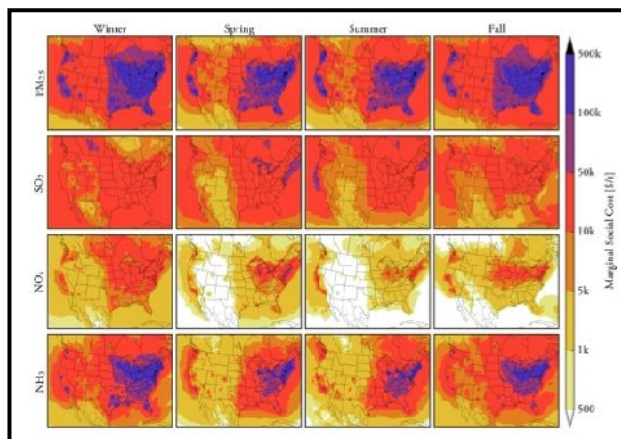
By the end of the year, the concentration of PM2.5 - particulate with a diameter of less than 2.5 microns - should be lowered to 60 micrograms per cubic meter, according to the city's Bureau of Environmental Protection.

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## Researcher wants to put the power to model air pollution into your hands

*Date: 19-Sep-2017 Source: PHYS ORG*

When we talk about studying air pollution, we typically think of official government agencies and university labs, measuring particles and tracking wind speed – and with good reason. Until very recently, modeling the movement of pollution in the air required very complex calculations – models that often



took days and even weeks to run. But air quality affects everyone: not just governments and universities, but average citizens, children, pets. At Carnegie Mellon, CEE/EPP Professor Peter Adams is working to make sure that everyone who is affected by air pollution has the tools they need to understand the quality of their air.

Adams' lab is one of these university labs that creates complicated air quality models, called Chemical Transport Models (CTMs) that can take an inordinate amount of time to run, but are

extremely comprehensive and accurate. This is due to the many necessary inputs, such as a very detailed description of the 3-D meteorology for the time in question, the emissions of all pollution emitters in the surrounding area, and much more.

"Doing one of these requires both a lot of expertise and a lot of time," says Adams. "These are the gold standard models, but the days or weeks of computer time is not even the big cost. The big cost is it takes months to prepare the inputs, and then months to analyze the data. It's definitely not user-friendly."

US regulations require CTMs to be run in certain cases. For instance, when the EPA rolls out a major regulation, they have to do very detailed modeling to prove the environmental benefits. The EPA has in-house capabilities to run these models. But the responsibility of compliance with EPA regulations falls to the states. When an area is found to not be in compliance with EPA regulations, it falls to the states to come up with a State Implementation Plan, to show how they are going to bring their emissions in line with regulations. What this means is that there is a whole category of researchers and decision makers who care about air quality, but are unable to run one of these models.

"This is the gap we're trying to address," says Adams. "We've built what we call a Reduced Complexity Model that gives essentially the same answer, and it requires no expertise to run. In some cases, it's as simple as multiplying two numbers. Just tell me where and how much you're increasing the emissions of a certain pollutant, and you can basically look up in a table how that will effect human health."

The tool is known as EASIUR: Estimating Air-pollution Social Impact Using Regression. Imagine you emit a ton of a certain pollutant—be it SO<sub>2</sub>, NO<sub>x</sub>, or Ammonia. The human health effects will be very different depending on not only the pollutant you emit, but also where you emit, both due to the atmospheric chemistry of the area and the population density. EASIUR is based on extensive models run in Adams' lab, which have modeled the entire country, broken up into 36-kilometer grids. Using a combination of simulations and statistics, Adams, along with Ph.D. student Jinhyok Heo, has been able to develop a simple, user-friendly table—something that would take a modern computer processor approximately 6,000 years to accomplish. This table can tell you what the human health damages will be if you emit X amount of pollutant in a certain location—not only at the site of emission, but downwind as well.

"Take Pittsburgh Port Authority, for instance," he says. "Some of our buses are old, relatively dirty diesels. Wouldn't it be nice if they could actually have defensible numbers to say, 'If I replace an old bus

with a cleaner one, the NOx emissions go down, and this many lives will be saved." Then, they can use this data to sell the idea of switching to a cleaner bus model. This is the kind of application that EASIUR is perfect for."

Thanks to Adams new, easy-to-use modeling tool, everyone who is affected by the negative health effects of air pollution will be able to have access to the information necessary to address the problems, without having to sacrifice accuracy.

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## Tragedy spurs young researcher's air pollution fight

*Date: 21-Sep-2017 Source: New Zealand Herald*



When his parents died, a young Egide Kalisa was told "normal diseases" were to blame.

He's since learned the truth: respiratory disease, fuelled by indoor air pollution in his Rwandan home city of Kamembe, had more likely taken his mother and father.

Their deaths were probably caused by wood-fired cooking and heating in poorly ventilated houses.

The tragedy made Kalisa recognise air pollution - from sources ranging from car exhausts to industrial emissions - as a threat to humanity, and one that's becoming more critical each year.

Unless the world tackles climate change, deaths caused by air pollution are expected to increase by about 60,000 globally by 2030 - and 260,000 by 2100.

Now studying toward a PhD at the Auckland University of Technology, the 27-year-old has made it his mission to tackle the problem.

As the planet marks World Car Free Day tomorrow - agencies around New Zealand are encouraging vehicle commuters to take the bus or train instead - Kalisa has shared research revealing how car-less days quickly halved air pollution levels in one Rwandan city.

After losing his parents, Kalisa lived with his sister and brother, who weren't much older, and the family were forced to raise themselves.

"I became curious about my parents' death when I started high school - I would always search information on respiratory diseases, because of the pain I felt that my parents had died from it," he said.

"I found that air pollution is a major environment-related health threat to humans and a risk factor for both acute and chronic respiratory disease - and in doing so, I discovered what I really want to do in life.

"I often found myself asking the question 'why not me?' after losing my parents - I took the view that if others could achieve something, then I could too, and was fortunate in my schooling."

After gaining a scholarship from the Rwandan government, Kalisa studied air pollution at university, travelled across the world, became an assistant lecturer, and won the Commonwealth Scholarship, which brought him to AUT.

Today, he's assessing urban aerosols in New Zealand and Rwanda, in the hope his findings will help his home country's government combat air pollution.

Around Auckland, Kalisa has been measuring key air pollutants PM<sub>2.5</sub> and PM<sub>10</sub>, and testing them for polycyclic aromatic hydrocarbons (PAHs) and their nitrated derivatives (NPAHs), which are one of the most studied families of organic compounds, given their proven carcinogenic effects on humans.

To investigate what pathogenic microorganisms also lurk in Auckland's air, he's collected data for biological aerosols, building a new methodology in the process.

While his findings showed Auckland had relatively low levels of PM<sub>2.5</sub> and PM<sub>10</sub> compared with other international centres, that didn't mean the city was clean.

Heating and heavy traffic brought a high concentration of NPAHs, especially in winter.

However, with its limited amount of heavy industry, coastal location, strong winds and isolation from other continents, Auckland could boast relatively good air quality, he said.

Back in Rwanda, his research revealed a 56 per cent drop in air pollution during the country's car free days, which its government had originally brought in to encourage exercise.

In Kigali city, air quality improved just 48 hours after a car-free day.

Rwandan officials have asked for his report and recommendations; he plans to present his Auckland findings at upcoming conferences.

"Governments should invest in air pollution research and recognise that we need to take steps to be part of the solution and not part of the air pollution problem," he said.

"As Rwanda and New Zealand grow, maintaining a healthy population with clean air will be an increasing challenge.

"And with vehicle emissions having been found to be major contributors of PM<sub>2.5</sub> and PM<sub>10</sub> in Kigali and Auckland city, our governments should take steps to improve the public transport, and promote walking and cycling."

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## **Air Quality Of Delhi Better Than Last Year, Says Government**

*Date: 21-Sep-2017 Source: NDTV*

This year, the volume of particulate PM 2.5 and PM 10, which are ultrafine particulates, have ranged between 200-100 and 300-200 micrograms per cubic metre (ug/m<sup>3</sup>), according to official data.



NEW DELHI: The air quality of Delhi has so far been "relatively better" compared to last year, the Delhi government today said, a day after the Supreme Court-appointed EPCA pulled up the NCR states for not doing enough to prevent a potential spike in pollution during the upcoming winter.

This year, the volume of particulate PM 2.5 and PM 10, which are ultrafine particulates, have ranged between 200-100 and 300-200 micrograms

per cubic metre (ug/m<sup>3</sup>), according to official data.

The corresponding safe standards are 60 and 100. In 2016, the average volume of these particulates were 500-200 and 300-100 between January and September.

However, the government did not specify any reason behind the comparatively better situation recorded so far.

The figures were reviewed during a meeting of environment department officials and scientists of the Delhi Pollution Control Committee (DPCC) here today.

The panel is also mulling over a proposal to roll out measures under the "very poor" category of the Graded Response Action Plan (GRAP) from September 25, instead of the scheduled October 15, in view of Delhi hosting a few matches of the U-17 FIFA World Cup.

During the meeting, which was presided over by Environment Minister Imran Hussain, preventive measures being taken to arrest a possible spike in pollution levels during the upcoming U-17 FIFA world cup and Diwali were discussed.

A senior government official, on condition of anonymity, said the picture has indeed been better this year, but air quality will start deteriorating from October due to rapid fall in temperature and burning of paddy straw in neighbouring Punjab and Haryana.

A host of measures under the very poor category of the GRAP, which was drawn up by the Central Pollution Control Board (CPCB) and is being implemented by the EPCA, including the closure of the Badarpur thermal power plant, are scheduled to come in force on October 15.

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## **New study shows air pollution may be causing kidney disease in the US**

*Date: 21-Sep-2017 Source: CNBC*

Add kidney disease to the list of health problems associated with air pollution.



A team of scientists from Washington University in St. Louis and the Veterans Affairs St. Louis Health Care System found an association between tiny particulate matter and kidney disease in two different data sets.

The scientists compared Veteran Affairs data on kidney disease with data on air pollution from two separate sets: satellite data from NASA and information from the Environmental Protection

Agency.

Their study consistently found that risk of kidney disease rose along with air pollution levels across the continental United States.

As might be expected, many of the areas of the U.S. at greatest risk tend to be more heavily populated. The part of the country with the lowest risk overall is a section that runs roughly from Montana through West Texas. There are pockets of lower-risk areas in other places, but much of California and the Eastern half of the United States are more vulnerable.

The scientists published their results Thursday in the *Journal of the American Society of Nephrology*.

It is important to note that this only found an association with air pollution — the study did not conclusively determine pollution to be the cause of kidney disease.

But the fact that the study found the association in both the EPA data set and the NASA data set is compelling, said Dr. Ziyad Al-Aly, a senior author on the study and an assistant professor of medicine at Washington University, in a statement.

"The beauty of using both EPA and NASA data is that the agencies used two distinct techniques for collecting data, yet the results were similar," he said. "This constellation of findings suggests that chronic exposure to air pollution is a significant risk factor for the development and progression of kidney disease."

The study focused on a type of pollution called PM 2.5, which is particulate matter up to 2.5 microns in size. This particular form of pollution can come from myriad sources, including vehicle emissions, fossil fuel power plants, wildfires or even campfires.

Scientists say the particles can enter the bloodstream once they are breathed into the lungs.

Air pollution has been linked to health problems as varied as cardiovascular disease, diabetes and weight gain. The study's authors say that one of those conditions could be responsible for kidney damage, rather than the pollution itself.

They also noted that the population they studied was mostly older white male military veterans, so the results might not apply to other populations. The scientists tried to account for confounding factors, but there could still be additional variables, such as diet or genetics, or even other environmental factors such as exposure to heavy metals.



But the data show a clear association.

"In our analyses, the risk of chronic kidney disease and its progression was most pronounced at the highest levels of fine particulate matter concentration," Al-Aly said in the release. "This suggests further study is needed for a broader assessment of the global burden of kidney disease attributable to air pollution."

Air quality has improved in the United States in recent decades, but Al-Aly pointed out that there is no safe level of exposure to PM 2.5; even low levels can increase risk.

Other parts of the world have serious problems with hazes of pollution. China has even had to essentially shut down entire cities for days at a time. Just breathing Beijing's air might be as bad as smoking 40 cigarettes a day.

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## Air pollution is bad for our kidneys

*Date: 22-Sep-2017 Source: Futurity*



Air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, new research suggests.

Outdoor air pollution has long been linked to other major health conditions such as heart disease, stroke, cancer, asthma, and chronic obstructive pulmonary disease.

The researchers culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

The EPA derived its data from land-based air-monitoring stations across the US. The findings suggest that 44,793 new cases of kidney disease and 2,438 new cases of kidney failure may be attributed to levels of air pollution that exceed the EPA's threshold of 12 micrograms per cubic meter of air, which is the highest level of air pollution considered safe for the public, as set by the Clean Air Act of 1990 and updated in 2012.

"Data on the relationship between air pollution and kidney disease in humans has been scarce," says Ziyad Al-Aly, the study's senior author and an assistant professor of medicine at Washington University in St. Louis. "However, once we analyzed the data, the link between air pollution and the development of kidney disease was clear."

Fine particles can damage the kidneys in the same way they damage other organs such as the heart and lungs. Airborne and invisible, microscopic pieces of dust, dirt, smoke, soot and liquid droplets often become destructive when they invade the bloodstream. The kidneys filter the blood, and these harmful particles can disrupt normal kidney function.



The study found that even low levels of particulate matter may adversely affect the kidneys. And those adverse effects increase as pollution levels increase.

“The higher the levels of air pollution, the worse it is for the kidneys,” says Al-Aly, who is also the Veterans Affairs’ director of clinical epidemiology in St. Louis. “However, no level is completely safe. Even at relatively low levels, there was a relationship between particulate matter concentrations below the EPA thresholds and kidney disease.”

Researchers also linked the VA data to space-borne sensors from NASA satellites. “NASA data and EPA data yielded consistent results,” Al-Aly says.

“The beauty of using both EPA and NASA data is that the agencies used two distinct techniques for collecting data, yet the results were similar,” he says. “This constellation of findings suggests that chronic exposure to air pollution is a significant risk factor for the development and progression of kidney disease.”

Study results placed Southern California and large regions in the South, Midwest, and Northeast at the greatest risk for kidney decline attributed to air pollution.

Over the years, unsafe levels of outdoor air pollution have decreased in the United States. Still, more than half of the US population lives in areas—from industrialized big cities to farming communities to coal-mining towns—with unhealthy levels of outdoor air pollution, according to a 2016 study by the American Lung Association.

In many places across the globe, including China and India, outdoor air pollution is significantly worse than in the US.

“In our analyses, the risk of chronic kidney disease and its progression was most pronounced at the highest levels of fine particulate matter concentration,” Al-Aly says. “This suggests further study is needed for a broader assessment of the global burden of kidney disease attributable to air pollution.”

The study appears in the *Journal of the American Society of Nephrology*.

The US Department of Veterans Affairs funded this research

Source: Washington University in St. Louis

Original Study DOI: 10.1681/ASN.2017030253

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## **Auto LPG more promising in curbing air pollution: IAC**

*Date: 22-Sep-2017 Source: Money Control*

"The number of premature deaths in India stood at 11 lakh in 2015 because of air pollution, a recent study by an American institute found. There was about 50 per cent increase in premature deaths in India between 1990 and 2015 because of toxic air quality," IAC said in a statement.



As concerns over smog and its harmful affects reappear with the approaching winter, the government should encourage the use of cleaner fuel options like LPG in vehicles while minimising the use of petrol and diesel, Indian Auto LPG Coalition (IAC) has said.

"The number of premature deaths in India stood at 11 lakh in 2015 because of air pollution, a recent study by an American institute found. There was

about 50 per cent increase in premature deaths in India between 1990 and 2015 because of toxic air quality," IAC said in a statement.

Another recent report by Greenpeace, which assessed the state of air quality in 168 cities in India, found that none of the cities complies with air quality standards prescribed by World Health Organisation (WHO).

It also says fossil fuels, particularly petrol and diesel, are the main reasons for the deteriorating air quality across the country.

"The national capital was covered with a thick blanket of smog last Diwali with young children being the most badly affected. As winter approaches again, we realise we have not done anything to alleviate the situation," said Suyash Gupta, Director General, IAC.

Stating that a solution for the deteriorating air pollution has to be found, he said many countries have switched to gaseous fuels CNG and LPG, including some in Asia.

In Turkey, 40 per cent of all private cars run on Auto LPG.

LPG as a fuel in automobiles is cleaner than compressed natural gas (CNG) and is easier to handle.

"Need of the hour is to make informed fuel choices for our vehicles so that we do not choke our cities and imperil the health of the younger generation," IAC said.

While the government is pushing for electric vehicles to check pollution, the infrastructure for the same will take some time to develop.

Auto LPG can reduce vehicular pollution and about 500 cities have auto LPG filling stations. Other cities can also be brought under the ambit instantaneously as the fuel can be transported easily and does not require pipelines and other infrastructure.

"Auto LPG emits up to 120 times lesser particulate emissions than diesel vehicles, 96 per cent lesser nitrogen dioxides (NOx) than diesel and 68 per cent lesser NOx than petrol," the statement said.

## Improvements In Air Pollution Offer Concrete Benefits In Terms Of Longer Lives: Michael Greenstone

*Date: 22-Sep-2017 Source: Business World*



As India balances, the urgent need for robust economic growth with the urgent need for public health, the AQLI provides a concrete measure of the benefits of reducing particulate air pollution in terms of longer lives

Last week, a study on the impact of air pollution on life expectancy was undertaken by Michael Greenstone, the Milton Friedman Professor in Economics, the College, and the Harris School, as well as the Director of the Energy Policy Institute at the University of Chicago. A tool was also

released by the organization called the Air Quality-Life Index (AQLI) which translates particulate air pollution into its impact on a person's lifespan for every country. The tool finds that if India reduced its air pollution to comply with its national standards, its people could live more than 1 year longer, or a combined more than 1.6 billion life years. If the country complied with the more stringent World Health Organization's air quality standard, its people could live 4 years longer, or a combined more than 4.7 billion life years.

In an exclusive interview with BW Businessworld, Michael Greenstone discusses the study and the AQLI, elaborating on suggestions to improve air quality and increase life expectancy. Edited excerpts:

1) What are the key findings of the study on the impact of air pollution on life expectancy?

The study has identified a credible way to measure the causal effect of long-run exposure to particulate air pollution on life expectancy, at the pollution levels that several billion people around the world (including in India and China) face. It estimates that a 10  $\mu\text{g}/\text{m}^3$  increase in sustained exposure to airborne particulate matter reduces life expectancy by 0.6 years. These results indicate that particulates are the greatest current environmental risk to human health.

2) How does the Air Quality Life Index (AQLI) tool work in translating the impact of particulate air pollution on a human's lifespan for every country?

The AQLI combines grid-level estimates of population and pollution with the study's estimated effect of particulate matter exposure on life expectancy. This grid-level approach allows us to estimate life years saved by meeting WHO or national standards at different administrative levels for each country (e.g. districts in India) as well as for the entire country itself. More information about the data generating process for the AQLI can be found in the Data & Methodology section at the bottom of the AQLI's web page.

3) What are the some of the suggestions in improving air quality to increase life expectancy?

Naturally, India is searching for the best way to balance the dual and, at times, conflicting goal of economic growth and a clean environment. The study highlights that improvements in air pollution offer concrete benefits in terms of longer lives. However, in too many instances, current policy imposes significant costs on industries without receiving sufficient pollution and health benefits. The least costly way to gain these health improvements is to pursue market-based regulatory approaches, like cap-and-trade for particulates that is built upon a foundation of reliable monitoring of industries. There are great opportunities for India to pursue regulatory policies that reduce air pollution, extend lives, and decrease the regulatory burden on industries.

4) How will compliance with national standards of air quality improve the quality of life for people?

Concentrations of particulate matter would be roughly 20% lower if India met its own national air quality standard, and would likely result in substantial short- and long-term health benefits. The findings of our study indicate that Indians would live about 1.3 years longer, on average, if its air quality standards were met. Other studies focusing on short-term benefits of lower particulate matter concentrations have found reductions in respiratory hospital admissions, mortality, and incidence of respiratory symptoms.

5) What is the difference between the national standard for air quality and WHO's standards for air quality?

India's national PM<sub>2.5</sub> standard is 40 µg/m<sup>3</sup>, whereas the WHO air quality guideline is 10 µg/m<sup>3</sup>. The WHO assigns such a low standard precisely because small particulate pollution have been shown to have negative impacts on health even at very low levels.

6) How was the AQLI built by employing a unique social setting in China?

The China study found that people living to the North of the Huai River, relative to people South of the river, face PM<sub>10</sub> concentrations that are about 42 micrograms per cubic meter higher and live 3.1 years less. Together these findings indicate that an additional 10 micrograms per cubic meter of PM<sub>10</sub> reduce life expectancy by 0.6 years. We then apply this relationship to global particulate air pollution data, including data from India.

7) What are the challenges and threats faced due to deteriorating air quality?

Without proper control mechanisms in place, India's rapid economic growth and urbanization will be accompanied by a continued deterioration in air quality, and in turn, a further reduction in life expectancies. At the same time, current policies have imposed significant costs on industries with too few pollution and health benefits. Market-based regulatory approaches, such as cap-and-trade policies, can both lower the cost of reducing air pollution and help India balance its growing demand for energy with its public health goals.

8) What is the applicability of the AQLI tool in the Indian context?

As India balances, the urgent need for robust economic growth with the urgent need for public health, the AQLI provides a concrete measure of the benefits of reducing particulate air pollution in terms of longer lives. In contrast to most previous work, the study's context (China) is particularly well suited for

extrapolation to India because of the similarities in the countries' pollution levels and economic conditions.

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## **Car Free Day ineffective in reducing air pollution: Committee**

*Date: 23-Sep-2017 Source: The Jakarta Post*



Jakarta's Car Free Day, which has been implemented for 15 years, is considered ineffective in efforts to reduce air pollution in the city.

Committee for the Phasing Out of Leaded Fuel (KPBB) executive director Ahmad Safrudin said that while Car Free Day had helped reduce air pollution along Jl. MH Thamrin and Jl. Jenderal Sudirman, air pollution had increased in other areas of the city.

"The air pollution might reduce around Sudirman, but it increased significantly in Casablanca because during Car Free Day as people who usually traveled via Sudirman-Thamrin were rerouted to Casablanca," Safrudin said as quoted by *kompas.com* in Jakarta on Friday.

He said Car Free Day was aimed at reducing people's dependence on private vehicles; however, unlike in Singapore, Bangkok in Thailand and other cities in Europe, it did not work.

"Few people in Jakarta are willing to use bicycles or switch to public transportation," Safrudin said.

The Jakarta Environment Agency's environment laboratory head, Diah Ratna Ambarwati, said there was a significant difference in air pollution levels during Car Free Day and normal days.

"During Car Free Day, air pollution is reduced by almost 70 to 80 percent," Ambar said.

She said that in 2015, air pollution during Car Free Day declined by 75 percent. The pollution level declined 65 percent in 2016 amid increased construction activity in Jakarta and the increased use of private vehicles in the city. (dis/ebf)

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## **From air pollution to pesticides, scientists are hunting for environmental causes of autism**

*Date: 23-Sep-2017 Source: Scroll*

If you look just at the numbers, you might think autism rates are spiraling out of control. The rates seemed high enough at one in 150 in 2000, when public health officials started tracking a steady rise in



the syndrome in the United States. And by the time estimates finally flatlined in 2012 at one in 68, many parents had embraced unfounded theories blaming vaccines for an autism “epidemic,” helping to fuel outbreaks of measles and other once rare diseases.

Experts, however, attribute most of the upsurge to increased awareness, better access to services,

and expanded criteria to diagnose the neurodevelopmental syndrome, which is characterised by restricted interests or behaviors and problems with communication and social interactions.

Autism is remarkably diverse, encompassing a wide spectrum of disabilities and gifts. “If you’ve met one child with autism,” parents and clinicians like to say, “you’ve met one child with autism.” That heterogeneity, which also includes a range of physical ailments, has made the search for autism’s causes a daunting task.

Most studies have focused on genes, and suggest that hundreds of gene variants may increase risk. So-called copy number variations, which include long stretches of duplicated or deleted DNA that can alter gene expression, appear especially common in autism.

Clear evidence of autism’s genetic roots came when a 1977 study showed that identical twins, who share the exact same genome, were far more likely to also share an autism diagnosis than fraternal twins. We now know that a younger sibling of a child diagnosed with autism faces a higher risk of developing the condition than other children. But twins also share the same environment, including the womb. And that shared environment, as a 2011 study of twin pairs reported, appears to play a greater role than previously appreciated.

One way environmental factors might influence autism risk is by changing “epigenetic factors” – proteins and other molecules that affect the way genes are expressed without changing the DNA sequence. Such factors, which are critical for normal brain development, respond to diverse exposures in the environment, from endocrine disruptors to folic acid in the diet.

Scientists hope that by identifying genes or genetic profiles that increase susceptibility to specific environmental exposures they’ll be able to find ways to alleviate disabling aspects of autism. But the science is “really just beginning,” says Lisa Croen, director of the Autism Research Program at Kaiser Permanente Division of Research. What causes autism, and how environmental agents interact with genetic and epigenetic factors to increase risk, remains an open question.

### Casting a Wide Net

Multiple factors likely interact to cause any one child’s likelihood of developing autism. And though scientists agree that genetic and environmental factors both play a role, genetics research has far outpaced work on environmental links.

“Up until 2007, we had virtually no research on what I think of as the world of environmental hazards and autism,” says Irva Hertz-Picciotto, who directs the MIND Institute Program in Environmental

Epidemiology of Autism and Neurodevelopment at the University of California, Davis. Starting around 2010, she says, “suddenly everybody was studying it.”

To scientists, environmental risks include anything beyond the genome. So far they’ve investigated a potential role for air pollution, pesticides, parental age, medical conditions including infection and diabetes, prenatal care, lifestyle factors like the mother’s diet, smoking and alcohol consumption, and time between pregnancies. Results from many of these studies have been mixed. Even when a study finds an association between an environmental factor and increased risk, it doesn’t imply causation, but suggests that factor might increase risk.

In a recent review of epidemiological studies of nongenetic autism factors, researchers reported advanced parental age and preterm birth as established risk factors, and short intervals between pregnancy and prenatal exposure to air pollution as potential risk factors. They concluded that a long list of other possible environmental factors, including endocrine disruption, warrant further investigation.

Endocrine disruptors have come under scrutiny because they can interfere with hormonal pathways involved in brain development. But studies of endocrine-disrupting chemicals, including flame retardants and perfluorinated compounds, have produced conflicting results.

“There’s not a consistent evidence base yet,” says Croen.

Evidence of increased risk appears stronger for phthalates, chemicals found in diverse consumer products from cosmetics to teething rings. Yet even these results vary. “The reasons for these different findings relate to study design, methodology, how exposures are ascertained, the way people are studied, the way cases are ascertained,” Croen says. “It’s kind of messy.”

Air pollution has so far received the most scrutiny, Hertz-Picciotto says. And though air pollution contains many known neurotoxins, there’s also a bit of a streetlight effect: that’s where the data are. Federal, state and local agencies have monitored a range of air pollutants since passage of the Clean Air Act in 1970, giving researchers a treasure trove of data to map against where pregnant women live and infer potential exposures.

Several well-designed studies have found an association between air pollution and autism, including the Childhood Autism Risks from Genetics and the Environment, or CHARGE, study, which Hertz-Picciotto has run since 2002. But a few equally solid studies have not. “I think the jury’s still out on air pollution,” Hertz-Picciotto says.

In a CHARGE study of organophosphate pesticide exposure during pregnancy, Hertz-Picciotto’s team found that women who lived within 1.5 kilometers (just less than a mile) of treated agricultural fields during their pregnancy had a 60% higher risk of having a child diagnosed with autism. The pesticide chlorpyrifos was associated with heightened risk during the second and third trimester.

Recent studies in mouse models developed to study autism risk factors (e.g., here and here) reported that prenatal exposure to pesticides, including chlorpyrifos, can interfere with the animals’ normal social, exploratory and vocal behaviors. Extrapolating from mice to humans is notoriously fraught, but scientists hope the models will help them screen for exposures that disrupt autism susceptibility genes and identify gene-environment interactions linked to increased risk. Scientists with the U.S. Environmental Protection



Agency recommended restricting all uses of chlorpyrifos in 2015 based on evidence that the neurotoxic pesticide could place infants and children at risk. EPA administrator Scott Pruitt overturned that decision in March.

Because pregnant women living in agricultural communities can't fully avoid pesticide exposures, researchers have looked at factors that might reduce pesticide-associated autism risks. Hertz-Picciotto's team considered folic acid as a potential mitigating factor based on evidence that it helps buffer the toxic effects of environmental contaminants. And several studies have reported that mothers who took folic acid supplements were less likely to have children with autism than those who didn't, though a large study found no such association.

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## **Air pollution: Big relief for Delhiites from smoggy mornings this winter; this is the reason why**

*Date: 24-Sep-2017 Source: Financial Express*



After suffering from polluted air for years, especially during winter, the citizens of Delhi may just be able to breathe cleaner air this time. Delhi may get respite from smoggy mornings this winter.

After suffering from polluted air for years, especially during winter, the citizens of Delhi may just be able to breathe cleaner air this time. Delhi may get respite from smoggy mornings this winter. The capital may not witness smoggy mornings this winter as many farmers in the neighbouring state of Punjab have stopped burning

paddy stubble and are using it to generate electricity with the help of biomass machines, chairman of Environment Pollution Control Authority (EPCA) Bhure Lal has said. Stubble is also being used to produce compost for fields, he said.

Last year, uncontrolled burning of paddy stubbles by farmers in Haryana and Punjab resulted in heavy smog which lasted for nearly 12 days in the NCR, disrupting normal life. At present six machines are being used to produce 62.5 MW electricity from the paddy stubble, which is the remaining part of harvested crop. But the number of machines are being increased to generate 600 MW electricity from it, Lal told PTI. Public sector company National Thermal Power Corporation (NTPC) and some private sector firms have also shown an interest in the project, he claimed.

The EPCA will activate over 20 stations in Delhi-NCR by October 20, to keep a check on air quality of the region. It is also planning to establish nearly 13 stations in Haryana and 10 in the districts of Uttar Pradesh which fall under NCR, Bura said. A Graded Response Action Plan notified by the environment ministry has to be implemented and in this regard the Badarpur Thermal Power Station will be closed after October 15, he said.

## 5 Health Problems Caused Due To Air Pollution

*Date: 24-Sep-2017 Source: INDIA*



Air pollution is a serious concern these days. In metropolitan cities, where air pollution levels are high there is a constant worry about one's health. In a recent study, it was found out that air pollution, however high or low in levels might damage a person's kidney. Even if you inhale only small particulate matter present in the air, it can still do enough damage to your kidneys and might also put you at a risk of chronic kidney diseases. Now kidney damage is just one of the many health

problems. There are several health problems that can happen only because of air pollution. Life expectancy can reduce, there can be cardiovascular issues and other health problems as well. The harmful air that you breathe goes through your lungs to your blood and then it finally reaches the kidneys. And that's how slowly with time, kidneys are affected. Here are the 5 other side effects of air pollution on health.

Air pollution might increase the risk of your asthma. If you already have respiratory problems, air pollution might only make it worse.

People living in cities that are highly polluted might also have increased risk of cancer. If your city has high levels of pollution, you might want to consider moving out for the sake of your health.

Another very commonly seen health problem because of air pollution is wheezing and coughing. Most city people have this problem and there is no solution to it except for being on medicines.

Air pollution also gives rise to heart problems. There have been several cases of heart issues that have been associated to air pollution. The higher the level of particle the more the risk.

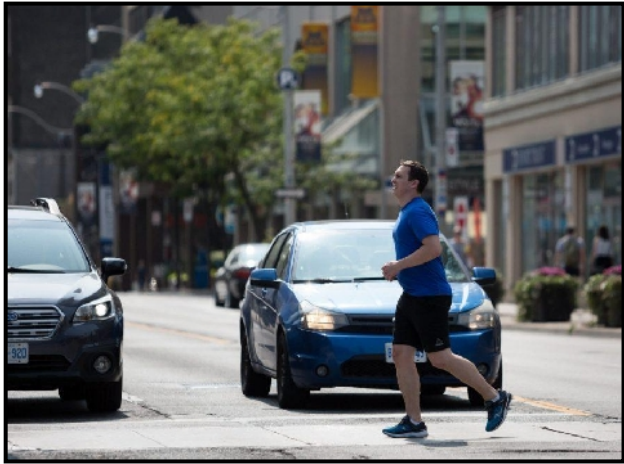
If you have noticed that you fall ill too often, then you can blame the pollution in your city for that. Air pollution messes with your immune system and makes you weak. It also affects reproductive systems.

And most importantly, it is not just humans who get affected, Both animals and aqua life are largely affected because of pollution. The hazardous air that is released due to burning of fossil fuels has killed so many animals.

The only thing as a citizen that one can do is to be more responsible towards the environment. Do not add to the pollution in any way because it is your health that is at risk.

## Running is awesome. But is air pollution ruining the high?

Date: 25-Sep-2017 Source: The Star



Today, the Star introduces Q&Ache, a bi-weekly column addressing readers' health and wellness questions. This week: just how bad is a smog-filled run?

For me, running's like church — a sanctuary where I can feel my heart beat and lose my thoughts to anything.

Though, usually not pollution.

But to fellow cardio-addict Nick Williams, 29, dirty air is often on his mind — at least two or

three times a week during his 13-kilometre runs through the city, sometimes during rush hour traffic. Williams, a communications specialist who recently moved downtown from the suburbs, spends a lot of time in running shoes passing behind cars and “trying to avoid but still inhaling some exhaust,” he said.

Concerned, he asked the Star to find out whether urban running, through Toronto's congested core, will affect his lung health long term.

“Should I stick to running indoors in well-ventilated gyms?” he asked. “I would hate it if my efforts to be healthy are actually doing the opposite!!

It's a well-founded worry.

Connie Choy, air quality co-ordinator for The Lung Association Ontario, said air pollution has been linked to hospital admissions and premature deaths.

Studies connect it to a laundry list of ailments, experts say, including appendicitis, cardiovascular disease, lung disease, increased respiratory illness in children who live close to major roadways and even weight gain.

One study suggests air pollution affects changes in cyclists' heart rates immediately after a jaunt through traffic. Still more studies link long-term exposure of fine particulate matter — tiny particles, say from car exhaust — to diabetes.

Williams isn't kidding when he said that on hotter days he can “taste the smog.”

The bad news is that no one knows if there's a “safe level” of pollution, said John Molot, a physician focused on evaluating and treating patients with environmentally linked conditions. What we do know, he said, is that the more dirty air we breathe, the more likely we are to develop chronic disease.

Thankfully, Toronto isn't like certain areas in China, Choy says, where, on some days, she's heard the mere act of inhaling has been likened to smoking a pack of cigarette a day. But while local air quality has

improved in the last decade or so, according to the Ministry of the Environment and Climate Change, this city is still a metropolis overflowing with chemical-spewing companies and cars. Not to mention, our air quality is affected by the wind and policies south of the border (the U.S. still burns coal that wafts into our airspace, Choy said).

In terms of running indoors or out, the easy answer is check The Air Quality Index (AQHI) and use common sense.

The AQHI rates the air's risk to health on a scale from 1 to 10 — 1 being “ideal” for outdoor activity and 10 indicating the air's awful (Toronto has never had a 10 day).

Children, the elderly and those suffering from chronic illness may want to consider reducing exertion outdoors if the air quality is 4 or higher, the scale indicates. Or, if they're already experiencing symptoms, such as coughing or wheezing.

Healthy specimens, like Williams, may not immediately feel the effects of dirty air at a 4. Still, it's probably not a great idea to do a lot of quick breathing around cars, experts say. Exhaust teems with microscopic particles that can be absorbed into your cells and cause damage.

However, running indoors on a treadmill isn't exactly a panacea. “Well ventilated is a relative term,” Molot said.

Just like human lungs, buildings suck in air from the outside — so, you may want to reconsider a gym near a busy highway. And inside air can be a stew of cleaners and personal care products, such as deodorant, Molot said.

The best place to run — surprise, surprise — is through undisturbed countryside with lots of green leaves to purify the breeze, Molot said. When that's not an option, a park is the next best thing (as long as it's not near a busy highway!).

The gym falls somewhere between busy roadway and city park. It's also best to run in the early mornings or late evenings, Choy said, when fewer cars are on the road. Wintertime and just after a rainfall, when the air tends to be cleaner, are good, too.

The best way to combat chronic disease — from pollution or otherwise — is to follow Williams' lead and run (or work out) whether in the country, through the city or in a gym, Molot said.

“The bottom line is that aerobic exercise trumps everything,” he said. “It really comes down to: do your exercise, choose your poison.”

Got a question for this column? Email [mhenry@thestar.ca](mailto:mhenry@thestar.ca) Do you have a question about health, nutrition, fitness or being well that you can't resolve with a Google search? Michele Henry might be able to help. Send your questions to [mhenry@thestar.ca](mailto:mhenry@thestar.ca) and she'll find an expert who can answer.

## **Hadapsar, Navi peth, Mandai have the worst air quality in Pune**

*Date: 26-Sep-2017 Source: Hindustan Times*

In an alarming revelation, the Pune Municipal Corporation's environment status report (ESR) 2016-17 claimed that Hadapsar has been recorded as one of the most polluted regions in the city followed by Navi peth.

PMC's environment status report 2016-17 shows that air pollutants like Nitrogen Dioxide (NO<sub>2</sub>), Nitrogen Oxide (NO) and particulate matter were seen to have crossed the standard permissible limit set by the Central Pollution Control Board.

As per the data released by Pune Municipal Corporation, the areas where Nitrogen Oxide was found to have been above the average level includes Hadapsar, Navi peth and Mandai. The standard permissible limit for Nitrogen Oxide is said to be 40ug/m<sup>3</sup> (micrograms per cubic metre of air) while in Hadapsar area it is found to be 60ug/m<sup>3</sup>.

Apart from this, Nitrogen Dioxide, too, is found to be above the standard permissible level in areas including Pashan, Lohegaon, Shivajinagar, Katraj and Hadapsar. This increase in Nitrogen Dioxide was recorded especially during the month of November.

According to the report, the other important factor which is above the standard average level is the dust particulate matter present in the air.

The report states that dust particles of up to 10 microns and 2.5 microns are found to be more in the air. The report added that even as their levels were found to be decreasing since 2011, they are still above the standard permissible level laid down by the Central Pollution Control Board.

The presence of Carbon Monoxide (CO) in the air was found to be below the standard value of 2ug/m<sup>3</sup> in the city. Yet in January and February this year its presence was more compared to last year. However, Carbon Monoxide was found mainly in areas like Shivajinagar, Hadapsar and Katraj.

Similar to Carbon Monoxide, the proportion of Sulphur oxides in the air is also said to be rising. Although, it is still found to be below the standard level laid down by the Central Pollution Control Board, the increasing number of vehicles is in turn increasing the levels of Sulphur-based pollutants in the air.

According to Dr Mahendra Kawedia of Jehangir hospital, the rise in air pollutants is affecting the health of citizens in various ways. He said, "Over the years, cases of bronchitis and asthma have been on the rise. With rising air pollution, people who are more susceptible to it start suffering from lung problems and sometimes these diseases become chronic."

Dr Sanjay Gaikwad from Sassoon General Hospital, too, said that rising air pollution level is a serious concern as the percentage of airborne diseases is significantly growing in the city, thus putting the lives of the residents at risk.

Rising number of wheels worsen city health With over 40 lakh vehicles registered in Pune, the city is also witnessing rise in factors contributing to its increasing air pollution levels.

The Pune Municipal Corporation's (PMC) environment status report for 2016-17 clearly shows that air pollutants, including Nitrogen Oxide, Nitrogen Dioxide, Sulphur Dioxide, Carbon Monoxide and particulate matter in the air are constantly increasing.

Many of these pollutants, including particulate matter, Nitrogen Oxide and Nitrogen Dioxide, are found to be above the standard set by the Central Pollution Control Board. Other pollutants, including Sulphur Dioxide and Carbon Monoxide, are below the standard permissible levels, but are still rising.

According to the statistics available with the Regional Transport Office (RTO), Pune, close to two lakh new vehicles are seen on city roads every year. The total number of vehicles registered in Pune till July this year is 43,30,635. Out of these 25,07,428 are two-wheelers while 6,07,886 are four-wheelers.

Speaking about this rising air pollution in the city, PMC's environment officer Mangesh Dighe told Hindustan Times that this rise in air pollutants is mainly because of the rise in the number of vehicles in the city.

"Pollutants like Nitrogen Oxide, Carbon Monoxide and Sulphur are a result of the smoke emitted from the vehicle's exhaust. With rising number of vehicles on the roads, these pollutants are also rising," added Dighe.

He further stated that even as various industries also contribute to rise in air pollutants, those kind of industries are not there in the vicinity of Pune in large numbers.

"Pune mainly has assembling industries or service industries which do not release pollutants like Sulphur, Nitrogen Oxide or Carbon Monoxide. Hence, the only major factors for rising air pollution are the vehicles," he added.

He further stated that with this rise in number of vehicles, the dust also does not settle and keeps floating in the air, thus increasing levels of particulate matter in the air.

Dighe stated that the Bharat Stage IV vehicles are seen to cause less pollution compared to the older vehicles which are still seen in large numbers on the roads.

"If vehicles use alternate fuels like CNG or LPG, then this rise in air pollution can be controlled as these are clean fuels. Hence, the use of CNG and LPG needs to be popularised in the city," he added.

Environmentalist Vinod Bodhankar stated that apart from the air pollution caused due to vehicles, a significant component in the particulate matter present in the air comes from burning of plastic. He stressed on the need to reduce plastic consumption as only seven per cent to nine per cent of the plastic is genuinely recycled.

The number of vehicles in the city has seen a constant rise with growing population. The population of Pune, which was 35 lakh in 2011 has increased to 45 lakh in 2017. The absence of a proper public transport system in Pune has propelled the number of private vehicles, particularly two-wheelers.

## City better equipped to curb pollution this winter

*Date: 27-Sep-2017 Source: The Hindu*



20 new ambient air quality monitoring stations likely to start functioning by October-end

Delhi will be heading into winter 2017 better equipped than ever before when it comes to air pollution data, with 20 new ambient air quality monitoring stations likely to start functioning by the end of October. After that, experts say, the challenge will be to make effective use of that data to tailor pollution-control measures.

With the 20 new stations of the Delhi Pollution Control Committee (DPCC), which has six stations currently, likely to be set up in October, the total monitoring stations in the Capital, including the ones operated by the Central Pollution Control Board and the Ministry of Earth Sciences, will reach 40 — the highest number for any Indian city.

On Tuesday, Delhi Environment Minister Imran Hussain visited the site of one of the under-construction stations to review the progress. The 26 DPCC stations would help taking Delhi's air quality data from macro to micro, making localised solutions possible, a senior DPCC official said.

### Real-time data

The official added that analysers for the stations would start being installed by the end of this week, and the stations would start producing real-time data within 48 hours of that. By October 15, most of the stations are likely to start producing data, which would include particulate matter and toxic gases.

Apart from just increasing the number of stations, the new stations are spread across a variety of land-use, from industrial to residential areas.

Anumita Roychowdhury, an executive director and the head of the air pollution and clean transportation programmes of the Centre for Science and Environment, said the new stations would enable “micro-mapping of pollution”.

“There will be a better understanding of Delhi's pollution. The next question will be how is the data from all the stations is integrated,” she said.

The Supreme Court-monitored Graded Response Action Plan, which was notified by the Union Environment Ministry in January, will be implemented in the winter for the first time.

### Measures to roll out

Starting October 15, strict pollution control measures, including the shutting down of the Badarpur power plant, under the plan will be rolled out. Ms. Roychowdhury said the new monitoring stations would enable better implementation of the plan.



However, experts said there were still some questions remaining. “We can set up any number of monitoring stations, but what we do with them is important. We should have a system where the stations are used proactively to issue health advisories. Air quality and meteorological data should be integrated so we can predict high pollution episodes to an extent,” said Sunil Dahiya, a campaigner with Greenpeace India.

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## **Sadiq Khan triggers alert for high air pollution in London**

*Date: 27-Sep-2017 Source: The Guardian*



The mayor of London, Sadiq Khan, has triggered the capital’s emergency air quality alert as polluted air from the continent combines with toxic air in London to create dangerous levels of pollution.

The alerts will see warnings displayed at bus stops, road signs and on the underground. Khan has also asked TV and radio stations across the capital to warn their viewers and listeners in news bulletins.

Anyone with lung or heart problems is advised to reduce strenuous exercise, especially outside. The young and elderly are particularly vulnerable.

Today’s alert has been triggered by “high” levels of air pollution. It is the seventh time in 13 months that the mayor has used the alert system. One instance was because the level of pollution was deemed “very high”, and on six occasions because it was “high”.

Khan said: “The shocking and illegal state of London’s filthy air means once again I am triggering a high air pollution alert today under my new comprehensive alert system.”

The government’s committee on the medical effects of air pollutants advises adults and children with lung problems, and adults with heart problems, to reduce strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also reduce physical exertion.

Khan is implementing a range of measures to try to tackle the air pollution crisis in the capital, and he called on the government to do more.

“I am doing everything with the powers I have at City Hall and it’s now time for the government to step up by introducing a national diesel scrappage fund to rid our streets of dirty diesels, and to give me the powers I need to tackle non-transport sources of pollution.”

Responding to the news that the capital’s air quality emergency alert had been triggered, Prof Jonathan Grigg from Doctors Against Diesel said “dirty air is seriously damaging Londoners’ health and wellbeing.”

Grigg called on Khan to do more to tackle it. “Vulnerable people shouldn’t have to restrict their activities to stay safe,” he said. “Sadiq Khan must bring London’s air pollution down to legal levels as soon as possible, and commit to phase out diesel vehicles by 2025 to protect Londoners’ lungs.”

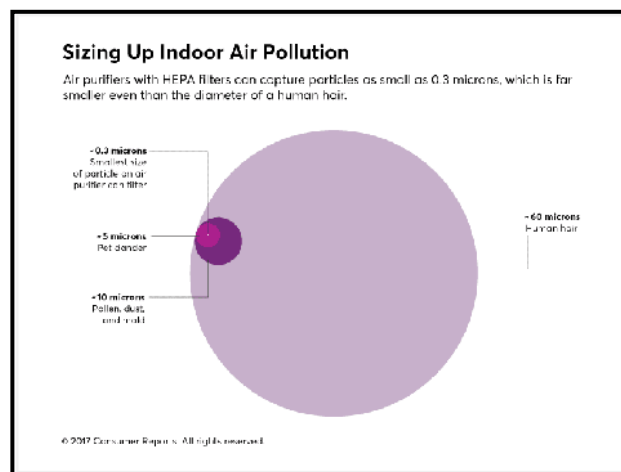
The government has come under increasing pressure over the UK’s air quality. It has suffered a string of humiliating defeats in the courts over its failure to clean up the nation’s air. Its latest proposal, released in July, was met with widespread criticism from clean air campaigners and regional politicians.

The latest episode of dangerously polluted air has been caused by mist, low cloud, fog and slow wind speed in London that has led to a build up of pollution. This has combined with air arriving from the continent that has travelled slowly over industrial polluted areas giving it time to pick up emissions on the way. Experts say this is likely to produce high levels of PM2.5 and moderate levels of PM10 particulate pollution across areas of London and the south-east.

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## 13 Ways to Reduce Indoor Air Pollution

*Date: 28-Sep-2017 Source: Consumer Report*



Pollutants can be introduced into the air of your home in a number of ways. Some are carried in on the breeze; some are carried in, unwittingly, by you. “A lot of things come into our homes on our clothing, including pollen and cat allergens,” says Elliott Horner, Ph.D., lead scientist for UL Environment (Underwriters Laboratories). Other pollutants originate inside the home, such as when you pet your dog and release dander into the air or burn a piece of toast and send smoke streaming into the kitchen. It’s difficult not to generate indoor air pollution in your home, Horner says.

To get rid of impurities, you need to pursue several lines of attack. Following the checklist below will help you to minimize indoor air pollution so that a portable air purifier won’t have to work as hard, if you even need one at all.

### 1. Open a Window

Adequate ventilation is key to promoting healthy indoor air, and opening windows (when it’s not too cold or the pollen count is not too high, of course) is an easy way to encourage a good exchange of indoor and outdoor air.

### 2. Ban Smoking

“Absolutely no cigarette smoke,” says Norman Edelman, M.D., senior scientific adviser for the American Lung Association. Secondhand smoke impairs respiratory health and is responsible for some 3,000 lung cancer deaths a year in nonsmokers, according to the Environmental Protection Agency.

### 3. Give Fido a Bath

If you have pets, bathe them and wash their bedding often to reduce allergy-causing dander. And we hate to break it to you, but you should also keep them out of bedrooms.

### 4. Use Exhaust Fans

Run fans in the kitchen (removes cooking fumes) and bathroom (removes steam) that vent outside. Also be sure that your dryer vents to the outside to minimize lint. To reduce the level of pollen in the air on days it's not possible to open the windows, run your window air conditioner on the fan setting with a clean filter.

### 5. Use a Doormat

Wiping shoes can reduce pollutants carried into the house. Better yet, establish a shoes-off policy.

### 6. Change Filters

If you have a forced-air heating and cooling system, change the air filters more often when there is more smoke or pollen in the air.

### 7. Skip Fires

Flames dancing in the fireplace look delightful, but they release soot and smoke into the air.

### 8. Don't Cover Up Odors

Avoid air fresheners, scented candles, incense, and other odor-masking fragrances, which can trigger asthma.

### 9. Vacuum Often

Do this especially if you have a pet. Brooms can just stir up more dust.

### 10. Use a Microfiber Dusting Cloth

It will capture more dust than a cotton rag.

### 11. Minimize Carpet

It can trap pollutants such as dust mites, pet dander, mold spores, and other dirt and dust. Choose hard-surface flooring instead.

### 12. Try to Stay Dry

To reduce mold, keep moisture down by using a dehumidifier and cleaning the filter regularly.

### 13. Store Chemicals Safely

Store solvents, glues, and pesticides away from living areas, and, when possible, use homemade cleaning products such as a mixture of white vinegar and water.

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## Air pollution: Sadiq Khan calls for ban on wood-burning stoves

*Date: 29-Sep-2017 Source: The Guardian*



Wood-burning stoves could be banned in some areas to combat air pollution under proposals by the London mayor, Sadiq Khan.

Khan has written to Michael Gove, the environment secretary, to request extra powers to improve air quality in the capital, including measures to tackle solid-fuel burning and construction pollution. The proposed measures include minimum emissions standards for vessels on London's waterways and heavy construction

machinery like diggers and bulldozers.

Wood-burning stoves, which would be banned under the proposals for urban areas with poor air quality, are increasingly popular – 1.5m have been sold across Britain. They are most popular in south-east England, where 16% of households have them, compared with 5% nationally.

It is estimated that between a quarter and a third of all of London's fine-particle pollution comes from domestic wood burning. In January, during a period of very high air pollution, it contributed half the toxic emissions in some areas of the capital, according to King's College London research.

Khan said: "Non-transport sources contribute half of the deadly emissions in London, so we need a hard-hitting plan of action to combat them similar to moves I am taking to reduce pollution from road vehicles.

"With more than 400 schools located in areas exceeding legal pollution levels, and such significant health impacts on our most vulnerable communities, we cannot wait any longer, and I am calling on government to provide the capital with the necessary powers to effectively tackle harmful emissions from a variety of sources."

The mayor has asked the environment department to amend the Clean Air Act to allow for the creation of zero-emission zones where the burning of solid fuel is not allowed from 2025 onwards.

When asked to comment on Khan's letter, a Defra spokesperson told the Guardian: "We are determined to improve air quality and have put in place a £3bn plan to reduce roadside emissions.

“Next year we will publish a comprehensive Clean Air Strategy which will address all sources of air pollution. We are also raising consumer awareness about the impact of burning wood on health and working with industry to help reduce harmful emissions.”

The mayor’s proposals come after he triggered London’s emergency air quality alert on Wednesday for the seventh time in thirteen months. Polluted air from the continent combined with toxic air in London to create dangerous levels of pollution.

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## **World Heart Day: Air pollution is damaging your heart, finds study**

*Date: 29-Sep-2017 Source: Hindustan Times*



Air pollution is not only damaging your lungs, but also harming your cardiac system. In an article published in the latest edition of the Indian Heart Journal (IHJ), doctors have warned against the harmful effects of fine particulate matter (PM) of sizes less than 0.25 micrometers (PM 0.25) and larger PM sized less than 10 (PM 10), on the cardiac system.

Hazardous PM are particles released mainly from the burning of vehicular fuel and coal industries, which remain suspended in the air.

Among the many studies cited, two international studies robustly showed that particulate matter had both long-term and short-term effects on the cardiac system, resulting in increased risk of mortalities upto 12%.

Dr Sundeep Mishra, cardiologist and editor of the IHJ, said short-term deaths are related to PM 10 whereas long term deaths have been associated with PM 0.25.

“PM 0.25 enters the body through the lungs and can cross the lung barrier to directly enter the blood stream. Once they enter the blood stream, they irritate the blood vessels, which leads to an inflammatory reaction,” he said.

PM 10, on the other hand, enter the alveoli-glandular tissues of the of the lungs and irritate the blood vessels there.

“Irritation of the walls of the arteries eventually leads to a plaque-like condition, and in the long run, results in Atherosclerosis, a condition in which the walls of the blood vessels are thickened and blocked,” he said.

According to doctors, despite India harbouring the world’s most polluted cities, there have not been any large- scale studies to associate cardiovascular deaths with air pollution.

“In India, there are no proper death registries. Moreover, the death certificates are not always issued by qualified people, resulting in skewed data. So it is tough to get a true picture,” said Dr Sudhir Pillai, cardiologist at PD Hinduja Hospital, Mahim.

In the review, doctors have said that the most ideal way to address this problem is to maintain strict environmental standards of pollutants, but they agreed that there is a need for more practical solutions.

“Reducing physical activities around polluted areas and using air filters, may help to a certain extent,” the review said.

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## October 2017

### **Delhi's air goes from moderate to poor, likely to get worse soon**

*Date: 01-Oct-2017 Source: Scroll*



Delhi's air quality has degraded from moderate to poor since September 27, The Times of India reported on Sunday. According to the Central Pollution Control Board's daily air pollution index, the last days of poor air quality were in June. But air quality this summer and monsoon were better than that of 2016, the pollution board data shows.

Traffic congestion due to Dussehra could have resulted in the deteriorating air quality, experts told the daily. However, the rapid fall in temperature, burning of agricultural residue in neighbouring Haryana and Punjab, and Diwali fireworks are likely to erase the gains of the last three months.

What will the administration do?

From October 15, Delhi will roll out measures under the Graded Response Action Plan to control emissions from all sources. It will be implemented by the Environment Pollution Control Authority between October 15 and March 15.

With the plan in place, measures such as odd-even rules and restrictions on construction work will be automatically implemented when the level of PM<sub>2.5</sub> breaches 300 micrograms per cubic metre and PM<sub>10</sub> stays above 500 micrograms per cubic metre for two days in a row. These are particulate matters that are 10 or less than 10, and 2.5 or less than 2.5 micrometres in diameter. PM<sub>2.5</sub> are the micro particles of dust that cause several lung and respiratory diseases.

Diesel generators will be banned in the city during "very poor" air quality days and parking fees may be hiked by three to four times. The administration will also shut down brick kilns, hot mix plants and stone crushers. The Badarpur thermal power plant will also stop work from October 15.

Keshav Chandra, chairperson of the Delhi Pollution Control Committee, said that they will notify all agencies to monitor waste burning and flouting of construction dust norms and alert the committee of any violations.

Anumita Roy Chowdhury, Executive Director of Centre for Science and Environment said that air pollution control has come under stricter scrutiny after Delhi's deadly Diwali smog last year. "With sustained action, we can prevent smog incidents this winter and bend the pollution curve eventually," she was quoted as saying by The Times of India.

Smog in NCR last Diwali



Air quality in Delhi-NCR saw an alarming drop after Diwali celebrations on October 30, 2016. As a result of the smog, schools remained closed for three days from November 7. The National Green Tribunal had also declared an environmental emergency in Delhi, Haryana, Punjab, Rajasthan and Uttar Pradesh.

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## **Delhi's air turning foul again after respite since January**

*Date: 01-Oct-2017 Source: The Times of India*

NEW DELHI: After three months of respite, Delhi has started registering 'poor' air days again. According to Central Pollution Control Board's daily air pollution index, air quality began degrading from the 'moderate' range from September 27.

The last 'poor' days were in June, after which the air quality remained mostly 'moderate' or 'satisfactory'.

Air quality this summer and monsoon was better than in 2016, according to CPCB's data. But if the city fails to prevent air pollution spikes again in the next three months, these gains will be lost.

The recent fall in quality could have resulted from traffic congestion due to Dussehra, experts said, but it is also the time of the year when the levels of particulate matter in the city air start peaking. Particulate matter levels start peaking around this time because of a combination of factors, including burning of agricultural residue in Punjab and Haryana, use of firecrackers for Diwali and a meteorological condition called winter inversion, when a layer of warm air traps cold air and acts like a lid to keep polluting particles close to the ground. Starting October 15, Delhi will implement the graded response action plan (GRAP) under which measures will be taken to control emissions from all sources.

According to members of the Supreme Court-mandated Environment Pollution Control Authority (EPCA), measures to tackle 'very poor' category days will be enforced throughout the cold months from October 15 to March 15. These include a ban on waste burning and construction dust, cracking down on visibly polluting vehicles and increasing public parking fee up to four times. The Badarpur thermal power plant will also cease work from October 15.

A taskforce of CPCB, Delhi Pollution Control Committee (DPCC) scientists will decide whether more stringent interventions like stopping all construction activity, stopping trucks from entering the city, shutting down schools should be considered when air pollution levels reach the upper levels.

These measures, meant to check pollution at various intensities, were not in place last winter. Prodded by the Supreme Court, the Union ministry of environment, forests and climate change notified GRAP this January. CPCB has formed 40 teams to inspect and monitor the implementation of GRAP.

Keshav Chandra, chairperson, DPCC, told TOI, "We will notify all agencies, including the revenue department, to monitor waste burning and flouting of construction dust norms and alert us on violations."

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## India allows 16 new thermal power plants that violate stricter air pollution standards to come up

*Date: 02-Oct-2017 Source: Scroll*



Sixteen new thermal power plants that started operations in India between January and June violate the mandatory new air pollution regulations that the environment ministry put in place two years ago. None of them abide by the regulations under the Environment Protection Act, 1986, which require them to cap the emission of pollutants – hazardous oxides of nitrogen and sulphur – below strict prescribed limits.

The new rules, notified in December 2015, imposed limits on emissions of poisonous oxides of sulphur and nitrogen, and mercury for the first time. They also tightened the norms for water consumption while putting a tighter cap on permissible levels of emission of particulate matters – tiny particles in the atmosphere that can easily enter one's lungs.

The rules mandated that all fossil-fuel based power plants that come up after January 1, 2017, should follow the new pollution standards. Existing power projects were also required to retrofit their plants in order to bring their pollution levels in line with new standards by December 2017.

However, a status report prepared by the Central Pollution Control Board shows that none of the 16 power plants that started operations from January meet the stricter emission norms, which require the deployment of costly pollution abatement technology. They have only met the standards for the particulate matter norms, which are easier, and cheaper, to adhere to.

This revelation comes on top of the fact that the Central Electricity Authority, which is controlled by the Union Ministry of Power, has already devised a plan to help existing power plants – numbering more than 300 – to dodge the December deadline to retrofit their plants to adhere to the new pollution norms. The Central Electricity Authority has laid out a phased plan for the plants, which requires them to follow these standards only starting 2020. This has been done without the environment ministry formally amending its 2015 notification that imposes the new norms from December.

The new standards

Coal-based thermal power plants are one of the key drivers of pollution by oxides of sulphur and nitrogen in and around industrial clusters. Breathing in these pollutants can lead to adverse respiratory reactions such as airway inflammation, bronchoconstriction and symptoms of asthma. They also react in the atmosphere to produce fine particles containing sulphate or nitrate that make up a significant fraction of the air pollutant called particulate matter 2.5, which is 30 times smaller than the average width of a human hair, and which chokes the airways to the lungs.

Prior to December 2015, India did not have standards for emissions of oxides of sulphur and nitrogen and mercury from thermal power plants. The only standards that existed were for particulate matter, and these were quite lax when compared with global best practices.

The environment ministry defended the operations of the new plants.

A senior official who did not wish to be identified as the official is not authorised to speak to media, said: “All the [16] plants are meeting the particulate matter standards.”

Asked why the plants did not meet the standards for oxides of sulphur nitrogen, the official said: “They will also be taken care of. The discussion is going on. There will be a roadmap.”

### Dodging implementation

The new standards were set on the recommendations of the Central Pollution Control Board and after repeated consultations between the ministries of power and environment.

However, the power industry started resisting their implementation as soon as they were notified.

To meet the new pollution norms for sulphur oxides, fossil fuel-run power plants are required to install a technology called flue-gas desulphurisation, which helps remove sulphur dioxide from exhaust gases produced by these plants. The power industry argued that this significantly increased the cost of power production. But environmentalists said that the cost was nothing as compared to the damage caused by pollution to human health.

Documents show that the power ministry called at least two ministerial meetings with the environment ministry last year to address the concerns of the power industry. The Central Pollution Control Board was asked to respond to all the representations made by power producers and industry bodies. It did so and found no reason to delay the implementation of the norms. It concluded that all the industry’s concerns had been taken into consideration while setting the standards and setting out the two-year period to implement them.

However, going against the timeline for implementation of new standards, as notified in the 2015 rules, the Central Electricity Authority proposed to give 300 power plants a deadline ranging between 2020 and 2024 to put the flue-gas desulphurisation technology in place.

### New power plants and violations

The 16 new plants that violate norms have done so using a grey area created by the lack of required action by the environment ministry.

All power projects start construction only after they receive mandatory environmental clearance from the ministry, which stipulates the conditions the project must meet once it starts operations.

These plants got their environmental clearances before December 2015, when the new standards were notified. However, the notification makes no exception for plants that received their environment clearances before the notification was issued. In fact, it specifically mentions that thermal power plants

installed after January 1, 2017 should follow the norms, including those “which have been accorded environmental clearance and are under construction”.

The environment ministry is fighting a case before the National Green Tribunal in which Greenpeace India has alleged that the ministry is not implementing the 2015 air pollution rules.

On September 11, the tribunal asked the ministry to submit a report on the status of the implementation of the new emission standards. The ministry submitted the list of these 16 new plants to the tribunal. It also said that three other plants that were accorded environmental clearances after January 2017 have been asked to adhere to the new pollution norms.

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## Gurgaon's air quality to be assessed pre and post Diwali

*Date: 04-Oct-2017 Source: Hindustan Times*



The Central Pollution Control Board (CPCB), in association with the state pollution department, plans to assess air pollution symptoms of respiratory diseases among residents of Gurgaon before and after the festival of Diwali.

A survey will be conducted to assess the degree of lung function impairment in persons chronically exposed to the city's air. Officials said that areas to be assessed will be finalised within a week. Four

zones will be demarcated for the survey, which will be conducted to assess the correlation between the health effect and air quality, officials said.

The survey will be based on questionnaires and also comprise health camps.

This initiative was planned as every year, the city's air quality turns 'poor' following the Diwali festival. As per a World Health Organisation (WHO) in 2010, outdoor air pollution is considered the fifth largest killer in India after high blood pressure, indoor air pollution, tobacco smoking and poor nutrition. It was stated that around 6, 20,000 deaths take place in India every year from air pollution-related diseases.

“We have been asked by the CPCB to monitor the air quality index of the city and take necessary steps immediately (when it worsens) to curb pollution in case of poor air quality,” said JB Sharma, regional officer, Haryana State Pollution Control Board (HSPCB).

Sharma said the board will also conduct weekly meetings to assess the condition of air quality in the city for the next three months. The survey will be conducted in residential, industrial and commercial areas of the city, officials said.

“Vehicular emissions and chemicals from crackers, when trapped in atmosphere for a long time, can lead to harmful effects on health. Air quality of Gurgaon should be monitored at regular intervals, in prominent areas, to figure out solutions for high level of pollutants in the atmosphere,” Anumita Roy

Chowdhury, executive director, research and advocacy and head of the air pollution and clean transportation programme, Centre for Science and Environment (CSE), said.

Dr Rajesh Kumar, senior consultant, internal medicine, Paras Hospitals, Gurgaon, said, “During Diwali festival, there will be an increase in the level of harmful gases such as the suspended particulate matter (SPM) CO, NO<sub>x</sub>, hydrocarbons and SO<sub>2</sub>. Pregnant women, children and those having chronic asthma are more vulnerable. Fireworks can also cause respiratory problems such as chronic or allergic bronchitis, bronchial asthma. Exposure to excessive sound levels could lead to restlessness, temporary or permanent hearing loss, high blood pressure, and sleep disturbances.

According to a study by CPCB last year, open burning of solid waste and bursting of crackers emit pollutants such as carbon monoxide (CO), hydrocarbons (HC), particulate matter (PM), nitrogen oxides (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>).

Doctors are of the opinion that poor air quality has been impacting the health of residents. Dr Piyush Goel, consultant pulmonologist, Columbia Asia Hospital, Gurgaon, said, “The alarming pollution level is making the air around us fatal and is one of the most important factors leading to precipitation of asthma attacks. On an average, at least 1 in every 3 children suffers a respiratory issue in his or her lifetime. It is also causing heart problems.”

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## Air pollution takes a toll on solar energy

*Date: 04-Oct-2017 Source: Science News for Student*



Air pollution can be a drag for solar energy. That pollution can cut the output of solar panels. And the energy losses from this are quite costly, a new study finds.

Dust and other air pollutants can produce a haze that darkens the sky. That haze then acts as a light filter. It cuts how much sunlight reaches solar-energy panels. Its effect on the electricity production by those solar collectors can be huge,

the new study finds. It estimates that across parts of India, China and the Arabian Peninsula alone, pollution can slash electricity from solar energy by 17 to 25 percent.

And haze in the air isn't the only factor that can limit how well solar panels work. If pollutant particles land on a panel's flat surface, they will further block how much light gets through to the solar cells below. Dust can come from natural sources, such as windswept soils. But human activities produce much of these pollutants. Those activities include driving cars, powering factories and converting coal to electricity.

Michael Bergin works for the Pratt School of Engineering. It's at Duke University in Durham, N.C. Bergin led a team that collected dust and pollution from solar panels in India. Then his group calculated how much this pollution could cut the solar energy output there, in China and in Mideast nations.

In India, polluted air appears to cut solar electricity by roughly 1 gigawatt (or billion watts). Natural dust and human-generated pollution contribute about equally here.

In eastern China, fossil-fuel use contributes far more than does natural dust. China also generates more solar energy than any other country. So there, air pollution's toll is much bigger. It likely cuts electricity production by close to 11 gigawatts, the researchers calculate. That's the full power output of 50.6 million photovoltaic solar panels. It's also equal to 5,500 large-scale wind turbines or 1,100 coal-fired power plants. And it's the amount of energy needed to power 1.1 billion LED lightbulbs. Clearly, that's a lot of energy being lost.

It's also costly. Making up for that lost energy is costing China the equivalent of about \$10 billion per year, Bergin notes. Regular cleaning of solar panels can help. Cleaning the air, he notes, will prove a lot harder.

His team describes how it came to these numbers August 8 in *Environmental Science & Technology Letters*.

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## New Delhi's Air Quality Enters Red Zone, Forecast Grim

*Date: 04-Oct-2017 Source: NDTV*



NEW DELHI: The air quality of the national capital today turned "poor" and the situation would further deteriorate in the next few days, according to central government agency SAFAR, which monitors air pollution.

The day-long average of particulate matter PM 2.5 and PM 10 were 178 and 94 micrograms per cubic metre, respectively, while the air quality index or AQI of the Central Pollution Control Board was poor. The AQI is a yardstick to measure how clean

the air is at a specific location, while PM 2.5 is an air pollutant made up of a complex mixture of dust, soot and smoke, and can cause health issues.

A "poor" Air Quality Index essentially means that people will have breathing discomfort on prolonged exposure to such air. On further dip in air quality, AQI will turn "very poor" and "severe".

An official of the CPCB attributed the rise in pollution levels to ground-level activities such as burning of paddy stubble in neighbouring Punjab and Haryana and meteorological conditions including a cyclonic circulation and a fall in wind speed that traps pollutants.



The level of the air pollutant PM 2.5 may breach the danger mark while that of PM 10 will be at medium risk in the next three days, according to the forecast of weather monitoring agency SAFAR,

The safe limits of the two pollutants PM 2.5 and PM 10 are 60 and 100 micrograms per cubic metre, respectively.

Nine out of 17 monitoring stations of CPCB in New Delhi recorded "poor air quality", while two recorded "very poor air quality". Four stations of SAFAR had air quality in the "poor" category.

Winter is a critical time in the national capital as meteorological conditions trap air pollutants near the earth's surface.

The volume of pollutants also rises alarmingly due to the burning of paddy stubble in Haryana and Punjab and bursting of firecrackers during the festive season.

Last year, the air quality of Delhi had plunged and a dense blanket of smog had kept the city shrouded for over a week in November, soon after the Diwali festivities, prompting the authorities to announce closure of schools among other emergency measures.

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## Indoor air quality on EU building agenda for first time

*Date: 05-Oct-2017 Source: EU Observer*



MEPs will debate amendments to new EU building regulations next week (11 October), which could see indoor air quality become a mandatory criteria for the first time - a boon for workers and residents.

The plans come as part of a larger rethink on future building standards in the wake of the Paris Agreement on climate change, and are intended as part of improving the overall energy performance of the built environment.

And they come after several pieces of recent research showing the potential health and economic costs to EU citizens of poorly-ventilated or damp homes and workplaces.

The World Health Organisation (WHO) warned in a report this month that healthier homes and workplaces could prevent around 1 million deaths, globally, a year, and explicitly singled out indoor air quality as a factor.

The WHO said "globally, 29 percent of COPD (chronic obstructive pulmonary disease) deaths are attributable to household air pollution, 8 percent ambient and 11 percent in workplaces."



Data from Danish window and rooflight manufacturer Velux, in their Health Homes Barometer report, also suggests people living in damp or mouldy homes were 40 percent more likely to suffer from asthma.

And according to current healthcare spending reports by Fraunhofer, a German research organisation, it costs the EU €82 billion euros annually to treat chronic obstructive pulmonary disease and asthma.

#### Crunch time at Parliament committee

Under the microscope next week in the European Parliament are amendments to the Energy Performance of Buildings Directive (EPBD). A series of proposed amendments to the EPBD will be going before the committee on industry, research, and energy (ITRE) on 11 October.

The proposed policy changes are intended to ensure all EU citizens will have access to the best indoor air quality and seeks to set high minimum standards at the member state level, along with ambitious renovation strategies.

"My main point is to ensure our buildings are helping to keep us healthy", says Anneli Jaatteenmaki, a Finnish MEP, former prime minister and member of the environment committee.

With most people spending some 90 percent of their time indoors, the stakes could hardly be higher - both for tenants, home owners, office workers, and the construction and renovation sectors.

"Energy efficiency and indoor air quality must go hand in hand. The consequences poor indoor air quality has on Europeans' health and quality of life, as well as on our economies, cannot be underestimated," according to Roberta Savli, director of strategy and policy at the European Federation of Allergies and Airways Diseases Patients' Associations (EFA).

"Europeans have the right to breathe clean and safe air everywhere," she said and adds, "the European Parliament has the opportunity to introduce an indoor air quality certificate to protect us."

#### Interchanging air

But potential conflicts between the energy efficiency measures and proposed indoor air quality standards are already becoming apparent. Attempts to increase the energy efficiency of buildings generally mean "we are not opening windows; we are interchanging incoming and outgoing air" according to Jaromir Kohlíček, a Czech MEP and vice-chair of the ITRE committee.

Whilst not necessarily disagreeing, the construction industry is keen to point to the problem with maintaining and repairing existing air systems in the current building stock.

Eugenio Quintieri, secretary general of the European Builders Confederation (EBC) stresses "we need a European legislative framework able to ensure heating and air-conditioning systems are not only functioning safely, but remain in good repair, because they have a huge influence on indoor air quality".

The general feeling towards the legislation amongst special interest groups and politicians is positive.

Adrian Joyce, secretary general of the European Alliance of Companies for Energy Efficiency in Buildings (EuroACE), admits that to "live up to the Paris Accords we have to change."

He points out that buildings consume 40 percent of all energy and produce 36 percent of carbon dioxide emissions and 70 percent of all buildings were constructed before there were energy regulations.

The amendments must set a "strong vision for the building stock for 2050", but he highlighted the "need to strengthen renovation strategies at the member state level".

Achieving the balance between a high level legislative framework and member state commitment for ambitious renovation strategies and action plans will be essential to see significant progress on the issue.

The amendments sets a framework that, "defines responsibilities and allows member states to create their path to the overall 2050 goal," according to EuroACE, "this is positive for the member states". "If these amendments are adopted it means we will see much lower energy demand and much lower carbon dioxide emissions from buildings by 2050."

"What we hope to establish is good practice concepts", Kohlicek states, for renovating and preserving the current building stock and for new builds.

Heat or eat

Affordability will continue to be an issue. Financial support packages at the EU and member state level must be encouraged, according to Jaatteenmaki.

Kohlicek said that the intent of the changes, with respect to energy poverty and health outcomes, were such that "the declaration is quite clear, we must help the impoverished".

"When you are living in better homes the heating costs are lower," Kohlicek said.

Properly renovated and insulated buildings lose less heat and use less energy overall, meaning fewer decisions about 'whether to heat or eat'. "We hope with these directives, we can push the entrepreneurs who own these buildings to fix the issues," he comments.

Velux, the major Danish window and rooflight manufacturer, has pointed out that individuals living in more affluent European countries are able to afford staged projects over several years whereas those living in the central Eastern European region are in the opposite situation. Twice as many people experience poor health when they are not able to adequately heat their homes, according to Velux.

"Policy with a long view"

But Kohlicek offers a word of caution, stating "the direct impact of indoor air quality will not be readily apparent". It could take as long as ten years to see a statistical change, he warns, as these directives are for new buildings and future renovations. "This is a policy with a long view".

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## **Air pollution: Why this year is not going to be different from the last**

*Date: 06-Oct-2017 Source: Hindustan Times*

As winter approaches, northern India and large cities like Delhi stand at the brink of yet another smog and pollution-filled season. Last year, the situation had become so bad that schools had to be closed for a few days, chief minister Arvind Kejriwal had recommended that people work from home to avoid going out, the coal-fired Badarpur power plant had to be shut down for 10 days, and the government pondered a scheme to create artificial rain through cloud seeding to reduce the amount of particulate matter in the air. The CM even described the city as a 'gas chamber'.

One of the big culprits blamed for last year's terrible air quality was burning of agricultural stubble in Haryana and Punjab. Millions of tonnes of stubble is burnt by farmers in northern India just before winter, and this, coupled with the already terrible conditions in Delhi, makes the situation much worse. This year, in spite of a National Green Tribunal (NGT) order banning the burning of stubble, over a dozen cases of crop burning had already been reported from Haryana by Wednesday. The coming of Diwali is not going to help the situation either. With citizens abdicating responsibility by bursting crackers, the air pollution levels will invariably spike on the day of the festival. It takes a long time for pollution levels to descend again from the Diwali spike.

There are lessons to be learnt from China, which is another country that faces a problem of air pollution so bad that the government has had to declare 'war' on it. After the disastrous 'airpocalypse' in 2011-2012, the Chinese government created a national air pollution plan, at the heart of which was a drastic reduction in coal use in metropolitan cities. Increasing investments in renewable power has also helped bring down pollution levels. Strict emission norms for vehicles, 'red alerts' issued for dangerous pollution levels, and empowered and decentralised pollution control authorities have also helped put in place a long-term solution based approach. There are lessons in such steps for Delhi and other metropolitan cities as well.

Given that governments of three states are still scrambling for solutions this year, and no coherent norms have been put in place for the coming winter season, it appears as though we have learnt nothing from our experience last year. This does not bode well for the city or its citizens. Nothing short of a mammoth effort that includes awareness and mitigation campaigns can help the city of its citizens in the coming winter months.

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## **Pollution control board to identify highly polluted roads in Gurgaon**

*Date: 07-Oct-2017 Source: Hindustan Times*

The pollution watchdog said that it will on Monday identify road stretches that have a high level of air pollution.

The data will be compiled and the information will be shared with the Municipal Corporation Gurugram (MCG), so that the agency can initiate take measures such as sprinkling water to settle the dust on these specific stretches.



The initiative is planned as every year, when the city's air quality turns 'poor' before and after Diwali.

At present, the Haryana State Pollution Control Board (HSPCB) has marked out MG Road, Iffco Chowk and Rajiv Chowk as highly polluted areas .

“A detailed report will be submitted soon and it will cover all sectors of the city. The three stretches were found to be highly polluted because

of ongoing construction work. These stretches also have witnessed large scale tree felling in the last few months to facilitate the construction work,” said JB Sharma, regional officer, HSPCB.

The initial study has pointed out that key commercial areas such as Sadar Bazar and Udyog Vihar are also highly polluted.

Also, the construction along the Southern Peripheral Road (SPR) and Northern Peripheral Road (NPR) is contributing to the poor air quality in the city.

Apart from the construction dust, these important stretches have a high level of air pollutants as they get a large number of vehicles every day.

According to the Centre for Science and Environment data, approximately 3.5 lakh vehicles ply on the Delhi-Gurgaon Expressway every day, contributing to the growing level of pollutants in the air.

“The carbon monoxide level, over the last few days, has been recorded more than five times higher than the prescribed limit of 4 mg/m<sup>3</sup>. This is mainly due to emissions from vehicles that are trapped in the atmosphere as winter is approaching,” said Shakti Singh, environmental engineer, HSPCB.

It was observed that major air pollutants in Gurgaon include carbon monoxide (CO), hydrocarbons (HC), particulate matter (PM), nitrogen oxides (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>).

“Water sprinkling will start once the air pollutants increase. We will follow the environment pollution control and prevention authority's (EPCA's) graded response action plan when the Air Quality Index (AQI) falls to “poor”,” Singh said.

The air quality index is an indicator of the pollution and it keeps tracks of three pollutants — NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. The index indicates air quality as ‘good’ for values between 0-100, moderate for values 101-200 and poor for values between 201-300.

The index for individual pollutants at a monitoring location is calculated as per its 24-hour average concentration value (eight-hour cycle in case of CO and ozone) and health breakpoint concentration range.

All pollutants cannot be monitored at all locations. Overall AQI is calculated only if data of on a minimum of three pollutants is available.

## **Air pollution exposure reduces childrens working memory**

*Date: 08-Oct-2017 Source: India Today*

London, Oct 8 (PTI) Exposure to air pollution on the way to school can have damaging effects on childrens cognitive development and reduce their working memory, a study has found.

The study, led by researchers from the Barcelona Institute for Global Health (ISGlobal) in Spain, assessed the impact of fine particulate matter (PM2.5) and black carbon during the walking commute to and from school.

The findings of an earlier study had shown that 20 per cent of a child's daily dose of black carbon - a pollutant directly related to traffic - is inhaled during urban commutes.

"The results of earlier toxicological and experimental studies have shown that these short exposures to very high concentrations of pollutants can have a disproportionately high impact on health," said Mar Alvarez-Pedrerol, researcher at ISGlobal.

"The detrimental effects may be particularly marked in children because of their smaller lung capacity and higher respiratory rate," said Alvarez-Pedrerol, first author of the study published in the journal *Environmental Pollution*.

The study was carried out in Barcelona and enrolled over 1,200 children aged from seven to 10, from 39 schools, all of whom walked to school on a daily basis.

The childrens working memory and attention capacity was assessed several times during the 12-month study.

Their exposure to air pollution over the same period was calculated on the basis of estimated levels on the shortest walking route to their school.

Statistical analysis of the findings showed that exposure to PM2.5 and black carbon was associated with a reduction in the growth of working memory - an interquartile range increase in PM 2.5 and black carbon levels was associated with a decline of 4.6 per cent and 3.9 per cent, respectively, in expected annual growth of working memory.

No significant associations were found with exposure to NO2 and none of the pollutants studied were observed to have any effect on attention capacity.

In this study, boys were much more sensitive than girls to the effects of both PM2.5 and black carbon.

However, walking or cycling to school - which builds physical activity into the child's daily routine - has health benefits that outweigh any negative impact of air pollution, said Jordi Sunyer, head of ISGlobal's Child Health Programme.

"The fact that children who walk to school may be more exposed to pollution does not mean that children who commute by car or on public transport are not also exposed to high levels," said Sunyer.

"The solution is the same for everyone: reduce the use of private vehicles for the school run and create less polluted and safer home-to-school routes," said Alvarez-Pedrerol. PTI MHN

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## **Five new air monitors before Diwali for pollution study**

*Date: 08-Oct-2017 Source: Times of India*

GURUGRAM: Five temporary air monitoring machines will be installed at select locations for a comprehensive study of pollution levels in different parts of the city before and after Diwali, when the concentration of atmospheric particulate matters records a spike every year.

Further, the Haryana State Pollution Control Board (HSPCB) is set to start a survey, reportedly in a first-of-its-kind initiative, to assess the impact of the sudden rise in pollution on the lung functioning of citizens during this time.

Officials at HSPCB said the five machines were most likely to be installed on MG Road near Iffco Chowk, Sohna Road near Subhash Chowk, at the bus stand in old Gurgaon, Cyber City and Sector 4. The machines will remain active for at least a week starting October 15 and, along with the existing air monitor at Vikas Sadan, will provide a wide spectrum of data for an in-depth analysis of PM 2.5 levels and ambient air quality during the festive week.

"The Central Pollution Control Board (CPCB) has directed us to keep tabs on the air pollution levels right from October 15. Accordingly, we will measure air quality five locations, at least, before and after Diwali," said a senior HSPCB official.

Moreover, the state board is going to launch a survey, mostly likely this week, to understand the immediate effects of the rising pollution and assess the correlation between the air quality and breathing problems, if any, faced by citizens. The survey, which is likely to continue till winter, will be conducted both in residential and commercial areas.

"We will demarcate the city in four zones to cover people from different walks of society. Respondents will be selected from office-goers, street vendors, shop owners, construction and other type labourers, homemakers, etc, who are exposed to the polluted air for varied durations. They will be given questionnaires and their answers will be analysed by experts," the HSPCB official explained. Also, the board is planning to conduct a few health check-up camps for better understanding.

A city-based pulmonologist, Narang Sethi, welcomed the move. "The state pollution board has finally woken up on an important issue concerning public health, thanks to CPCB and media coverage. The analysis of the correlation between air quality and lung functioning will help devise corrective measures and create awareness among the people," he added.

Experts, however, criticised the authorities for a delayed response to this pressing crisis. "I don't understand why the authorities are waiting for October 15 to take the steps. These measures should have been taken in September to prevent the situation from going out of hand," said Niranjan Raje, a former member of Environmental Pollution Control Board.

On Saturday, the concentration of PM 2.5 in the city varied between 85.67g/m<sup>3</sup> and 99.08 g/m<sup>3</sup>, which is considered 'poor'. HSPCB officials claimed that the state board was planning to start the drive as soon as the situation turned 'very poor', that is PM2.5 level between 121 and 250 g/m<sup>3</sup>.

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## Secrecy around air pollution controls in cars faces legal challenge

*Date: 09-Oct-2017 Source: The Guardian*



New EU rules that allow car manufacturers to keep pollution control systems secret from the public should be declared illegal, according to environmental lawyers.

The systems can legally cut emissions controls under certain conditions on the road, meaning more pollution is produced. But keeping these strategies secret risks another “dieselgate” scandal, according to ClientEarth lawyers, who announced on Monday that they are seeking to challenge the

regulation in the European Union’s court of justice.

In the dieselgate scandal, Volkswagen were caught cheating emissions rules by using software to hoodwink lab-based tests. New stricter tests came into force in September in the EU, including an on-the-road component. However, manufacturers say the emissions controls must still be ramped down at certain temperatures to protect engines.

Car makers must declare such strategies to national regulators but they claim that making them public would breach their commercial confidentiality. ClientEarth disagrees, arguing that such secrecy violates EU law.

“Dieselgate uncovered the huge lack of political will to hold car manufacturers to account for dangerous and illegal emissions,” said ClientEarth lawyer Anaïs Berthier. “To allow industry to continue keeping information on its emissions secret now sounds like a bad joke.”

“This information must be public, so individuals and NGOs can monitor whether car manufacturers are complying with vehicle emissions rules and if national authorities are keeping the industry on the straight and narrow,” she said.

Until recently, virtually all diesel cars emitted far more nitrogen dioxide on the road than in lab tests, resulting in higher levels of pollution across the world. In the UK, where 23,500 people are estimated to die early due to NO<sub>2</sub> pollution each year, ClientEarth has twice defeated the government in the courts over the adequacy of ministers’ air pollution plans and the most recent plan was declared “woefully inadequate” by city leaders and “inexcusable” by doctors.



ClientEarth lawyers argue that the confidentiality provision of EU Regulation (2017/1154) should be annulled by the EU court of justice. They believe the confidentiality rules violate EU laws governing access to environmental information and the international Aarhus Convention, which is designed to ensure public access to environmental information.

A spokesman for the European commission said: “The commission has already taken robust action to limit the continuous exposure to harmful air pollution and to ensure that citizens are well informed.”

Mike Hawes, chief executive of the Society of Motor Manufacturers and Traders, which represents the car industry in the UK, said: “The UK automotive industry is investing billions of pounds in new technology to reduce emissions and pass the toughest emission testing regime in the world. Manufacturers must, however, guard all their intellectual property, including information on the emission control systems provided to [national] Type Approval Authorities, as this will be commercially sensitive.”

However, ClientEarth lawyer Ugo Taddei said national authorities had failed to protect the public in the past: “To avoid a new dieselgate, tackle the widespread emission tampering practices and put an end to their detrimental and unacceptable health impacts across Europe, we need transparency, not tests carried out by discredited authorities and reckless manufacturers behind closed doors.”

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## Exposure to Air Pollution May Damage School Kids' Memory; Try these Memory Boosting Foods

*Date: 09-Oct-2017 Source: NDTV*



If you child is exposed to excessive air pollution, there is a chance it might be affecting their cognitive development, resulting in memory loss. According to a study published in the journal Environmental Pollution, there is an association between a reduction in working memory and exposure to fine particulate matter; fine inhalable particles that have diameters of 2.5 micrometres or less, along with black carbon- a pollutant directly related to traffic, during the walking commute to and from school.

The detrimental effects may be particularly marked in children because of their small lung capacity and higher respiratory rate. The study was carried out in Barcelona and enrolled over 1,200 children aged from 7 to 10, from 39 schools, all of whom walked to school on a daily basis. The children's working memory and attention capacity were assessed several during the 12 month long study. The statistical analysis of the findings revealed that exposure particulate matter and black carbon levels were associated with a decline of 4.6 percent and 3.9 percent, respectively, in the expected annual growth of working memory.

The fact that children who walk to school may be more exposed to pollution, but that does not mean children who commute by car or on public transport are not exposed to high levels. According to the researchers, the solution remains the same- reduce the use of private vehicles for the school run and create less polluted and safer home-to-school routes.

While this may take time to be executed, it is imperative to look after the child's diet. Here are some memory boosting foods that you must add to their daily diet-

#### 1. Blueberries

Blueberries are known as superfoods, majorly because of the presence of antioxidants and vitamin C. According to a study conducted by the University Of Florida Institute Of Food and Agricultural Sciences also found that blueberries can help improving cognitive ability, also including memory.

#### 2. Milk

A research conducted at the University of Kansas Medical Centre found that milk could improve the functions of the brain, due to the naturally occurring antioxidant glutathione in it.

#### 3. Nuts and seeds

Storehouse of nutrients, a handful of nuts and seeds daily may help increase brainpower significantly. Pumpkin seeds are loaded with zinc that plays an important role in shaping one's memory. Brain shaped walnuts are a good source of omega-3 fatty acids and other essential nutrients that promote memory and further improve the brain functioning.

#### 4. Green vegetables

From broccoli, to kale and spinach- green vegetables are full of iron, vitamin E, K and B9 which are extremely important for brain cell development, keeping memory related issues at bay.

With Inputs from IANS

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## **Air pollution in Delhi: Have things really changed?**

*Date: 09-Oct-2017 Source: Financial Express*

The Supreme Court in the year 2015 and 2016 had issued the orders to not allow trucks in Delhi which are not destined for the city. Taking the cognizance of the rising air pollution in the national capital, the apex court had also stressed on more stringent enforcement of rules to check polluting vehicles. However, the drivers believe that most rules are meant to be broken. A report by the Indian Express quoted Jignesh Kumar, driver of a 13-year-old truck as saying, “Option nahi hai koi aur. They send some trucks back, but that’s just for show. If you have money for a bribe, you can get in. Who is going to stop a truck carrying food meant for the city?” While South Delhi mayor Kamaljeet Sehrawat said, “Such things shouldn’t be happening. I will get it inspected.”



The Environment Pollution (Prevention & Control) Authority (EPCA) a year earlier had submitted a report to the Supreme Court suggesting that the air in Delhi after Diwali was the worst it had ever been. As per the report, it was 14 times worse than the norm, and surprisingly even worse than the ‘Great Smog of London in 1952’. This year too, all signs are indicating that the situation could be equally bad, if not worse, reported the Indian Express.

Despite this, the Delhi government is hopeful.

Here is what it will do:

- Anti-firecracker campaign is set to begin next week.
- Environment Minister Imran Hussain has directed officials to complete the installation of 20 new monitoring stations on time so that during winter and Diwali, the air quality can be measured efficiently.
- A senior official of the Delhi environment ministry was quoted as saying that odd-even scheme and shutting of schools will be done only on “severe or emergency air quality days”.

What are some Plans on hold:

- Intensify public transport – Delhi cabinet had approved a proposal to procure 2,000 new buses in September. However, the DTC needs 11,000 buses — it has not been able to buy new ones since 2009-10, when it procured 3,775 vehicles.
- Multi-level parking lots – The SDMC’s plan to construct multi-level parking lots to reduce congestion has also been derailed due to lack of land.
- Control construction dust – The SC had directed the repair and building of pavements and vacuuming of roads. But for Delhi’s extensive road network spanning 28,508 km, the SDMC has 12 mechanised sweeping machines, North has four and East has three.

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## **Half-hearted ban on sale of crackers won't help: India needs sustained efforts to tackle air pollution**

*Date: 11-Oct-2017 Source: First Post*

Delhi-pollution\_PTI.jpg

The Supreme Court verdict banning the sale of firecrackers in the Delhi/National Capital Region (NCR) is strange, to say the least, especially since it has not prohibited the bursting of firecrackers. Apart from making the order difficult to implement, the learned judges have also failed to gauge the emergency facing the country.



Last year, post Diwali, Delhiites woke up to streams of toxic air streaming into their homes. The young, the old and infirm, all were very literally gasping for breath with the more serious cases being rushed to the hospital.

The nuanced stance of the highest court of India banning the sale of firecrackers till 1 November 2017, but allowing the public to explode their existing stock has raised several question marks. The Delhi Police's chief spokesperson and Commissioner of Police (Traffic), Dependra Pathak, is a perplexed man.

Pathak, along with other police officials pointed out that such an order is difficult to implement especially since retailers who have bought firecrackers will continue to do business from their homes.

Police officials also questioned how they were expected to monitor online purchases of crackers. There are several websites who are not functioning from Delhi but who is to stop them from supplying firecrackers to Delhiites.

Several leading doctors who have been actively promoting the "Right to Breathe" campaign in the national capital believe the ban — spread over Delhi and 23 districts of Uttar Pradesh, Haryana, and Rajasthan along with environmental activists — should have been imposed across the country.

Dr Randeep Guleria, head of AIIMS, and a pulmonary specialist attributes the sharp rise in respiratory problems to the increased particulate matter (PM) 2.5 levels in the Delhi/NCR region.

As part of a WhatsApp campaign, Dr Arvind Kumar — who is also part of the "Right to Breathe" campaign — of Ganga Ram Hospital has been showing pink healthy lungs of people living in an unpolluted environment and the black, diseased lungs of people living in the national capital. The concern being voiced by doctors is understandable because, already, pollution levels have worsened in the last fortnight with PM 2.5 levels having risen 11 times between 22 September and 8 October.

Dr Guleria says that after Diwali, doctors in NCR report a 30 percent rise in the number of patients complaining of respiratory disorders.

Of course, part of the blame for the rising pollution levels must be put on the shoulders of farmers of Punjab and Haryana who continue to burn the stubble in their fields. Wind directions in the last fortnight have been from the north to the southeast bringing in high levels of toxins and a haze hanging low over the horizon which for Delhites means the beginning of winter.

The problem is not just in Delhi/NCR region though. All the cities in north India including Gwalior, Kanpur, Agra, Lucknow, and Patna are suffering from acute pollution caused by firecrackers, vehicular pollution and stubble burning by farmers.

No wonder these cities are reporting a spike in both respiratory diseases and heart problems.

"It's time the government declares a national emergency on air pollution and treat this problem on a war footing," she added.

Some pollution experts including Dipankar Saha who heads the Central Pollution Control Board's air laboratory services are quietly optimistic about the Supreme Court order. He believes that the order is the first step and if it is properly implemented, it will help to ensure better quality air this year.

But octogenarian Bhure Lal, who heads the Environment Pollution (Prevention and Control) Authority believes that while the Supreme Court order might help ensure better air quality this Diwali, the need of the hour is to come up with a sustained and long-term plan to tackle this problem which must be strictly implemented and monitored on a regular basis throughout the country.

All these experts, however, dismiss the claims that there are no thorough studies to show the extent to which bursting of firecrackers affects air pollution levels. A study undertaken by the Chest Research Foundation in Pune has conclusively shown that firecrackers are highly polluting as they produce high levels of PM 2.5 over a brief period of time. Firecrackers also result in a huge increase in potassium and sulphur levels.

Of course, the trading community is upset with the Supreme Court order as this comes across as re-imposition of a ban that was lifted just a month ago.

It is ironic how three determined children namely Arjun Gopal, Aarav Bhandari and Zoya Rao Bhasin along with their committed parents have spearheaded this significant piece of legislation. The 11 November 2016 order was issued on the basis of these children's petition which had ordered the suspension of all licenses that permit wholesale as well as the retail of fireworks within the territory of Delhi/NCR.

The September 2017 order was again challenged by these children who pointed out how firecrackers posed a serious health risk to them and thousands of other children especially since air quality deteriorated abysmally in Delhi/NCR. In fact, this had forced authorities to shut down schools post Diwali in 2016.

It was this plea by the three children that led the Supreme Court to point out that Diwali could indeed be celebrated with an equal fervour via various other means. The country, however, needs much more progressive legislation and its sustained implementation to improve the air quality and the health of its citizens.

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## **Oxford aims for world's first zero emissions zone with petrol car ban**

*Date: 12-Oct-2017 Source: The Guardian*

Petrol and diesel vehicles will be banned from Oxford city centre under plans to bring in what officials believe would be the world's first zero-emissions zone.

The proposals aim to slash air pollution in the historic university city, which has seen levels of the harmful pollutant nitrogen dioxide rise above legal limits in some areas.



Under the plans being put out for consultation on Monday, the ban would be introduced in phases, starting with preventing non-zero-emitting taxis, cars, light commercial vehicles and buses from using a small number of streets in 2020.

As vehicle technology develops, the zero-emissions zone will extend to cover all non-electric vehicles, including HGVs, in the whole of the city centre by 2035, according to the joint proposals by Oxford city council and Oxfordshire

county council.

The introduction of the zero-emissions zone could see levels of nitrogen dioxide, much of which comes from traffic fumes, particularly diesel engines, fall by up to three-quarters by 2035, the councils said.

Data released by the World Health Organisation last year showed that Oxford was one of 11 British cities to breach the safe limits set for toxic particles known as PM10s. It also breached the limit for PM2.5s.

The city has already won £500,000 of government funding to install charging points for electric taxis, and £800,000 to install 100 electric vehicle charging points for residents, but officials say more will be needed to support the zero-emissions zone. Other schemes being considered to support the zone include reduced parking fees for electric vehicles, electric taxi-only ranks, and electric delivery vehicle-only loading areas.

Councillor John Tanner of Oxford city council said: "Toxic and illegal air pollution in the city centre is damaging the health of Oxford's residents. A step change is urgently needed; the zero emissions zone is that step change.

"All of us who drive or use petrol or diesel vehicles through Oxford are contributing to the city's toxic air. Everyone needs to do their bit, from national government and local authorities, to businesses and residents, to end this public health emergency."

Oxfordshire county council councillor Yvonne Constance said: "We want to hear from everyone who uses the city centre, including businesses, bus and taxi firms and local residents ... Pragmatism will be an important part of anything we plan, but we have set the ambition."

The mayor of London, Sadiq Khan, called last month for the environment department to amend the Clean Air Act to allow for the creation of zero-emission zones.

Other cities that have tried to introduce measures to tackle vehicle emissions include Madrid, whose city council ordered half of the city's cars to be banned in 2016, and Oslo, where the authorities eventually backtracked on a plan to ban all private cars in the Norwegian capital.

## Air pollution on rise in state capital, equipment gathering dust

*Date: 12-Oct-2017 Source: Hindustan Times*



Air quality of the city is getting worse due to rise in concentration of particulate matter (PM) 10 and 2.5 and situation is expected to worsen after Diwali. What's more worrying is that the state is not properly equipped to measure its air quality and its deterioration is fast emerging as a major health hazard.

Last year, the Jharkhand State Pollution Control Board (JSPCB) had purchased three devices to measure concentration of particulate matter (PM) 2.5. But all the three devices are gathering dust due to lack of filter papers required for reading the pollutant levels and measuring the air quality.

Of late, it has been observed that the air pollution across the state capital breaches the 'safety level' during Diwali. But the JSPCB has been able to measure air quality at just one place, i.e. Albert Ekka Chowk, due to lack of infrastructure. Experts say tiny particulate matter reaches deep into lungs, at times leading to diseases such as Asthma and Tuberculosis.

JSPCB has eight machines to measure PM 10 but only five are in a working condition. Out of the five, one was installed at Albert Ekka Chowk, two were on stand-by and the remaining two were used for surprise checking in industrial areas, officials said.

The officials, however, said the level of PM 2.5 had never been measured in any part of the state during Diwali due to absence of filter paper.

Such condition prevails at a time when it has been observed even in other parts of the country, including national capital, that the level of harmful pollutants in air increases drastically during Diwali due to bursting of firecrackers coupled with foggy weather conditions.

Taking cognisance of the high pollution level during Diwali, the Supreme Court earlier this week banned sale of firecrackers in the Delhi-NCR region till Diwali.

In Ranchi, the recorded data on Diwali last year at Albert Ekka Chowk showed respirable suspended particulate matter (RSPM 10) had escalated to 199% from the permissible limit of 100 micrograms per cubic metre (mg/m<sup>3</sup>).

The only automatic ambient air quality monitoring display installed in the city is at Doranda, where pollution level is considerably lower than other parts of the city, which has witnessed concentration of PM 10 and PM 2.5 above the permissible limit many times.

Concentration of PM 10 was recorded highest at 985 micrograms per cubic metre in Doranda, 10 times higher than the permissible limit, on World Environment Day on June 5 this year.



Kirti Abhisek, a professor of environment studies at Birla Institute of Technology (BIT), Mesra, said, "With rising number of vehicles, PM 2.5 level has also increased in the capital city and it needs to be monitored for people's awareness."

He said proper monitoring would help people and planners introduce preventive measures as PM 2.5 invites several health problems, mainly related to the respiratory system.

Indian Medical Association's, Jharkhand chapter president, AK Singh said over 15% rise in number of Tuberculosis and Asthma patients had been recorded in the state over the past 10 years, which could be attributed to the rising air pollution.

JSPCB member secretary SK Suman, however, said air quality in the city was 'still safe'. "We have been monitoring noise and air pollution levels in Ranchi and other cities of Jharkhand under guidance of CPCB," he said.

Suman said order to procure filter paper to read PM 2.5 had been placed.

JSPCB analyst RN Kashyap said, "We have ordered for Whatman filter paper from UK to measure PM 2.5. All procedure to import it has been completed. We are expecting to get the filter by end of this month."

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## Europe Launches Satellite to Map Air Pollution in Unprecedented Detail

*Date: 13-Oct-2017 Source: SPACE*

LONDON —The European Space Agency (ESA) has launched the most advanced air-pollution-monitoring satellite ever built, with the mission of mapping the global distribution of dangerous air pollutants in unprecedented resolution.

The Sentinel-5P satellite lifted off aboard a Eurokot Rockot booster from the Plesetsk Cosmodrome, located roughly 500 miles (800 kilometers) north of Moscow, at 5:27 a.m. EDT (0927 GMT, 1227 local time) today (Oct. 13). About 1.5 hours later, ESA controllers acquired the first signal from the satellite, confirming that the craft had successfully made it to orbit.

Sentinel-5P, or Precursor, is part of the European Union's Copernicus program, the world's largest Earth-observation program. Copernicus is a joint venture between ESA and the European Commission, the EU's executive body; it currently consists of six satellites in orbit, including the Sentinel-5P launched today. Sentinel-5P is the first of the fleet to focus on measuring the chemistry of Earth's atmosphere.

"Having Sentinel-5P in orbit will give us daily and global views at our atmosphere with a precision we never had before," Josef Aschbacher, ESA's director of Earth-observation programs, said in a statement.

The launch of Sentinel-5P comes at an important time. The only satellite currently measuring air pollution, NASA's Aura, launched in 2004 and is already past its initial six-year mission lifetime.

According to Stephen Briggs, senior advisor to the director of ESA's Earth Observation program, the Sentinel-5P offers an improvement over the 13-year-old Aura satellite.

"Sentinel-5P carries an instrument called Tropomi, which is very powerful because it has a very wide swath — 2,600 kilometers wide [1,615 miles]," Briggs told Space.com during a launch event here hosted by the UK Space Agency and Airbus. "That means that it will give us the view of the whole Earth every day. Every day, we will get measurements of every point on the Earth."

Tropomi, which is short for "TROPOspheric Monitoring Instrument," has been developed primarily by a Dutch consortium, led by the Royal Netherlands Meteorological Institute.

The spectrometer will measure a wide range of pollutants in the atmosphere, including nitrogen dioxide and sulfur dioxide, which come from the burning of fossil fuels, as well as carbon monoxide, formaldehyde, ozone and the potent greenhouse gas methane. Thanks to Tropomi's high resolution of 4 by 2 miles (7 by 3.5 km), scientists will be able to understand in detail how air pollution spreads in the atmosphere, see what the most important sources of air pollution are and identify accumulation hotspots.

"The current atmospheric chemistry missions have very low resolution," said Elizabeth Seward, a space scientist at Airbus, which built the satellite and participated in the development of the instrument. "If you see an image of the air pollution, you can't tell where it is coming from. Tropomi is unique in that it's going to be very highly accurate, and so we will be able to see where does that nitrogen dioxide, for instance, come from and how is the wind spreading it."

According to Briggs, space-based air-pollution measurements provide an important overview that complements the more detailed local ground-based measurements.

"From space, we are able to see the dynamics of the atmosphere, which shows us what the sources [are], and where the sinks are, of these different pollutants," he added.

Briggs said that Tropomi will be especially important for monitoring of methane, a greenhouse gas that is 28 times more potent in warming the planet than the more known carbon dioxide.

"Methane has been measured by Envisat in the past. That was at a very coarse resolution," Briggs said. "We will want to see much more detailed measurements of methane in the future. Understanding what sources and sinks are for methane is very important for us to understand climate."

Emitted from agricultural source, such as cow manure, as well as from oil and gas exploration, methane is of great concern to the climate research community. While emissions of carbon dioxide have been flattening out over the past few years, emissions of methane keep rising sharply, according to recent studies.

Sentinel-5P is a precursor to the Sentinel-5 instrument that will be flown on the European meteorological satellite MetOp-SG in 2021. The European Commission decided to build the precursor craft to plug a data gap left after the retirement of the Envisat satellite in 2012.

## Air pollution intensifies in Delhi-NCR, warning of health risk

*Date: 13-Oct-2017 Source: Times Now News*



New Delhi: Air pollution intensified in the National Capital and the adjoining cities on Friday, with forecasts warning further worsening of situation in the next 24 hours and warning the very young or old and those with breathing problems to take precautions.

The average PM2.5 (particles in air with diameter less than 2.5 mm) level in Delhi till 8 p.m. was recorded at 119, considered 'poor', showed data by System of Air Quality and Weather Forecasting and Research (SAFAR).

The international permissible limit for PM2.5 is 25 micro grammes per cubic metre while for India, it is 60.

Cautioning, especially those with heart or lung diseases, apart from old people and children to avoid any prolonged or heavy exertion, SAFAR had forecast further intensification in PM2.5 levels in air on Saturday -- considered 'very poor'.

"Everyone else should reduce prolonged or heavy exertion," said a health advisory by SAFAR, while it further elaborated 'health risk' as "everyone may experience more or serious health effects. Significant increase in respiratory effects in general population".

The assessments are based on the level of PM2.5, one of the major and common pollutants with direct consequences on life expectancy.

On Friday, the PM2.5 situation by 8.00 p.m. had crossed red-mark considered 'very poor' at five areas of Delhi, including Pitampura and Delhi University in the north, Lodhi Road, Mathura Road and Aya Nagar in the south.

According to the Delhi Pollution Control Committee (DPCC) data recorded at 8 p.m., the level of PM2.5 at Anand Vihar in east Delhi was 145, at Mandir Marg in central Delhi was 83, at Punjabi Bagh in west Delhi was 68 and R.K Puram in south Delhi was 171.

According to the Central Pollution Control Board (CPCB), the Air Quality Index (AQI) on Friday also showed a grim picture with Delhi's AQI further deteriorating in the past 24 hours and placed as 'poor' with index value 285.

On Thursday, Delhi's air quality, still poor, had an index value of 268.

Meanwhile, in neighbouring Ghaziabad in Uttar Pradesh, the situation seemed alarming, with air quality consistently falling for three days and fixed at the index value of 342 on Friday, which was 338 on Thursday and 296 on Wednesday.

In Haryana, Gurugram saw a moderate air quality while in Faridabad, the air quality was recorded as poor with index value 252.

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## Diwali 2017: How to protect yourself from air pollution this Deepawali

*Date: 14-Oct-2017 Source: Indian Express*



Diwali, the festival of lights is a joyous occasion full of merriment, gaiety, zest and zeal. From attending traditional parties to shopping for new clothes and preparing delicious meals — the five-day festival is believed to bring in good luck! To jazz up the ritual of lighting lamps and tying strings of light bulbs, people also burst crackers. However, little do they realise that they tend to add pollutants to the environment. After the extensive use of harmful firecrackers or non-biodegradable items

such as plastic decoration items and thermocol plates — every year, after the merriment comes to a halt, most cities have a cover of smog for a couple of days.

In several areas, especially the National Capital, firecrackers have been banned for some time to control the pollution levels. Nevertheless, we must take care of the health of not just our near and dear ones — but all the citizens of the country. We all know the precautions one must take while dealing with fire, but the harm caused by smoke and fumes also needs to be taken care of. Here are a few tips shared by experts that can help us deal with air pollution, especially for patients with asthma, kids, and elderly people.

Things to keep in mind before Diwali:

- \* **Boost immunity:** Drink plenty of water or increase the intake of fluids. One must also try to avoid fatty foods, more so, on the days prior to the festival. “Apart from that, certain food items like apples, apricots, broccoli, walnuts, and beans contain a good amount of antioxidants and are good for lung health and immunity,” says Dr Ravi Shekhar Jha, consultant – pulmonology, Fortis Escorts Hospital.

- \* **For patients with asthma:** Keep your inhalers handy and stock up your refills and check the expiry date of the inhaler. Also, buy your medication beforehand as most shops are closed during the festival.

Things to keep in mind during Diwali:

- \* **For shortness of breath or choking:** Do not panic. Go to an area where there are fewer fumes and then take deep breaths. Wear a wet cloth as a mask to avoid breathing in bad air. In case it continues, see a doctor.

- \* **For people with respiratory problems:** Try to restrict your exposure to fumes of firecrackers. In case, you feel tightness in the chest or feel short of breath, use an inhaler immediately. “If you don’t get relief

or don't have a rescue inhaler with you, visit the nearest healthcare facility immediately. Chest tightness may herald impending respiratory failure," Dr Jha warns.

\* Tips for kids and newborns: Children shouldn't be left alone on their own. Take care that the crackers do not produce too many fumes as it is extremely injurious to health. "Keep newborns indoors and keep the window panes shut so that harmful air doesn't enter the house. Use a wet cloth as a mask to avoid breathing in polluted air," Dr Rajesh Chawla, senior consultant for respiratory medicine from Indraprastha Apollo Hospitals says.

\* Tips for elderly people: Similar care should be taken for old people. In case, they participate in burning firecrackers, make sure they wear a safety mask. Also, never try to touch half burned crackers. Remain as far as possible from the smoke of the crackers.

Things to do after Diwali:

We often see the urban skyline being blanketed under a thick layer of smog which refuses to dissipate for quite a few days after Diwali. During this time, restrict your activities outdoors if possible. It is advised to wear a mask at all times when stepping out during this phase.

"Don't go for a walk in the smog and don't exercise in the open. Avoid exercising early in the morning. Exercise indoors," says Dr Chawla.

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## Air pollution: Firecracker ban puts lid on toxic brew, a step in right direction

Date: 14-Oct-2017 Source: Economic Times

Elements	Usage	Effect
Colouring Agent	Aluminium (brilliant white), Lithium (red), Copper (blue), Strontium (red), Barium Nitrate (green), Antimony Sulphide (glitter effect), Cadmium, Arsenic	Skin irritation and wart formation, accumulates within the body, cause of Alzheimer's Disease, cancer risk, lung damage and respiratory tract irritation, gastrointestinal problems, radioactive effects, replaces calcium in the body, hormonal imbalance, muscular weakness
Oxidising and reducing agents	Lead compounds, Potassium Nitrates, Perchlorates (Ammonium & Potassium), Mercury	Accumulates in the body, detrimental to the physical and mental growth of infants and children, affects the unborn, carcinogenic, thyroid problems, toxic dust contaminates around and surface waters, poisonous to plants and animals
Fuel	Potassium Nitrate	
Produced on bursting crackers	Ozone, Nitrogen Dioxide, Sulphur Dioxide, Nitric Oxide	Toxic dust, lung cancer

The ban on Diwali crackers does not ruin the festival of lights. Experts say that on the contrary, the ban will actually spare citizens from lethal doses of toxic substances that are not measured in routine pollution checks such as mercury, lead, and aluminium.

As for those who value clean air—the apex court order is just a good first step. It is an intervention that makes much more sense than steps such as the temporary ban on new diesel vehicles, the odd-even scheme, environment specialists say.

"This will play a crucial role in regulating air pollution in the region and reduce the impact on human health," said Ajay Mathur, Director General of New Delhi-based think tank, The Energy and Resources Institute, or TERI.

The order, restores the pristine glory of Diwali, when people celebrated the festival with earthen lamps and a few sparklers; but in recent decades, the festival has been marred by ostentatious use of firecrackers

that contain lethal doses of chemicals, and release poisonous gases, putting people to risk of cancer, skin disorder.

Bursting crackers was a major contributor to the dark 10-day haze that enveloped Delhi last year, with poisonous substances at alarming levels, he said. “The ban by the Supreme Court would ensure that unlike previous years, Delhi does not gasp for clean air after Diwali, and those suffering from respiratory diseases do not have to consider leaving the city during this time,” Mathur said.

Data recorded by monitoring stations shows that the levels of toxins that can accumulate in humans, animals and plants, jumps three to four times the average levels of October and November.

Unlike other experts, Mathur, who has been a part of international group of scientists working with the Intergovernmental Panel on Climate Change, stresses the ban on firecrackers is just a first step. “With meteorological conditions not being favourable for dispersing dust and particulate matter in a short interval, the ban is a step in the right direction,” he said.

Those arguing that the ban will diminish festive fervour would benefit from a quick glance at the toxic brew that goes ..

Materials used include nitrates, sulphur, charcoal, aluminium, titanium, copper, strontium, barium, dextrin and paron. Virtually every organ in the body is at risk especially given the huge quantities of firecrackers that are burst during Diwali. Justices Madan B Lokur and Deepak Gupta, who gave the firecracker ban judgment, observed in the five days that Diwali is celebrated, roughly 10 lakh kg of firecrackers are burst each day.

In its affidavit to the Supreme Court, Central Board of Pollution Control, the country’s apex pollution regulator, analysed the four commonly sold types of firecrackers— atom bombs, Chinese crackers, maroons, and garland crackers. It found that the four key ingredients used were aluminium powder, which gives firecrackers its brilliant flames and white sparks, sulphur, potassium nitrate, and barium nitrate.

These ingredients, according to the scientists at CPCB, are a major constituent of the smog that forms on bursting of firecrackers and hangs over the city like an impenetrable cloak for days after Diwali. This smog has high levels of sulphur oxides and nitrogen oxides, and particulate matter containing heavy metals such as lead, mercury, strontium, lithium, and aluminium.

The CPCB says that a “major concern being the inappropriate stoichiometric amounts of the ingredients in making common firecrackers.”

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## **Delhi's Air Quality Worsens, To Stay 'Very Poor' For 48 hours**

*Date: 15-Oct-2017 Source: NDTV*

NEW DELHI: With north-westerly winds blowing into Delhi from neighbouring states, air quality in the national capital worsened on Saturday and is set to remain 'very poor' over the next 48 hours.



According to weather analysts, north-westerly winds blowing at speeds of 10 to 12 km per hour across Delhi were bringing along pollutants from Punjab and neighbouring Haryana.

Satellite images show stubble-burning in parts of Delhi, and areas in Haryana, western Uttar Pradesh and Punjab.

"Winds are suppose to remain north-westerly till October 18, after which there are chances of a cyclonic development in the Bay of Bengal that

changes the wind direction to easterly," Mahesh Palwat, Director of private weather forecasting agency Skymet, told IANS.

He said easterly winds don't assure of respite either, as the combined post-Diwali effect, stubble-burning in western UP and meteorological conditions are set to increase pollution.

According to data from the System of Air Quality and Weather Forecasting and Research (SAFAR), average PM2.5 (particles in air with diameter less than 2.5 mm) level in Delhi till 8 p.m. on Saturday was recorded at 122 units, considered 'very poor', while on Friday it was 119 units, considered 'poor'.

On Saturday, the PM2.5 situation by 8 p.m. had crossed the 'very poor' mark at Pitampura, Dhirpur and Delhi University in the north, Mathura Road in the south, and the Indira Gandhi International Airport.

The PM2.5, however, is set to increase to 127 units on Sunday and 125 units on Monday, according to SAFAR.

The international permissible limit for PM2.5 is 25 micrograms per cubic metre while for India it is 60.

SAFAR officials cautioned people, especially with heart or lung diseases, elderly and children, to avoid prolonged or heavy exertion. Medical experts said already a surge in the number of patients complaining about chest pain and respiratory issues has been recorded.

Beside PM2.5, high ozone level -- another carcinogenic aspect in air pollution -- also recorded an increase at some places across Delhi, including the North Campus of Delhi University.

"High ozone levels affect lungs, though a major worry in Delhi is PM2.5. It also depends on several other factors like wind direction and speed... whenever there is burning (stubble), there will be harm to human health," SAFAR Project Director Dr Gufran Beig told IANS.

Air quality in neighbouring Noida fell from 'moderate' to 'poor' over the past 24 hours, with PM2.5 almost touching the red mark.

According to the Central Pollution Control Board data, PM2.5 over the past 24 hours was 209 units at Anand Vihar, 143.31 at R.K. Puram, 122.46 units at Mandir Marg, 163.25 units at North Campus (Delhi University), 150.13 at Dwarka, 144.57 at Punjabi Bagh and 109.87 at Lodhi Road.



All these values were at least twice the safe limit set by the government, which as per the possible health impacts (set by CPCB) can cause respiratory illness on prolonged exposure.

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## Air Pollution May Make Babies' Cells Age Faster

*Date: 16-Oct-2017 Source: Time*



There's growing evidence that exposure to air pollution can have a number of unhealthy consequences, from cancer to heart disease and respiratory illnesses. In recent years, researchers have also linked air pollution exposure to faster aging in adult cells.

In a new study published in *JAMA Pediatrics*, an international group of researchers conducted the first detailed look at pollution's effect on developing babies in utero. They found that the more pollution expectant moms were exposed to

while they were pregnant, the shorter their babies' telomeres: parts of the DNA in every cell that act as a molecular clock keeping track of the cell's age, and the body's.

According to the study of 641 newborns, those whose mothers were exposed to higher levels of certain types of air pollution (so-called "particulate matter" from things like car emissions and burning of residential heating fuels), were born with shorter telomeres—8.8% shorter in their cord blood cells and 13.2% shorter in their placenta cells—than those whose mothers were exposed to less pollution. The effect was strongest when the moms were exposed during the second trimester.

Telomeres shorten every time a cell divides; since older cells have divided more than younger ones, their telomeres are shorter. Eventually, when the telomeres become too short, that signals the cell to die. The study's findings suggest that these babies are starting out with a shallower reserve of telomere length—so as their cells divide, the cells will age faster than those that start out with longer telomeres.

"Our results may have important health consequences later in life because a shorter telomere length at birth indicates less buffer capacity for postnatal influence of insults," such as inflammation, the authors write. Other studies have shown that a number of things can affect the length of telomeres and accelerate their shortening, including smoking, obesity, exposure to violence and stress. All tend to increase inflammation, which promotes a molecular stress that quickens the telomere-shortening process.

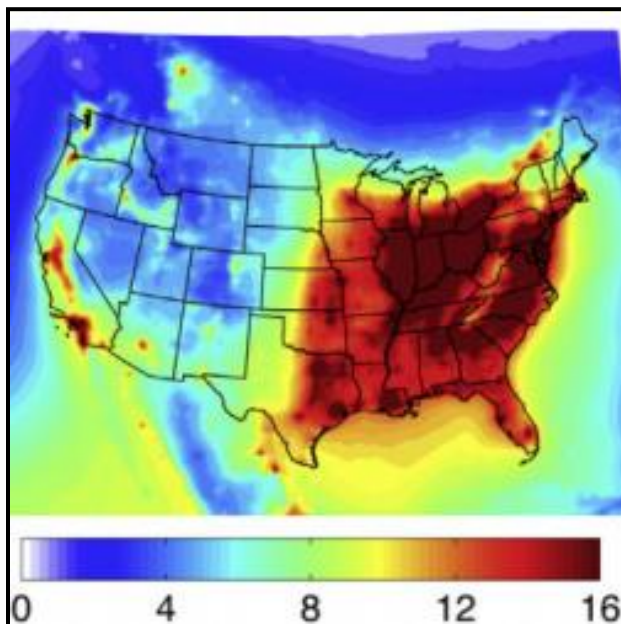
Frederica Perera, director of the Columbia University Center for Children's Environmental Health, has investigated the effects of pollutants on fetuses and says the study's findings are noteworthy. "The findings are yet another argument for addressing the problem of air pollution," she says. "Shortened telomere length is certainly not a good sign." (Perera was not involved in the new research.)

The researchers say their study does not suggest that all children born in environments where their mothers were exposed to pollution will necessarily age more quickly. They point to some encouraging news in their finding that babies born to mothers exposed to higher levels of air pollution during their third trimester tended to have longer telomeres than those exposed to less. This suggests that by the final trimester, the fetus may have developed ways to compensate for and counteract the effects of pollution on the DNA, they say. The authors say that these results should promote more research into the effects of particulates on developing cells in utero. Longer term studies of how the shortened telomeres affect children and teens are also critical. (Perera, for example, is tracking telomere length in a group of children, now 18 and 19, whose in utero exposure was measured.) If pollution can affect aging in adult cells—and research suggests it does—then more work needs to be done to better understand how it can influence aging in newborns as well.

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## Air Pollution: How To Deceive People With Maps

*Date: 16-Oct-2017 Source: American Council on Science and Health*



It doesn't matter how bad or wildly untrue an idea might be; it is a near certainty that one can find an academic somewhere who is willing to embrace it. Alternative medicine, AIDS denialism, Holocaust denialism, communism -- all of these find a welcoming home within the ranks of academia.

The latest bad idea -- admittedly, not nearly as bad as the aforementioned -- comes from Smith College history professor Daniel Gardner, who believes that the U.S. should learn from China about air pollution. In an article for Project Syndicate, he makes the case that a nation with some of the cleanest air in the world can learn from a nation with some of the dirtiest air in the world.

Dr. Gardner, who has no expertise in epidemiology or public health, begins with the alarming statement that "America's air kills." As evidence, he cites a study that claims that there are 200,000 premature deaths in the U.S. every year because of air pollution. That's a shocking statistic. But is it true?

No, almost certainly not. The study that Dr. Gardner cites is incredibly misleading -- and it appears to have been purposefully written that way. Consider the image (on right) depicting PM2.5 (small particle) air pollution in America. California, the Midwest, and the eastern U.S. look terrible.

But here's the catch: Look at the scale. According to it, the worst air in America contains 16 micrograms ( $\mu\text{g}$ ) of small particles per cubic meter of air ( $\text{m}^3$ ). The World Health Organization's PM2.5 standard is an annual average of 10  $\mu\text{g}/\text{m}^3$ . The study's own data show that air quality for roughly half the U.S. meets

the health standard set by the WHO, while air quality for the other half exceeds it, but just barely. The only reason this map looks bad is because the authors deceptively colored it with ominous shades of red to make it look as if air quality in America is unhealthy.

And it's not even clear that the map is accurate. It does not agree with the PM2.5 air quality map produced by the WHO. (See below. Scale: green < 10  $\mu\text{g}/\text{m}^3$  of PM2.5; yellow 11-15; orange 16-25; orange-red 26-35; red 36-69; dark red 70+.)

According to the WHO's map, almost all of America's air is perfectly clean. The splotches of yellow, located in the Midwest and California, exceed the WHO standard of 10  $\mu\text{g}/\text{m}^3$ , again just barely. Indeed, a recent report, which we discussed earlier this month, concluded that the U.S. would receive little health benefit from cleaning up its air even further: One and half months of extra lifespan per person.

So, how is the figure of "200,000 premature deaths" determined? It seems to be based on an EPA report that assumes there is no safety threshold for levels of PM2.5:

In other words, the EPA consulted with environmentalists and activists, then decided to endorse the most alarmist possible interpretation of the data. If there is a single particle in the air, you're going to suffer an early death. That's the pollution equivalent of telling mothers they're going to poison their babies if they have a glass of wine while pregnant.

Can the U.S. Learn from China about Air Pollution?

Dr. Gardner is entirely wrong. Not only are his stats based on dubious extrapolations, but his conclusion that the U.S. can learn from China is backward. On air pollution, the Chinese could learn from us.

But when a politically motivated history professor writes about science, anything is possible.

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## Health and Wellness: Why a banana a day will actually keep the doctor away

*Date: 16-Oct-2017 Source: Herald Extra*



When you see commercials with elite athletes dramatically tearing up the basketball court or drilling long balls to center field, the ever-important question always follows: Is it in you? Well, according to experts, not as much as it should. Doctors say we need 4,700 milligrams daily, but studies show most people aren't getting enough potassium in their diet.

Why the name may not ring a bell with most people, it's "street name" — electrolytes — may be more familiar. Most energy drinks are designed

to replenish these essential minerals. Along with potassium, the nutrients calcium, magnesium, sodium, phosphate and chloride work together to regulate important body functions. If you run low on them, look

out. Low levels affect sleep, muscles, heart rhythms, joints, digestion, anxiety levels, blood pressure and balance.

If you are looking for an effective way to feel better, here are four reasons potassium is essential for good health.

#### 1. It reduces bone loss.

The role of potassium in bone health relates to the ability of selected potassium salts to neutralize bone-depleting metabolic acids.

“These acids ‘eat away’ at bone, much like acid rain eats away at a limestone statue,” said Susan E. Brown, MD. “It is, however, is largely neutralized by potassium compounds, and to a lesser degree magnesium compounds, obtained from fruits and vegetables.”

Along with fresh produce, potassium is found in bananas, seeds, and most popular spices.

#### 2. Maintains blood pressure.

To appreciate the role of potassium, you need to understand kidney function. The tricky process of controlling blood pressure relies on the kidneys. When the body is filled with excess fluid, blood pressure increases, so the kidneys need to filter the blood and eliminate excess fluid that is stored in the bladder. But they need potassium to help draw out extra fluid and direct it to storage. When potassium levels are low, kidneys will not function efficiently. So, by reducing salt intake and adopting a diet rich in fruits and vegetables, potassium levels will remain high, which will help the kidneys keep the blood clean and blood pressure levels healthy.

#### 3. Reduces risk of kidney stones

Much of the focus on dietary needs for seniors revolves around fats and salt intake. But it’s also important that potassium levels are normal.

“Recognizing that the physical changes associated with aging can affect kidney function and the absorption of nutrients, we monitor our menus to be sure we are providing nutrients like potassium, which is necessary to maintain blood pressure, reduce sodium sensitivity, and reduce the risk of things like kidney stones,” said Debra Koenig, executive director at Fort Dodge Health & Rehabilitation. Great sources of potassium include kiwi, watermelon, pineapple, celery, and most citrus fruits.

#### 4. Muscle function

One of the quickest ways to discover a low potassium level (called hypokalemia) is muscle function. Since potassium helps muscle contraction, low levels result in muscle cramps, aches, spasms and weakness.

“Potassium also helps with electrical functions within your body by helping to synthesize proteins and support electrical activity in your heart to keep it beating,” said Diana Rodriguez. “Your body also needs potassium to help build muscles and promote healthy growth.”

Let's face it. Swigging on an energy drink or eating a bunch of bananas won't help us leap tall buildings in a single bound, but when you consider the importance of maintaining healthy potassium levels and the difference it can make in body functions — it couldn't hurt.

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## Delhi finally has an action plan to combat air pollution, here's how you can help

*Date: 17-Oct-2017 Source: Hindustan Times*



The stage is all set. The Graded Response Action Plan, Delhi-NCR's answer to combat air pollution that assumes apocalyptic proportions during this time of the year, will come into force for the first time from Tuesday.

Hindustan Times finds out about the plan, how it will be implemented over the next four months, the roles of agencies and their preparedness, what NCR cities are doing to implement it and how you

can make a difference with your suggestions and complaints.

### How it will be implemented

The Central Pollution Control Board (CPCB) will monitor air quality from various stations located across Delhi-NCR. Daily reports will be sent to the Environment Pollution Control Authority (EPCA), the implementing authority of the plan, which will take a decision on the future course of action.

If data of any station shows a sudden spike in pollution level, a team will rush to the spot and try to analyse the reason. Accordingly, action would be taken and instructions issued.

The CPCB has directed all state pollution control boards of NCR states to form teams that will fan out and flag violations. The CPCB has formed around 40 teams that are visiting various parts of Delhi alone.

“The chief secretaries of NCR states have been designated as nodal officers. We will direct them to take immediate action if any particular area shows a spike in air pollution,” said EPCA chairman Bhure Lal.

### What Delhi agencies are doing

The transport department is checking buses entering the three inter-state bus terminals for valid pollution under control papers and penalising violators. A special campaign will be launched after Diwali to randomly check commercial vehicles in the city. The officials will check if PUC centres are operating properly. Buses on some routes with low ridership could be diverted to cater to busy stretches.

The Badarpur Thermal power station will be shut from Tuesday after the FIFA U17 World Cup matches end in Delhi. Brick kilns without the less-polluting zig-zag technology have already been told to shut.

“There is no question of any department not following the GRAP as it is a Supreme Court direction. Seeing the pollution levels, whatever EPCA directs us, our departments shall do,” said Delhi government spokesperson Nagender Sharma.

What you can do

The Delhi Pollution Control Committee is setting up a control room. People can lodge complains at 9717593501 and 9717593574 through WhatsApp or the SAMEER app of CPCB. An email address will also be created.

“Complaints on our numbers would be diverted to the CPCB, which will take action,” said a senior official of the DPCC.

As the GRAP aims to curb pollution levels across NCR, neighbouring states have also initiated a series of steps.

Gurgaon is increasing the frequency of mechanised road cleaning, sprinkling water on road, stopping use of coal or firewood in hotels and open eateries, constituting teams to stop garbage burning and appointing nodal officers.

Haryana State Pollution Control Board officials said they already issued notices to shut down all polluting brick kilns.

While Haryana PCB officials detected 430 cases of stubble burning, farmers are being encouraged not to burn crop residue.

“This year we expect a 70% cut in pollution over last year,” said S Narayanan, member secretary, Haryana Pollution Control Board.

In Uttar Pradesh, the Gautam Budh Nagar district administration has been holding weekly meetings every Friday.

A total of 281 industries have been identified as hazardous waste-generating industries, out of which 60 are closed. There are regular site inspections to monitor waste disposal of these.

In Ghaziabad, enforcement action is more or less restricted to penal action against offenders.

“We conduct checks on polluters, especially those burning garbage. We collected nearly R25-30 lakh as fine over the past couple of months. We have procured four new road sweeping machines,” said CP Singh, municipal commissioner.

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## **Scary New Evidence Suggests Air Pollution Can Harm Babies in Utero**

*Date: 17-Oct-2017 Source: Mother Jones*

As fires spread across Northern California last week, smoke fouled the air of the San Francisco Bay Area and beyond. Ash fell from the sky like snow, walkers strapped on face masks before heading outside, and





school children throughout the region were kept indoors. The fires have since been controlled, but air quality hasn't yet returned to normal in the area.

It's no secret that air pollution is dangerous; the World Health Organization (WHO) estimates that about 3 million deaths worldwide are linked to outdoor air pollution every year—nearly double the number of people who die each year from

diabetes, and more than double the number who die from road injuries, according to the organization.

It gets worse. According to a study published in the journal *JAMA Pediatrics* today, air pollution may even affect fetuses in the womb. In a first-of-its-kind study, European researchers found that newborns whose mothers had breathed dirty air during pregnancy were more likely to show biological markers associated with shorter lifespans than newborns whose mothers had not been exposed to air pollution.

The study included 641 pregnant mothers living in Flanders, Belgium. After estimating how much air pollution each mother was exposed to on a weekly basis, the researchers compared those pollution levels to the length of their newborns' telomeres, groups of molecules that cap the tips of chromosomes and help with growth and repair of tissues. Telomere length is correlated with disease and "is considered a marker of biological aging," according to the authors.

What they found, specifically, was this: Mothers who inhaled the most air polluted with nitrates, sulfates, and black carbon with particles larger than 2.5 micrometers in diameter (the size that the WHO designates as unhealthy) gave birth to babies with shorter telomere length, meaning their children were more at risk for "accelerated aging."

The second trimester of pregnancy (weeks 13-27), the authors found, was the most critical window for newborns. Babies whose mothers breathed in polluted air during this period had the shortest telomere lengths at birth.

While the telomere-length finding is new, children's vulnerability to air pollution has been well documented, said Heather Brumberg, an associate professor of pediatrics and clinical public health at New York Medical College who was not affiliated with the new study. Breathing dirty air may increase a child's risk of developing ailments including allergies, asthma, neurological diseases, and obesity, she said. "There are tons of multi-system effects [of air pollution] on children growing up."

While air pollution isn't healthy for anyone, the difference between newborns and adults, Brumberg said, is that babies are more vulnerable to its effects because they are still growing. "Their brains are still developing; their lungs are still developing," she said. "Unlike an adult, air pollution may impact a child's development."

This study, the authors note, does have limitations. First, the researchers were only able to get a "snapshot" of telomere length by sampling just once, at birth. A more comprehensive study, the authors noted, would measure changes in telomere length throughout the pregnancies. Also, the group estimated



air pollution levels based on the mothers' home addresses, and failed to account for other places the mothers could have traveled.

According to a WHO model, 92 percent of the world's population lives "in places where air quality levels exceed WHO limits," while the vast majority of deaths related to air-pollution occur in low and middle income areas.

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## Graded action plan put in place to curb Delhi air pollution

*Date: 18-Oct-2017 Source: Economic Times*



The Badarpur power plant has been shut, diesel generators banned, hundreds of brick kilns ordered to stop production, and if the air quality worsens, Delhiites may have to shell out more as parking fee, possibly four times the current amount.

The Supreme Court-appointed EPCA, a body empowered to enforce the Graded Response Action Plan (GRAP) under which these steps have been taken, made it clear that if needed it will not hesitate to enforce the 'odd-even' plan, order cars off roads, and shut schools.

Measures under the GRAP's 'very poor' and 'severe' categories came into effect today, and they will remain in force till March 15, the EPCA announced following a review meeting chaired by its chief Bhure Lal, a former IAS officer.

EPCA (Environment Pollution Prevention and Control Authority) member Sunita Narain said while the GRAP proposes a hike in parking fee under its 'very poor' segment, it cannot be immediately implemented as the Delhi government's parking policy has not yet been finalised.

But she indicated that the EPCA will enforce the measure if pollution levels show any rapid spike, even if a formal policy is not in place.

Only those brick kilns, which have implemented the zigzag technology that helps reduce black carbon emission, have been allowed to function, Bhure Lal said.

Narain said measures such as the 'odd-even' car rationing policy - under which private vehicles are allowed on roads based on the last digits of license plates - or closure of schools will be taken only as a last resort under the emergency segment of the action plan.

"However, we are trying to ensure that we do not reach a health emergency like last year, which may force us to shut the city," she said.

Power officials said the closure of the Badarpur plant, which used to supply around 400 MW electricity to discoms, will not have any impact on Delhi as the city has surplus power.

CPCB wanted it to be closed by September, but it could not be done as the Jawaharlal Nehru Stadium, which hosted matches of the U-17 FIFA World Cup, drew electricity from the plant.

The EPCA said the two other thermal power plants in the region, at Dadri and Jhajjar, will also have to be shut if pollution reaches emergency levels and also directed that Bawana gas-based plant be run at full capacity.

The set of actions, which will kick in if the air quality aggravates, include closure of hot mix plants functioning in Haryana and Uttar Pradesh, stone crushers in Haryana and Rajasthan, and industries using Furnace Oil and Pet Coke, which are rich in Sulphur, across the region.

Under the GRAP, measures under 'very poor' and 'severe' categories are rolled out when levels of PM2.5 are between 121-250 micrograms per cubic metre (g/m<sup>3</sup>) and above 250 g/m<sup>3</sup> respectively. PM10 levels have to be between 351-430 g/m<sup>3</sup> PM10 levels add above 430 g/m<sup>3</sup> respectively.

The 24-hour-average safe standards of PM2.5 and PM10 are 60 and 100 respectively and anything beyond that can harm living beings as these pollutants measure up to 30 times tinier than the width of a human hair.

The severe plus or the emergency action plan under GRAP, which proposes a ban on construction activities, odd-even scheme, ban on entry of trucks and closure of schools, shall come into force when PM2.5 levels cross 300 g/m<sup>3</sup> or PM10 levels cross 500 g/m<sup>3</sup> (five times above the standard level) and persist for 48 hours or more. SBR ABH

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## Government set to face fresh legal challenge over air pollution crisis

*Date: 18-Oct-2017 Source: The Guardian*



Environmental campaigners are set to take the government back to court over what they say are ministers' repeated failings to deal with the UK's air pollution crisis.

ClientEarth, which has already won two court battles against the government, has written a legal letter demanding that the environment secretary Michael Gove sets out a range of new measures to address air pollution which contributes to the deaths of 40,000 people across the UK each year.

If the government fails to comply with this "letter before action", as it is known, ClientEarth will issue new proceedings and ministers are likely to face a third judicial review.

The courts forced the government to produce its latest air quality plan in July but the document was widely criticised as inadequate by environmentalists and clean air campaigners.

ClientEarth lawyer Alan Andrews, announcing the new legal proceedings, said the government's proposal had "simply passed the buck to local authorities who will have little option but to impose charges on diesel vehicles".

He added: "It is high time that the government kept up its end of the bargain and helped ordinary people and small businesses make the shift away from diesel towards cleaner forms of transport."

The renewed legal pressure on the government comes as new figures show the number of local authority areas in the UK which are breaching their air quality targets reached a seven-year high in 2016.

Government statistics show a total of 278 of the 391 local authorities (71%) missed their air quality targets last year, up from 258 in 2010.

Andrews said the figures were rising despite the government being ordered by both the supreme court and high court to clean up the country's illegal air pollution "in the shortest possible time".

"These new figures show that this is a national problem that requires a national solution," he said.

Client Earth first successfully challenged the government in 2015 when the supreme court ruled ministers must draw up plans to meet EU pollution rules by the end of that year. Eighteen months later, following a second judicial review, the high court judged these new proposals were illegally inadequate.

ClientEarth then challenged the government's draft proposals that were released in May but this new legal action is likely to lead to the third judicial review of the government's policy in the past five years.

In its legal letter, ClientEarth points out that under the government's existing plans 45 local authorities are not being required to take action on air quality, despite being forecast to breach air pollution limits for years to come.

It criticised the government's lack of progress on key national policies such as changes to the tax system to favour cleaner vehicles; a targeted diesel scrappage scheme and a "clean air fund" to help local authorities tackle pollution.

The letter also calls on the secretary of state to introduce specific measures and a "concrete timetable" to address these failings. The government has until Friday to respond.

The prospect of legal action comes amid growing concern about the scale of the UK's air pollution crisis. Earlier this month it emerged that as well as illegal levels of diesel pollution, every person in the capital is breathing air that exceeds global guidelines for dangerous tiny toxic particles known as PM2.5.

Last month the UN's special rapporteur on human rights related to toxic waste said the UK government was "flouting" its duty to protect the lives and health of its citizens from illegal and dangerous levels of air pollution.

And a new study published on Tuesday found that people are increasingly feeling the impact of toxic air. The survey by London Councils revealed that almost half of those surveyed felt their health had been

adversely effected, 40% said it had an impact on where they chose to live and a quarter said it was a factor in which school they wanted their children to go to.

Dr Penny Woods, chief executive of the British Lung Foundation, said the findings were further evidence that air pollution was taking its toll on people's day-to-day lives.

"Air pollution effects everyone, hitting the most vulnerable the hardest, including the elderly, children and people with lung conditions. We need strong national policies to support local authorities."

A spokesperson for the Department for Food and Rural Affairs said the government had "put in place a £3bn plan to improve air quality and reduce harmful emissions".

"We will also end the sale of new diesel and petrol cars by 2040, and next year we will publish a comprehensive clean air strategy which will set out further steps to tackle air pollution."

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## Delhi air pollution concerns; Here's what the state govt is doing to ease situation

*Date: 18-Oct-2017 Source: Money Control*



Delhi's air pollution is already in the "very poor and severe" category and the new measures will stay in place till March next year

Delhi has already kicked in measures to check pollution levels. The state government's Graded Response Action Plan has been set in place to combat air pollution.

Delhi's air pollution is already in the "very poor and severe" category and the new measures will

stay in place till March next year.

Here are 5 steps the government is taking:

- > The Central Pollution Control Board will monitor air quality from stations located across Delhi-NCR. Daily reports will be sent to the Environment Pollution Control Authority (EPCA).
- > The transport department is checking inter-state buses for pollution levels and plans to penalise the violators. The department also plans to do random vehicle checks post Diwali.
- > The government has ordered shut down of Badarpur Thermal power station after FIFA U17 World Cup matches. Brick kilns in NCR will also be shut down unless they convert to zig-zag technology, which helps in emitting cleaner air.

> The government also plans to shut down generator sets. Only essential services, such as hospitals, will be able to use the generator sets.

> The EPCA may also ask the city to switch to Odd Even cars method if the air quality deteriorates.

> The Supreme Court recently banned the sale of firecrackers in NCR to keep a check on air pollution.

Not only Delhi, but its nearby states like Uttar Pradesh, Haryana and Punjab too will set up monitoring stations to keep a check on the pollution.

Last year after Diwali, the air pollution levels shot up to eight times the safe limit. Crackers and burning of crops in nearby states were one of the main reasons.

However, this year the situation is not likely to be as bad as last year. The System of Air Quality and Weather Forecasting and Research (SAFAR) said the air quality is expected to range from moderate to poor during Diwali.

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## Delhi's Cracker Ban Stutters But Pollution Levels Lower On Diwali

*Date: 20-Oct-2017 Source: NDTV*



NEW DELHI: A quiet and promising evening gave way to thick haze and noise as Delhi celebrated Diwali on Thursday, dashing the hopes of cracker-free festivities, following a Supreme Court ban on the sale of firecrackers in the National Capital Region (NCR).

The online indicators of the pollution monitoring stations in the city glowed red, indicating a 'very poor' air quality as the volume of ultra fine particulates PM2.5 and PM10, which enter the

respiratory system and manage to reach the bloodstream, sharply rose from around 7 pm.

However, the air quality in Delhi during Diwali was better than last year, according to a data from the Central Pollution Control Board (CPCB). The Air Quality Index (AQI) value on Thursday was 319, putting it in "very poor" category, while the AQI last Diwali (October 30) had touched "severe" level after recording an index value of 431.

AQI level from 0-50 is considered good, 51-100 is satisfactory, 101-200 is moderate, 201-300 is poor, 301-400 is very poor, and 401 and above is severe.

Real time pollution data appeared alarming. The Delhi Pollution Control Committee's (DPCC) RK Puram monitoring station recorded PM2.5 and PM10 at 878 and 1,179 micrograms per cubic metre at around 11 pm.

The pollutants had violated the corresponding 24-hour safe limits of 60 and 100 respectively by up to 10 times.

While it is difficult to quantify the immediate effect of the ban on firecrackers, residents across the national capital felt the beginning was promising with neighbourhoods reporting much lesser noise and smoke till about 6 pm, compared to the previous years.

But as the festivities picked up, the faint echo of crackers started growing louder.

According to the SAFAR (System of Air Quality and Weather Forecasting And Research), the 24-hour rolling average of PM2.5 and PM10 were 154 and 256 micrograms per cubic metre respectively at around 11 pm.

It has forecast that the pollution levels will peak between 11 pm and 3 am.

The situation was similar, if not worse, in the neighbouring regions of Delhi such as Gurgaon, Noida and Ghaziabad, where crackers were burst as usual, raising question marks on the efficacy of the administration in enforcing the apex court's ban.

However, the SAFAR has also predicted a relatively cleaner post-Diwali air due to favourable meteorological conditions, which are helping prevent the smoke-filled air from the agricultural belt of Haryana and Punjab from entering the national capital.

A 'very poor' air quality index (AQI) essentially means that people may suffer from respiratory illnesses on a prolonged exposure to such air. If the air quality dips further, the AQI will turn 'severe', which may trouble even those with sound health conditions and seriously affect those with ailments.

The Supreme Court-appointed Environment Pollution Prevention and Control Authority (EPCA) is empowered to enforce the Graded Response Action Plan (GRAP) to combat air pollution in Delhi-NCR.

Measures under the GRAP's 'very poor' and 'severe' categories, which include a ban on diesel generator sets, came into effect on October 17 and they will remain in force till March 15.

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## **Air pollution levels enter the red zone**

*Date: 20-Oct-2017 Source: The Hindu*

As the citizens celebrated Deepavali, the festival of lights, by bursting a variety of crackers and fireworks, air pollution levels went up several times higher than the standard levels, on Thursday night.

As per the AP Pollution Control Board's Continuous Ambient Air Quality Monitoring Stations (CAAQMS), the amount of fine suspended particulate matter (SPM2.5) which is considered hazardous was 535 micrograms against the standard 60 micrograms per cubic metre at around 8.30 p.m. on Thursday. Also, the amount of particle pollution (PM10) was 653 micrograms against the standard 100 micrograms per cubic metre.





The amount PM2.5 and PM 10 which was around 106 micrograms and 66 micrograms at around 3.30 p.m., gradually increased in the evening as more number of people began bursting crackers.

The observations were drawn by the advanced and automated ambient air quality monitoring system installed at the Municipal Guest House on the M.G. Road. The annual averages of the amount of both the suspended particulate matter have always been above the standard levels for the past many years, according to the PCB.

Meanwhile, the amount of SPM 10 recorded at the air quality monitoring stations located at Auto Nagar, Benz Circle and the Police Control Room was close to the standard level. Only the SPM 10 level at the Police Control Room crossed the standard level in the evening.

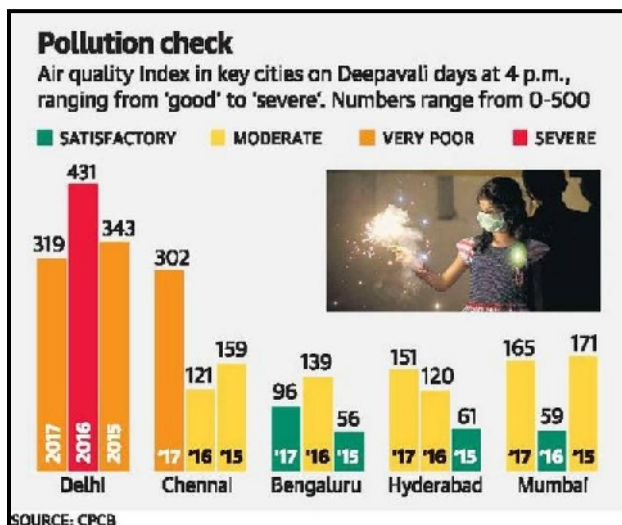
#### Online campaigns

The celebrations were a low-key affair in many areas of the city.

While high prices of the fireworks were the main reason behind the poor sales, there was also impact of the online campaigns on eco-friendly and pollutionless Deepavali, say traders.

## Air quality nosedives in spite of a quieter Deepavali

Date: 20-Oct-2017 Source: The Hindu



Smog and pollution touch toxic highs as weather system prevents dispersal of particulate matter in several cities

This year's Deepavali was the quietest in recent history, but the low-key celebrations across the country didn't stop pollution levels from spiking sharply.

In Chennai, which celebrated the festival on Wednesday, pollution levels the following evening inched up to that of Delhi, a city where where smog and pollution touch toxic highs during this season.

Other cities in the south, such as Bengaluru and Hyderabad, also witnessed a sharp rise in air pollution.

The Air Quality Index (AQI), a six-rung classification scale that rates air quality from 'good' to 'severe', downgraded air quality in Chennai from 'satisfactory' on October 16 to 'poor' and 'very poor' in the days leading up to Deepavali. As of 4 p.m. on Thursday, the AQI for Chennai was 302, just shy of Delhi's 319.



The primary pollutant in both cities was PM 2.5, or particles that are smaller than 2.5 microns and linked to respiratory illnesses.

Experts suggest that the weather conditions, which slowed the speed of winds in the Bay of Bengal, resulted in the high levels of pollutants enveloping Chennai.

K. Karthikeyan, former Member Secretary, Tamil Nadu Pollution Control Board, said, “This year, the particulate matter was much higher on Deepavali day than it was last year. It is the duty of the State Pollution Control Board to restrict the emissions in the spread area of Chennai by limiting crackers to maintain the desired air quality.”

In Bengaluru, PM 2.5 was recorded at 13.46 microgrammes per cubic metre on the outskirts to as high as 71.12 in Peenya Industrial estate. The city saw an uptick in cracker smoke on Thursday.

#### Downward trend

“There will be a rise due to bursting of crackers, but we have noticed a downward trend over the past few years. There is a tendency to celebrate a greener Deepavali,” said B. Nagappa, scientific officer, Karnataka State Pollution Control Board.

While last year’s Deepavali saw heavy rain, morning mist and chill had set in this year. Mr. Nagappa expects particulate matter to hover over the city due to lack of dispersal.

Hazy weather is expected in Hyderabad over the next few days, meaning pollution from firecrackers could remain suspended in the air due to temperature inversion, weathermen say.

Meanwhile, pollution data from three real-time continuous air-quality monitoring stations in Greater Hyderabad indicated a rise in levels by 6 p.m. on Thursday, compared to the previous day’s levels.

Most parts of Mumbai were covered by a thick cloud of smog, mainly due to pre-Deepavali celebrations with bursting of crackers. There was less noise due to cracker bursting, but experts say that to beat the noise, many opted for noise-free cracker varieties that added to air pollution.

Delhi traditionally celebrates Deepavali over multiple days, with the bulk of crackers burst before 3 a.m. on Thursday. A Supreme Court ban on cracker sale this year was expected to produce a dip in pollution.

Had it not been for the depression in the Bay, officials said, it would have been the “cleanest Deepavali” in the capital in many years.

“The depression has contributed to poor ventilation or a slowing down of winds this year in Delhi,” said D. Saha, Head, Air Quality, CPCB.

Last year, Delhi had a perfect storm of unfavourable weather that brought in pollution from Haryana and Uttar Pradesh and, an enormous cracker-emission load from within the city that saw the AQI record chart-busting ‘severe’ levels and prompted authorities to impose a variety of restrictions on traffic movement as well as a Graded Action Plan.

Along with Delhi, the full impact of crackers on air quality and sound levels in Bengaluru, Hyderabad and Mumbai would emerge on Friday.

By 6 p.m. of Thursday, the System of Air Quality Weather Forecasting and Research (SAFAR) rated Mumbai air quality level as ‘poor’ with an Air Quality Index (AQI) of 204. Its forecast said that the air quality will further dip to ‘very poor’ on Friday, with an estimated AQI of 303.

Anti-noise pollution activist Sumaira Abdulali will record the decibel levels in Mumbai on Thursday till midnight.

“The deadline for bursting crackers is till 10 pm. But many people go on bursting till midnight,” she said.

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## Delhi’s air quality on ‘Diwali day’ best in last 3 years

*Date: 21-Oct-2017 Source: Live Mint*



New Delhi: Delhi’s air quality level of ‘very poor’ on Diwali day was best in past three years but the air quality was far from satisfactory as it climbed to ‘severe’ level on Friday evening — a day after the Diwali celebrations.

However, what is certainly a reason to cheer is that the noise pollution on Diwali this year showed a declining trend compared to 2016.

“The sound level data on Deepawali day monitored during last four years reveals that in 2017 the sound level recorded is the lowest at all stations, even in humid atmospheric conditions,” said an analysis revealed by the Central Pollution Control Board (CPCB), which is India’s nodal pollution watchdog.

According to CPCB, the air quality index (AQI) of Delhi on Diwali this year was recorded at 326 (very poor) compared to 426 (severe) in 2016 and 327 (very poor) in 2015.

“In spite of non-favourable meteorological conditions, the air quality on Deepawali this year has shown an improvement (compared to) last year, 2016. The air quality was not so good during previous two days of Deepawali, due to intrusion of humid air coupled with prevailing calm wind conditions,” the CPCB analysis said.

But according to the System of Air Quality and Weather Forecasting and Research (SAFAR) of the Union ministry of earth sciences, the city’s air quality was ‘severe’ on Friday evening and it is expected to remain the same on Saturday.

On Friday morning, the Particulate matter (PM)<sub>10</sub> and PM<sub>2.5</sub>—the two deadliest components of air pollution— were at “poor” and “very poor” levels respectively. The level of PM<sub>10</sub> was 256µg/m<sup>3</sup> and PM<sub>2.5</sub> was 154µg/m<sup>3</sup>—over two and half times the satisfactory levels.

By Friday evening, the PM<sub>10</sub> level reached 595 µg/m<sup>3</sup> (nearly six times the satisfactory limit) and PM<sub>2.5</sub> was 407µg/m<sup>3</sup> (over six times the satisfactory limit).

The satisfactory limit of PM10 is 100µg/m<sup>3</sup> and PM2.5 is 60µg/m<sup>3</sup>. These fine particles can settle deep in the lungs and be absorbed in the bloodstream, which can lead to respiratory problems, cardiovascular diseases and lung cancer.

Disturbingly, PM10 and PM2.5 levels—during and after Diwali celebrations in some parts of the national capital—went as high as over 24 times and nearly 15 times, respectively, the satisfactory limit even this year.

Meanwhile, as per SAFAR, Delhi's neighbourhood towns like Noida and Gurgaon too saw 'severe' air quality level.

While overall pollution level on Diwali was 'very poor' on the day of the festival, the data recorded by air quality stations of the Delhi Pollution Control Committee (DPCC) showed that levels of PM10 and PM2.5 touched scary levels during and after Diwali celebrations.

For instance, Anand Vihar, which is one of the most polluted areas of the national capital, recorded PM10 at 2,402 µg/m<sup>3</sup> early Friday morning (over 24 times the satisfactory limit) and PM2.5 at 626 µg/m<sup>3</sup> (over 10 times the satisfactory limit).

Similarly, RK Puram, which regularly witnesses high levels of pollution, recorded PM10 at 1180µg/m<sup>3</sup> (nearly 12 times the satisfactory limit) and PM2.5 at 878µg/m<sup>3</sup> (nearly 15 times the satisfactory limit) on Thursday night. On Friday, the area recorded PM2.5 at 925µg/m<sup>3</sup>, which was nearly 15 times the satisfactory limit.

However, 2017 is still better than last year, when a day after Diwali, city's air quality was 'severe' and it resembled a gas chamber. Last year, the PM10 and PM2.5 levels were recorded at over eight times and ten times (respectively) the satisfactory limit.

The union environment ministry said AQI on Diwali and post-Diwali day was 426 and 425, respectively last year and it has been 326 and 367 this year.

"Air quality in Delhi has been better compared to last year. The number of 'good', 'satisfactory' and 'moderate' (air quality) days has increased and 'poor' and 'very poor' category has reduced significantly compared to 2016," said Union Minister of Environment, Forest and Climate Change Dr Harsh Vardhan in a statement on Friday evening.

"The year 2017 has seen positive changes with respect to air pollution in Delhi due to a number of steps taken by Union Government, State Governments and Government of Delhi," he added. Anumita Roychowdhury, executive director, Centre for Science and Environment (CSE), a Delhi-based environment think tank, said, "Delhi and NCR have experienced this winter's first ever emergency level on Diwali night. It is clear that the Delhi-NCR region requires a longer term and systemic action than a one-off ban."

"The Supreme Court has already ordered a phase down strategy with the help of regulation of chemicals, standards, reduced quantum of crackers, controlled bursting of crackers through community events, locational controls etc. This must be implemented without delay for a longer term solution to this problem," she said.

Roychowdhury said that their analysis has shown that despite the ban on sale of crackers by the Supreme Court, the air pollution levels breached the emergency standards on Diwali night.

“But it is also clear that without the ban on sale of firecrackers, the levels would have been far worse. Calmer wind and more moisture in the air on the post-Diwali morning worsened the pollution build-up on Friday,” she added.

On 9 October, the Supreme Court had banned the sale of crackers in Delhi and NCR area.

Now whether the low pollution levels—compared to last year—are due to the apex court’s ban on cracker sale leading to less people bursting crackers, awareness among people, favourable weather conditions or the graded response action plan (GRAP), it is yet to be finalized.

After the alarming levels of pollution in Delhi-NCR area last year, SC had approved GRAP to tackle air pollution in Delhi and adjoining regions.

The main objective was to institutionalize measures to tackle air pollution emergencies, giving a clear direction of steps to be taken by central and state authorities.

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## 5,000 masks donated to Gurgaon Police to fight air pollution

*Date: 22-Oct-2017 Source: The Economic Times*



In a bid to help Gurgaon Police personnel combat air pollution after Diwali, a private company and a hospital today donated 5,000 masks to the department.

Police Commissioner Sandeep Khirwar said the N95 masks will be given to field officials, especially those deployed in the traffic department, on PCR vans and volunteers.

Khirwar said Gurgaon suffers one of the worst spells of air pollution after Diwali. "These masks will help minimise the impact of alarming

pollution levels on police personnel," he said.

The air pollution levels had risen in Gurgaon after Diwali.

The PM2.5 level - which refers to particulate matter that have a diameter of less than 2.5 micrometres, which is about 3 per cent the diameter of a human hair - had reached up to 300 cubic metres in the Millennium City after Diwali.

The volume of pollutants, however, have come down due to strong wind movement after Diwali fireworks had pushed Delhi's air quality into the 'severe' zone for the first time this year.

"Police of NCR is among those highly vulnerable who, in line of their duty, spends hours breathing toxic air," said Arvind Chabra, head of Blueair India, which donated the masks.

"Pollution levels have spiked inspite of all-round efforts to control it although some progress has been made. At the frontline of this battle are the policemen on the ground who are responsible not only for regulating things like traffic but responsible for enforcing all other regulations," said Himanshu Garg, head of respiratory and critical care at Artemis Hospitals. CORR ABH

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## World Pollutionwatch: evidence grows of lifelong harm from polluted air

*Date: 22-Oct-2017 Source: The Guardian*



Historical data from studies on museum bird specimens, combined with current research, gives us a picture of the long-term harm from air pollution.

There is growing evidence about the lifelong harm from air pollution. The air that we breathe as children can stunt our lung growth, potentially causing problems later in adult life. Air pollution breathed decades ago has been shown to shorten lives in the UK today. However, investigating

these lifelong impacts is hampered by a lack of historic measurements.

Can the natural environment help us? Starting with lichens in the Jardin du Luxembourg, Paris in 1886, biomonitoring has helped to track air pollution. In a new twist, researchers in the US have constructed a 135-year history of pollution in America's rust belt by studying soot in the feathers of museum bird specimens. Tests on 1,347 birds showed that air pollution between 1880 and 1920 was worse than we thought. The birds also revealed useful data for climate modellers. It appears that soot pollution started to decrease around 1910, earlier than thought; with dips in the great depression and a rise for the second world war.

It takes a lot of effort to fly, and bird lungs are therefore more efficient than the bellows arrangements that we share with other mammals and reptiles. The coalminer's canary and the bird deaths in Rachel Carson's *Silent Spring* show their vulnerability to pollution. In Spain, blood tests show that a poor urban diet is leaving house sparrows struggling to cope with modern air pollution, especially in the breeding season. Previously, pigeons in Milan displayed the effects of breathing exhaust from leaded petrol. Ominously, analysis of their droppings shows that Milan's birds are still being affected by polluted air.

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## How To Clean Air

*Date: 23-Oct-2017 Source: Indian Express*

As we transition from the monsoon to winter, the temporary respite in air pollution is over. A combination of festivals, post-harvest crop burning, firing of brick kilns and reduced wind speed will soon increase the level of particulate air pollution in India. The Global Burden of Disease study estimates that, in India, ambient air pollution is responsible for 3,283 premature deaths every day.

Half of the top 20 polluted cities in the world are in India. India has seen the steepest increase in air pollution since 2010. Although China achieved global notoriety some years ago, it is India that has experienced a nearly 150 per cent increase in ozone-attributable deaths over the past 25 years. In comparison, the number of people who died due to diseases caused by pollution in China did not increase much in the same period.

Till now, almost all air pollution-related deaths were thought to be due to lung diseases. Evidence, however, is accumulating that links short and long-term exposure to air pollution with other diseases — these include heart attacks, stroke, diabetes, chronic kidney disease and cancer. In fact, the highest proportion of pollution-related deaths, especially those related to particulate matter, may not be because of diseases of lungs, but due to these other conditions.

Studies have shown that ultrafine particulate matter, which accounts for over 90 per cent of the particles emitted by road traffic, rapidly enters the bloodstream after being inhaled. These particles then interfere with the normal reactivity of blood vessels, and are distributed to many organs including the kidneys. Even when it does not kill, air pollution reduces the number of years lived in full health by aggravating asthma attacks, eye and skin disorders, and increasing the risk of development of high blood pressure, obesity, Parkinson's and Alzheimer's diseases, psychiatric disorders and frailty. Air pollution affects all stages of life, starting from pre-conception to old age. Exposure of a mother while pregnant causes abnormalities that increase the lifetime risk of chronic diseases in the baby. These associations have been shown in large population-based studies, done either in a cross-sectional manner — that is, examining the differences based on residence in areas with different levels of pollution — or in a longitudinal manner, where changing levels of pollution in the same area is associated with increasing disease risk after all other factors are accounted for.

On the positive side, remedial measures have shown reduction in the number of individuals with adverse outcomes, including improved life expectancy in several parts of the world. Policy interventions before the Beijing Olympics in China led to significant reduction in pollution, and this, in turn, reflected in significant improvement in people's physiology.

This will be a long battle. We need better urban planning starting with proper land-use assessment, reducing major transport activity close to communities, relocating traffic sources (roads, airports) from crowded areas, avoiding the mixing of industrial and residential areas, making better roads, reducing uncovered areas in cities by planting more grass and plants, improving transport technologies, and increasing awareness of the societal burden imposed by air pollution. Interdisciplinary academic groups including experts in toxicology, environmental health, analytical chemistry, applied physics, healthcare researchers, economists, and social scientists should evaluate the full range of impacts of air pollution on

human health, develop tools to identify pollutants, find origin of particles, and develop culturally-appropriate solutions.

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## **Air pollution is killing us. As a GP I welcome this new charge on drivers**

*Date: 23-Oct-2017 Source: The Guardian*



illnesses.

A report released last week by international experts shows pollution to have caused more deaths in the UK than in many other countries in western Europe. Air pollution is largely invisible, so it is hard to grasp how much damage it is doing to our health. But studies like the Lancet commission on pollution make it clear that poor air quality increases not only the likelihood of developing a range of respiratory illnesses, but also the frequency and severity of bouts of those

Like many GPs, I see this “double hit” in the children and adolescents who come to surgery every day. Preschool children who live near main roads have an increased risk of developing wheeze triggered by viral colds – a condition we call “preschool wheeze”. Exposure to traffic pollution also increases the chance of a child developing asthma. For preschool wheezers and children with asthma, high pollution days can then trigger episodes of severe wheezing, especially when pollution has not been dispersed by the wind.

Worse still, as children grow, air pollution restricts the growth of their lungs. While it’s impossible to see these effects in a child sitting in front of you in the surgery, they have been confirmed in a number of research studies in the US and Europe. In effect we are creating a generation of adolescents with stunted lung growth.

As they become older adults, where lung function and capacity naturally decline, this reduced capacity is a big concern. Recent research shows that children with persistent asthma who enter adulthood with reduced lung growth are especially likely to experience faster decline in lung capacity, to a point where in early middle age (as soon as their fourth decade) they have developed chronic obstructive pulmonary disease (COPD).

I treated a middle-aged woman in my surgery last week in exactly this situation: she has persisting asthma that is not responding to treatment. Almost certainly the lung tests I asked her to do in a few weeks’ time will show irreversible lung damage. Such individuals are at major risk of long-term ill health, with frequent chest infections leading to further deterioration in lung function and probably early death.

Yesterday I watched a man struggling for each breath as though it would be his last, his lungs destroyed by COPD. His family watched helplessly. His chest infection hadn’t responded to antibiotics and strong steroid tablets; hospital admission by ambulance was his only chance.



This is why I welcome the London mayor's new toxicity charge, which comes into force today and aims to drive down air pollution caused by diesel cars in the capital. Researchers in California recently showed that where pollution levels are driven down, children's lung growth can at least partially recover.

The illnesses linked to air-pollution exposure in adults span other respiratory and non-respiratory conditions, including pneumonia, angina, heart attacks, strokes and even cognitive decline. Sooty particles and nitrogen dioxide inhaled by pregnant women increase the risk of pre-term birth, and low birth weight at term. Overall, therefore, air pollution adversely affects our health across our entire lifespan. These illnesses can have far-reaching effects on a person's quality of life, that of their families, their livelihoods, and their finances. One patient I remember well lost her job due to recurrent severe asthma attacks.

Last week's Lancet report named air pollution from vehicles and factories as the biggest killer, accounting for 6.5m deaths worldwide. We know that in Greater London, road transport generates 45% of toxic nitrogen oxide emissions. Modelling has shown that, alongside other measures, the percentage of diesel cars will need to be reduced from 57% to 5% of the total if London is to become compliant with legal limits.

The new toxicity charge has faced criticism from some car owners. I'm sympathetic to the concerns of people already squeezed by the high cost of living, but there are good reasons for introducing pollution charging. Illegally high levels of air pollution affect all people living and working in the capital, from pedestrians and cyclists to drivers themselves. The aim of this charge is to effect behavioural change. It aims to encourage owners of the most polluting vehicles to make fewer journeys, greater use of other transport options or eventually to change to a less polluting type of vehicle, such as an electric-powered one.

This kind of policy decision only happens when the evidence of harm to public health is overwhelming – as, for example, with banning smoking in public places. We know this approach works: the smoking ban has delivered major improvements in public health, reducing rates of pre-term birth by about 4%, childhood hospital admissions for asthma by 10% and pneumonia by almost 20%.

Air pollution in the UK, and especially London, has been described by many experts as a public health emergency. It's a problem that cannot be solved without some effort on the part of individuals, policymakers and indeed the car industry. Driver charging alone won't fix this problem, but it is necessary to help everyone breathe clean air. Nobody should have to suffer the ill effects of traffic pollution: they are entirely preventable.

-Professor Chris Griffiths is lead at the Centre for Primary Care and Public Health, St Bartholomew's (Barts), and the London School of Medicine and Dentistry, and co-director of Asthma UK Centre for Applied Research. He has worked as a GP in east London for over 20 years.

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## **London is trying an innovative new strategy to stop air pollution: taxing old cars**

*Date: 23-Oct-2017 Source: VOX*

London is very literally putting a price on driving old, heavily polluting cars.

On Monday, the British capital introduced a “T-Charge,” a daily fee of £10 — or about \$13 — for drivers entering the city center in cars that release extremely high emissions as part of a bid to improve the city’s air quality.

The T-Charge, short for toxicity charge, mainly applies to cars that either use diesel or fail to meet European emissions standards adopted in 2006.

The T-Charge is stacked on top of another fee for driving through Central London — the congestion charge, which costs drivers £11.50, or about \$15, designed to reduce traffic in the city center while raising new money for its public transportation system.

In other words, if you’re one of roughly 34,000 motorists who doesn’t meet the new emissions standards, heading through the center of the city will cost you a whopping £21.50, or about \$28. Both fees are in effect between 7 am and 6 pm, Monday through Friday.

London Mayor Sadiq Khan hailed the move as a necessary step for protecting the health of the city’s inhabitants.

“As mayor, I am determined to take urgent action to help clean up London’s lethal air. The shameful scale of the public health crisis London faces, with thousands of premature deaths caused by air pollution, must be addressed,” Khan said in a statement Monday.

The T-Charge should help control pollution. But is it enough?

Air pollution is a serious health hazard in London. A 2015 study by researchers at King’s College London found that close to 9,500 Londoners die early because of long-term exposure to air pollution in the city, much of it caused by diesel cars, trucks, and buses.

Khan told Sky News on Monday that the T-Charge would cost the city £7 million, or roughly \$9.2 million, presumably because the regulation will discourage drivers from entering an area key to the city’s economy and hamper productivity. But he said the cost was a “price worth paying.”

The new T-Charge is actually a stepping stone to a more stringent standard. It will be replaced by an “Ultra Low Emission Zone” in 2019, which will bring the pollution fee up to £12.50, currently about \$16.50, in addition to the congestion charge. Khan is also angling to expand the area in London covered by the pollution fee by 2021.

There are concerns that the fee functions as a tax on lower-income drivers who can’t afford to purchase a new vehicle that meets emissions standards — yet also can’t afford to avoid driving into the city center for work.

Some environmental advocates believe financial carrots are as important as sticks for incentivizing a real pivot toward cleaner cars. "We urgently need a program of meaningful financial assistance to help drivers of the dirtiest vehicles switch to something cleaner, and bold policies to cut traffic overall," Friends of the Earth campaigner Jenny Bates told Sky News.

Some environmental activist groups think Khan's measure doesn't go far enough to control pollution. Simon Birkett, the director of Clean Air London, said in a statement that the T-Charge is an "important step" but that the city "must take bigger, stronger and smarter steps." He says the low emissions zone should be expanded more quickly than the city expects to, and calls for an outright ban on diesel vehicles.

Khan doesn't appear to be moving toward any ban yet — but he's certainly causing drivers to rethink how they want to move around the city.

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## **Wearable nasal device developed to fight air pollution**

*Date: 24-Oct-2017 Source: India Todays*

New Delhi, Oct 24 (PTI) The AIIMS in collaboration with the researchers of the Indian Institute of Technology (IIT), Delhi have developed a wearable nasal device which restricts the entry of air pollutants into lungs.

Named Airlens, the two cm device has the capacity to trap pollutants and bring them to safe levels depending on the air quality outside.

The use and throw device, which is awaiting a patent, does not need to be attached to anything, said Shashi Ranjan, a researcher at the IIT.

Developed by five researchers--Ranjan, Debayan Saha, Yogesh Agarwal, Akanksha Gupta and Harsh Sheth--the nasal filter was today launched by AIIMS Director Randee Guleria.

In the beginning, the device would be for children aged above 6 years.

At the launch, Guleria termed air pollution a silent killer which was creating a health emergency in the country and stressed on the need to initiate a movement to protect the environment.

He also advocated implementation of long-term measures and said the use of nasal filters or air purifiers could only provide short-term relief.

"We, along with these researchers, came up with the idea in 2015, following which they invented the device to restrict the entry of pollutants into the lungs.

"However, I have asked them to go to schools to gather evidence about how effective it is. It needs to be seen for how many hours a child can wear it and also if it can be effective for those suffering from asthma," he said.

The team has applied for the patent in the name of PerSapien which stands for saving (per) each (sapien) human life.

They have launched an awareness/innovation campaign for children by the name of Persapien Innovation Challenge.

They have also developed an app for monitoring air quality which can be installed on a smartphone and give the user an idea about the air quality outside.

Costing less than Rs 500, the device can be procured by applying on [persapien.com](http://persapien.com).

India had the world's highest number of deaths due to air, water and other forms of pollution in 2015, according to a study published in the Lancet journal last week. It showed that pollution killed as many as 2.5 million people in the country.

Most of these deaths are due to non-communicable diseases caused by pollution such as heart disease, stroke, lung cancer and chronic obstructive pulmonary disease (COPD), researchers said. PTI PLB AAR

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## Delhi's air quality set to dip, but stubble-burning no villain

*Date: 25-Oct-2017 Source: The Economic Times*



Air quality in Delhi is set to worsen in the next few days, but this time the city has no one but itself to blame, least of all paddy stubble-burning in Haryana and Punjab.

This conclusion can be drawn going by the forecast of the India Meteorological Department and the Central Pollution Control Board (CPCB) and their observations on the prevailing weather conditions.

CPCB member secretary A Sudhakar said that as per the IMD forecast, easterly winds, blowing from Uttar Pradesh, will introduce moisture in the city's air over the next few days, and fog will start building from October 29.

"As a result, pollutants having local sources (vehicular combustion, road dust, smoke from garbage-burning) shall remain at the ground level for longer hours. Their ground level concentration will be building up," he said.

The weather scientist said the city residents can expect pollution levels to go up substantially from October 29, some indications of which have started appearing.

The sky was blue until last week, but now it is gradually turning hazy, he said, predicting a build-up of pollutants over the next three to four days.

Sudhakar said the forecast can be interpreted as good as well as bad, considering the fact that there has been no impact of the paddy stubble-burning in neighbouring Haryana and Punjab in the city's air unlike previous years.

"North westerly or westerly winds, which are generally dry but laden with smoke, are not entering the capital, thus preventing the influx of air-borne residue of stubble-burning. That way it is good but easterly winds will bring a lot of moisture, which will trap local pollutants," he said.

Every winter, as pollution levels spike across the region, especially in Delhi, the states in the region indulge in blame game over the factors behind the rise. Delhi blames Haryana and Punjab saying their "inability" to contain stubble-burning makes the capital suffer.

However, the prevailing meteorological conditions leave no room for such buck-passing, as the moisture will largely trap pollutants that are emitted by sources present within the city and ground level action can help prevent the situation from going out of hand.

For example, the plunge in air quality after Diwali was largely due to burning of firecrackers, despite a ban on their sale, which the residents of the megapolis could very well have avoided.

The Supreme Court-mandated Environment Pollution (Prevention and Control) Authority has already enforced a raft of measures under the 'very poor' and 'severe' categories of the Graded Response Action Plan (GRAP), including a ban on diesel generator sets with certain exemptions.

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## **‘Better air quality can lengthen your lifespan’**

*Date: 25-Oct-2017 Source: The Hindu*



THIRUVANANTHAPURAM, OCTOBER 25: If India reduced its air pollution to comply with the WHO air quality standard, its people could live about four years longer on average, or a combined more than 4.7 billion life years.

Compliance with its own national standards could yield only more than one year in the bargain, or a combined more than 1.6 billion life years.

This is as per projections of the Air Quality-Life Index (AQLI) brought out by the Energy Policy Institute (EPIC) at the University of Chicago.

Diwali day air

For instance, Delhi's air quality level of 'very poor' on Diwali day was best in past three years but climbed to 'severe' level a day after.

Particulate matter (PM) 2.5, among the deadliest components of air pollution, was assessed at 154µg/m<sup>3</sup>, over two and half times the satisfactory levels.

EPIC estimates that there are currently an estimated 4.5 billion people around the world exposed to particulate pollution levels that are at least twice what the WHO considers safe.

Among most polluted

India, it says, is one of the most polluted countries in the world and air pollution is a major threat to health.

If the country were to reduce the pollution levels to WHO standards, some of the greatest gains are seen to accrue to some of its largest cities such as Delhi.

People in the national capital could live six years longer if the country met its own standards, and nine years longer if it satisfied WHO standards.

Likewise, the people of Kolkata and Mumbai could live roughly 3.5 years longer if the country met WHO standards. India is already taking action to reduce pollution, EPIC noted.

Working with centre

EPIC is working here with the Centre and several State pollution control boards to implement the world's first emissions trading programme for particulate pollution in India.

Michael Greenstone, Director, EPIC, said the high levels of air pollution are a part of people's lives in India, just as they were in the US, England, Japan and other countries in the past.

The last several decades have seen tremendous progress in many of these countries. But this progress did not happen by accident and it was the result of policy choices. "As India navigates the dual and conflicting goals for economic growth and environmental quality, the AQLI provides a tool to make the benefits of policies to reduce air pollution concrete," he added.

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## How to control air pollution

*Date: 27-Oct-2017 Source: The Tribune*



RN Malik & Mudit Mishra

A startling news item appeared on October 20: Ninety lakh people died prematurely in 2015 due to air pollution-induced diseases. This news item is based on the report published in Lancet, a renowned medical journal. Out of the nine lakh, 25 lakh died in India alone. Out of the 25 lakh Indians prematurely felled by pollution, 18.1 lakh died

because of diseases induced by breathing toxic air. The balance 6.4 lakh died due to water pollution.

The 90 lakh million deaths due to air pollution related ailments were more than the deaths caused by malaria, tuberculosis and AIDS put together. The most people at risk are in Asia and Africa and shamefully India tops the list of individual countries falling in this category.

China is close second with 18 lakh deaths but this is no consolation. Common pollution related ailments are cardiovascular problems, chronic obstructive pulmonary disease (COPD), lung cancer, strokes, sinusitis and allergies. These diseases are not fatal as such but are procrastinating in nature causing deaths over a period of time. The financial costs and loss of man hours are also tremendous.

#### Different strokes

We cry over alarming rise in pollution levels at the time of Deepawali and harvesting seasons of Rabi and Kharif crops. Pollution caused by bursting of crackers remains only for a few days. More disquieting part of the problem is the large number of fire accidents causing mostly eye injuries. Fortunately, the ban order of Supreme Court on sale and use of fire crackers in NCR reduced pollution levels and fire accidents significantly.

Air pollution caused by burning of rice husk in Oct- November stays for four to six weeks. Dense smog causes hazy conditions during the day as smoke particles (soot) remain suspended in the air at low heights due to inversion effect caused by moderate temperatures during this period. Air pollution caused by thrashing process of wheat crop in April-May period also stays for four to six weeks. But chemically more toxic air pollution caused by vehicular emissions coupled with dust particles stays round the year in cities and along the highways.

It is obvious that constant inhalation of polluted air will damage and stunt the growth of human body in one way or the other. Very fine suspended particulate matter (PM<sub>2.5</sub>) caused by different emissions enter the respiratory tract and get deposited in the lungs causing fibrosis resulting into allergic asthma and cancer. It also affects the functioning of other vital organs because of reduced oxygen supply. The second part i.e. inhalation of toxic gases (SO<sub>2</sub>, NO<sub>x</sub>, CO, lead particles) causes irritation, suffocation and affect oxygen carrying capacity of blood.

The combined effect of all these aforesaid maladies affect the immune system and hasten death of people already suffering from other diseases like diabetes, heart problems and lung infections.

Air pollution caused by different emissions is manageable and activism of the Supreme Court from time to time has shown the way. Initially the Supreme Court ordered Delhi Government to run buses and autos on the compressed gas. Then followed the order to ban the running of old buses and diesel vehicles, NGT banned the burning of rice husk though the states failed to completely implement the order. Finally, the Supreme Court banned the sale of fire crackers on the eve of Deepawali. On the other hand, the governments have done little to grapple with this problem. One wishes the legislature shows the same willpower as the judiciary to fight against this menace.

Not intractable



Air pollution is not an intractable problem. Dust pollution is the easiest to control and with least cost. The government only needs to take two steps. Firstly, direct the residents to pave or grass the surface lying between the road edge and the building line. Secondly, direct vacant plot holders to complete 25% construction within a stipulated time. Dust pollution in developed countries is non-existent because all unbuilt land surface in urban areas is either grassed or paved.

Rice husk problem can be tackled if the governments take two more steps. Firstly, educate farmers to convert rice husk into straw (turi) with thrashers and spread and mix the same with soil with the tractor. Secondly, set up power plants using rice husk as fuel. In wheat crop, a cloth curtain barrier some distance away from the thrasher should be provided.

In the final analysis, the air pollution generated by five major sources is manageable.

Consequently, the central and state governments will have to prepare a five-year Master Plan to reduce air pollution by adopting aforesaid measures. If, however, the governments continue to maintain their lethargic approach then only alternative left to save yourself from this scrouge is to start living away from cities. Wearing of masks across your face will only prevent the entry of suspended particulate and not the toxic gases adulterated in the air. Choice is yours.

#### Controlling vehicular pollution

The most potential source of damaging human health can be controlled significantly by the following steps:

- Apply odd-even formula for running of personal cars on select busy roads and highways.
- Constructing elevated tracks. They cost around Rs 100 crore per km.
- Allowing the use of only small cars during peak hours.
- Promoting the use of electric and two-seater cars.
- Providing a comfortable and attractive mass transport system. Look at the success of Metro service in Delhi carrying 30 lakh passengers daily.

The writers teach at Manav Rachna University , Faridabad

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## **Beyond Fireworks in Delhi and on Twitter, India's Stance on Air Pollution Deaths Is Hazardously Hazy**

*Date: 31-Oct-2017 Source: The Wire*

Another Diwali, another explosive pollution statistic. If you could get over 999, Delhi's score on its Air Quality Index as it maxed out the US Embassy's Chanakyaपुरi monitor the morning after Diwali, the latest number to wrap your head around now is half a million. That's how many people died in India from pollution-related causes in 2015, 124,207 of those from indoor air pollution and over 80,000 from



pollution arising from coal power plants, according to a new Lancet report on public health and climate change. But if you were looking for official numbers in response, I wouldn't hold my breath. Instead, the Indian government's response to international reports on air pollution deaths continues to be hazy, as it refuses to lay enough of its own data on the table.

### Communalising the commons

Diwali, the Hindu festival of lights, sparks off an annual debate around air pollution and its impacts in developing countries. It is a debate that has, until now, largely centred around its capital city of Delhi, given its population, location, weather, vehicular-density and proximity to national news studios.

The debate this year was triggered by a relatively tame Supreme Court order that threatened to play damp squib on Diwali, banning the sale of crackers in Delhi until November 1, but not their burning. The order was issued in response to a case filed by petitioners Arjun Gopal and Aarav Bhandari and Zoya Rao Bhasin when they were toddlers. Now nearly three years old, the order was only brought about when their representatives argued in that the ban was yet to be in force on the days that it mattered the most.

India's new environment minister Harsh Vardhan's response in tweet, welcoming the Supreme Court's order, was met with heavy troll fire from members of India's conservative right that pitted tradition against common sense. The minister's tweets have since been deleted.

But brief bravado aside, the doctor-minister's response to air-pollution-related mortality numbers were much more in keeping with tradition of his predecessor, the late Anil Madhav Dave, who called reports like the Lancet's "good academic exercises". "We have our own institutions working on air pollution and I would like to trust them more," said the late minister in response to the State of Global Air report released in February this year, which estimated air pollution to be the cause of 1.1 million premature deaths.

### Disproportionate data beyond Delhi and Diwali

In a way, Dave was only voicing an urgent desire for trust-worthy homegrown data that millions might echo, given the sheer paucity and quality of it that is being produced or relayed, outside of Delhi. As of September 2017, India has only 86 Continuous Ambient Air Quality Monitors (CAAQMs) operated by the Central Pollution Control Board (CPCB) that are sending out live, real-time data. This, in a country that has three mega cities, each home to more than 10 million people, 53 cities with a population over a million and 475 cities with more than a hundred thousand people.

Of the 86 CAAQMs in India operated by the CPCB, Delhi alone has ten. In addition, ten other monitors are operated as part of the SAFAR (System of Air Quality And Weather Forecasting And Research) developed by the Indian Institute of Tropical Meteorology. The Delhi Pollution Control Committee (DPCC) has 17 monitors of its own, set to jump to 26 by the end of October this year.

“We want to observe the micro as much as the macro,” said M.P. George, a senior scientist with the DPCC about the profusion of monitors around Delhi, which is a fair enough assertion that other cities could take a cue from.

But the macro picture, if you zoom out of Delhi, reveals grey areas on a scale that is terrifying. Uttar Pradesh, with a population of 200 million and critically polluted areas, including Prime Minister Narendra Modi’s constituency of Varanasi, has only ten real-time monitors for the entire state. Even as we speak, pollution levels continue to skyrocket in the city of Kanpur, which has only one monitor to its name.

But perhaps the most alarming revelation is the near total absence of monitors in India’s coal-bearing states, where Adivasi citizens with the least carbon footprint live with the the fall-out of development-induced pollution. Two of India’s highest coal producing states – Odisha and Chhattisgarh – do not have a single CAAQM. Neither does Madhya Pradesh – the largest state in the country – or even Goa, with its mining and coal transport hubs. It’s not just industrial toxic hotspots like Chhattisgarh’s Korba and MP’s Singrauli – even the state capital of Raipur isn’t generating live pollution data, despite the rare honour of being ranked by the World Health Organisation amongst the world’s most polluted cities in 2014 and in 2016.

Jharkhand, at the moment, has only one real-time monitor in Jharia, a mining town that has literally been burning for decades, as its coalfields spontaneously catch fire. However, this monitor, housed in a Tata-owned stadium, isn’t even registering the fine, particulate matter less than 2.5 microns in size (PM 2.5) that causes the greatest respiratory damage.

These data gaps need to be seen in the light of the Lancet’s Commission’s findings that burning fossil-fuels like coal and bio-mass accounts for 85% of airborne particulate pollution and for almost all pollution by nitrogen and sulphur oxides. Even seen from the myopic lens of Delhi, a modeling study by IIT Kanpur in 2016 indicates that nearly 60-90% of particulate-matter under 10 microns (PM 10) and nitrogen and sulphur pollution comes from emissions outside the city, primarily from thermal power plants. Delhi currently has around 16 coal-fired units within 50 kilometres from its center, and 114 units within 500 km, including states like Madhya Pradesh and Chhattisgarh where monitors are currently missing. This, even when a report by the CPCB tells us that 16 new thermal power plants that started operations from January 2017 are dodging stricter emission norms, while 300 older plants have been let off the hook until 2020.

Other states without a single CAAQM include the whole of the North-East of India – Arunachal Pradesh, Sikkim, Meghalaya, Manipur, Tripura, Nagaland, Mizoram and Assam – in addition to Jammu and Kashmir, Himachal Pradesh and Uttarakhand.

“All states are on board now,” said Dipankar Saha, senior scientist with the CPCB, who dismissed concerns around states backing out and shared plans to raise the number of monitors to 104 by the end of the year, with Bhubaneswar, Bhopal Raipur and Ranchi hopefully getting two CAAQMS each. However, even by the CPCB’s own targets, state capitals and industrial areas need to have at least six real-time monitors, each mega city needs at least nine and each Class I city (of which India has over 400) need at least three.

China, in contrast, started with 74 cities and 496 monitors as part of its national Air Quality Reporting System, way back in January 2013, and has close to 1500 monitors in 360 cities and towns. “Of course there are some neighbourhoods that go unmonitored, but the data gap is never as wide as an entire state,” said Lauri Myllyvirta, air pollution specialist at Greenpeace based in Beijing. “In China, 75% of the population has a real-time air quality station within 50 km, in India, that number is less than 23%.”

The cost of public health and who’s paying

So why are there so few monitors? Cost, for a long time, has been cited a stumbling block. “We import monitors and other high-end equipment from France, Germany, the United States etc., which are expensive but these need to meet either US EPA, TUV (Germany) or MCERT (UK) standards,” said Saha, although why there are no equivalent Indian standards 35 years after India’s Air Act came into being is a separate matter of concern.

The CPCB has been looking to Central Public Sector Utilities – including Coal India Limited, National Mineral Development Corporation and National Thermal Power Corporation – to sponsor monitors and equipment from their Corporate Social Responsibility funds. As of date, of 85 new CAAQMs that the CPCB has sought funding for, only 25 are being funded by India’s environment ministry, while 60 are being funded by public-sector industries. But this unnecessary reliance on sectors notorious for environmental non-compliance is a measure that could backfire.

In a meeting in December 2016 called by the CPCB, Central Public Sector Units from the states of Chhattisgarh, Madhya Pradesh, Maharashtra, West Bengal and Jammu and Kashmir backed out from funding a total of 14 CAAQMs in their states.

“It’s not as if industries aren’t required to monitor pollution continuously already, but that is currently privately shared with Pollution Control Boards in respective states,” says Mohit Gupta of the Occupational Health Network of India. “Why can’t that data be made public, if it is being collected in states where there is none?”

But it isn’t like there aren’t development funds already available, if the environment ministry wanted to tap into them. Many of the states that backed out of real-time pollution monitoring are ironically the ones with the highest contributions to India’s Clean Energy Cess. The cess, collected since 2010 from companies for every tonne of coal mined, was meant to fuel research and innovation to help India make a clean transition and address climate change impacts in our countryside or in our cities. Instead, 56,700 crores of this substantial corpus was used to reimburse states for GST-losses, when funds weren’t subverted for the government’s Clean Ganga Mission.

Odisha, Chhattisgarh, Jharkhand and Madhya Pradesh also lead collections under India’s District Mineral Foundation – set up in 2015 to allow for revenue-sharing with affected communities – contributing about Rs 8,474 crore to the Rs 11,000 crore corpus. As per Centre for Science and Environment India’s analysis, a vast majority of these funds have been used for road construction projects, in areas while baseline health and pollution data is severely lacking. None of the projects approved for funding in 2016-17 either under the DMF (District Mineral Foundation) or the Clean Energy Cess have looked at setting up better pollution monitoring in these districts or assessing and mitigating environmental impacts of on public health. In a reply to a parliamentary question on CSR underspend raised in August 2017, Arun

Jaitley admitted that 84 PSUs had not spent a single rupee of their CSR expenditure in 2014-15, and 69 in 2015-16. With the private sector, those number are a whopping 4111 companies in 2014-15 and 1296 in 2015-16.

The lived experience of air pollution versus information being made available is spurring increased citizen and civil-society vigilance. In Chhattisgarh, for instance, mining-affected Adivasi communities are undertaking their own monitoring to explain the serious health impacts they're facing from industrial pollution. In collaboration with groups like Community Environmental Monitoring, they're testing for and finding evidence of heavy metals like arsenic, which Pollution Control Boards have not even begun looking for.

While low-cost monitors are changing the game the world over, start-ups confided that Delhi Pollution Control Committee and CPCB officials look at indigenous, low-cost monitors as an irritant, instead of a welcome last-mile addition. "If the concern is making sure everyone's sensors meet a certain standard, then you (the CPCB) should have a national calibration unit that certifies low-cost monitors," said a Delhi-based NGO looking at deploying low-cost monitors in rural areas. "But if we show you that levels are disastrous in places that you're not looking in, you need to respond."

It is precisely this failure to monitor, respond and protect citizens from a nation-wide public health crisis that is far more audacious than the annual media circus around Diwali in Delhi. Indian environmental laws currently do not mandate health impact assessments. Moratoriums in critically polluted industrial areas were successively lifted from 2013 onwards without baseline health studies.

One thing is for certain- no part of the country is immune, not even its economy. The Lancet Commission estimates that welfare losses from pollution comprise 6.2% of global economic output.

It remains to be seen if the most powerful citizens of Delhi, whenever they choose to inhabit the same 'very poor' airspace, will finally break with the great Indian tradition of burying their heads in the haze. As India – the world's fourth largest carbon emitter – goes into COP23 where mitigation will be a key item on the agenda, it's essential that India begins acknowledging not just the mortality figures in Lancet's studies but also their connection to fossil-fuel and industrial emissions that it has facilitated through its short-sighted policy dilutions. Along with stepping up its monitoring efforts in urban, rural and industrial blindspots, it must begin with enforcing thermal power emission standards, mandate health impact assessments and Graded Response Action Plans (GRAP) everywhere, and not just in Delhi, two days before Diwali.

A Swachh Bharat is one where Indians are not treated like quarter-life citizens, and a nation-wide right to breathe is guaranteed.

Aruna Chandrasekhar is a researcher and photojournalist working on issues of development, land alienation, indigenous rights and corporate accountability in India for the last six years. She tweets at @aruna\_sekhar.

## Indoor Air Pollution Behind 1.24 L Premature Deaths In India In 2015: Report

*Date: 31-Oct-2017 Source: The Pioneer*



Indoor air pollution caused 1.24 lakh premature deaths in India in 2015, more than the emissions from coal power plants or other industrial sources, a report published in Lancet, a noted medical journal, has said.

The findings establish what experts have been saying for long - that air quality in Indian households, especially in the rural areas, is lethal due to use of wood or cow dung as cooking fuel coupled with poor ventilation.

The report states that while the country recorded 524,680 premature deaths in 2015 due to air

pollution caused by the presence of ultrafine particulate matter PM2.5, "the biggest contributor was household air pollution, which was responsible for 124,207 premature deaths per million people."

In May last year, the Indian government had embarked on a drive to provide free cooking gas connections to five crore women from poor households in three years with a view to reduce the use of polluting fuels such as wood and dried cow dung.

Among other sources, emissions from coal power plants, transport and other industries caused 80,368, 88,019 and 1,24,207 preventable deaths respectively, the report said.

The report, 'The Lancet Countdown: Tracking Progress on Health and Climate Change', is an account of a global study on climate change and the risks it poses in terms of temperature- related illness and death, worsening air quality, extreme weather events among others.

Pollutant particles PM2.5 measure less than 2.5 microns, up to 30 times finer than the width of a human hair, can embed themselves deep into the lungs and enter the bloodstream, triggering respiratory or cardiovascular diseases.

"Annual average PM2.5 concentrations in India are 59 ug/m<sup>3</sup>, with a maximum measurement of 176 ug/m<sup>3</sup> in Gwalior. The WHO recommends that PM2.5 concentrations do not exceed 10 ug/m<sup>3</sup>," the report said.

The corresponding standard set by the Indian authorities is 60 ug/m<sup>3</sup>.

China, with 966,793 premature deaths topped the list in 2015, but in its case the maximum number of deaths were caused due to industrial sources, the report said.

According to the 'Lancet Countdown', between 2000 and 2016, global labour capacity in populations exposed to temperature change is estimated to have decreased by 5.3 per cent, with India bearing the brunt.

"Compared with the 1986-2008 average, labour capacity (or productivity) in India has decreased by 2.85 per cent on average between 2000 and 2016. This decrease has been most significant from 2015, since when labour capacity has decreased by an average of 8.25 per cent," it said.

The report also refers to a "notable increase" in the heatwave exposure and length in India since 2014.

The findings come days before the UN climate summit in Bonn, Germany, scheduled to start on November 6.

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## November 2017

### **Scott Pruitt Declares War on Air Pollution Science**

*Date: 01-Nov-2017 Source: New Public*



The Trump administration's environmental denialism runs much deeper than global warming. That became clear just one month into the presidency, at the annual Conservative Political Action Conference, where panelist Steve Milloy—formerly a paid flack for the tobacco and fossil fuel industries and member of the president's Environmental Protection Agency transition team—argued that the mainstream science on the health risks of air pollution was wrong. Contra the Centers for Disease Control, the World Health

Organization, the National Institutes of Health and most publishing epidemiologists, Milloy insisted that excessive particulate matter is not linked to premature death—and that scientists who advise the EPA made up evidence to support the Obama administration's regulatory priorities. "These people validate and rubber-stamp the EPA's conclusion that air pollution kills people," he said. His co-panelists nodded in agreement.

Milloy called for EPA Administrator Scott Pruitt to overhaul the agency's scientific advisory boards, the bodies that ensure public health regulations are based on sound, peer-reviewed science. Milloy said scientists who receive EPA grants are biased toward regulation, and thus Pruitt should ban them from serving on the boards. He and his co-panelists also argued for more representation from polluting industries, which clearly do have a bias against regulation.

Milloy and others on the anti-environmental fringe are getting their wish. On Tuesday, Pruitt announced massive changes to the EPA's Scientific Advisory Board and Clean Air Scientific Advisory Council, both of which advise EPA on the science behind proposed regulations. Pruitt announced that EPA will no longer appoint scientists who have received grants from the agency to these boards. "From this day forward, EPA advisory committee members will be financially independent from the agency," he said. Pruitt is also expected to replace every single member whose term is expiring instead of renewing some for a second term, as is common practice. Terry Yosie, former director of the Science Advisory Board during the Reagan administration, told me, "It's fair to say that this has never happened to this sweeping degree before of existing board members whose terms are expiring this year."

These changes have been expected for several weeks, but it's all the more concerning when we look at who these new advisors are. A list of expected appointees to the EPA's Science Advisory Board, obtained by the Post, E&E News, and The New Republic, shows that Pruitt is expected to appoint multiple people who have downplayed the impact of air pollution on public health. These deniers will have the influence to contort EPA science, leading to the weakening or even repeal of clean-air regulations that protected Americans for decades.

Of the 17 new members expected to be appointed to the EPA's Scientific Advisory Board (SAB), three hail from large fossil-fuel companies: Southern Company, Phillips 66, and Total. Three are from red-state governments; one is from a chemical industry trade association; the rest are from various universities and consulting groups. Five of the 17 hold views on air pollution that are outside of the scientific mainstream. Of the three new members expected to be appointed to the Clean Air Scientific Advisory Council (CASAC), one is an air pollution skeptic.

Most toxicologists and epidemiologists accept that air pollution can harm humans, and that excessive air pollution can lead to death in vulnerable populations (like children and the elderly). That's why the government regulates it—principally under the Clean Air Act, a widely popular law passed in 1963 and amended multiple times with unanimous or overwhelming support in the Senate. Through that law, we have various regulations on specific air pollutants, including National Ambient Air Quality Standards for particulate matter and ground-level ozone.

Several expected SAB appointees will likely argue that these regulations should be weakened. Michael Honeycutt, the director of toxicology at the Texas Commission on Environmental Quality (TCEQ), has been aggressively seeking a spot on one of the scientific advisory boards since last year. He is “one of the top ozone science doubters in the state,” according to a 2016 profile in the Houston Press:

Honeycutt is the guy who has been leading the charge against making any changes to air quality standards in Texas. He and a bunch of TCEQ scientists have followed in the footsteps of Republicans in Texas and across the country in vowing to oppose EPA air quality changes until the end of time, more or less. He's stated in the past he's against any measures to reduce air pollution mainly because he feels they would be too expensive. Aside from that, Honeycutt reasons that ozone levels aren't an issue at all because “most people spend more than 90 percent of their time indoors” so they're rarely exposed to significant layers of ozone.

The EPA considers ozone a harmful air pollutant. “Reducing ozone pollution makes breathing easier,” the agency's website reads. “Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma.” Honeycutt, who's been trying to undercut the scientific basis for smog regulations since 2010, argues that people aren't outside long enough for high levels of ozone exposure to make a difference.

Robert Phalen, who directs the Air Pollution Health Effects Laboratory at the University of California Irvine, is not an obvious ideologue like Honeycutt, but his research findings would support a deregulatory agenda for air pollution. “The relative risks associated with modern [particulate matter] are very small and confounded by many factors,” he wrote in a 2004 study. “Neither toxicology studies nor human clinical investigations have identified the components and/or characteristics of [particulate matter] that might be causing the health-effect associations.” Phalen has argued that the air is currently too clean, because children's lungs need to breathe irritants in order to learn how to fight them. “Modern air,” he said in 2012, “is a little too clean for optimum health.”

Anne Smith, an analyst at NERA Economic Consulting, has argued against President Barack Obama's signature climate change regulation, the Clean Power Plan. Specifically, she took issue with how his administration classified the health risks of particulate matter. She contends that one can't know for certain whether a death during, for instance, a smog event was directly caused by air pollution.

Mainstream scientists acknowledge as much, but say the strong statistical correlation between death rates and pollution rates are enough to prove the risks. Smith disagrees.

The rest of the expected nominees are similarly skeptical. The University of North Carolina's Richard Smith is the author of a recent peer-reviewed study that found "No association of acute deaths with levels of PM2.5 or ozone." Stanley Young, a listed expert at the climate-denying Heartland Institute, has written that there is "empirical evidence and a logical case that air pollution is (most likely) not causally related to acute deaths." And Tony Cox—the one expected to be appointed to the clean air board—has long argued that the public health benefits of reducing ozone pollution are "unwarranted and exaggerated."

Unlike with climate change, which scientists overwhelmingly agree is driven by humans, some peer-reviewed studies cast doubt on air pollution's health impacts. But other peer-reviewed studies say air pollution's health risks are even greater than we currently assume. And the majority of scientists agree that air pollution poses a threat to public health, and can trigger death in vulnerable populations. The disproportionate number of doubters on Pruitt's science advisory team doesn't reflect that robust debate happening within the scientific community. Instead, it drastically tips the scales in favor of Pruitt's deregulatory policy agenda. Or as Milloy, the EPA transition team member and CPAC panelist put it on Tuesday afternoon, "More winning!"

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## Indian Leaders Move to Tackle Growing Costs of Air Pollution

*Date: 02-Nov-2017 Source: NRDC*



On one of my first trips to India in 2012, when I was invited to speak at the Delhi Sustainable Energy Summit, I was told that India had too many pressing problems to deal with and couldn't focus on air pollution.

Today, I just don't hear that argument anymore. It's become increasingly clear that in India, as anywhere else in the world, pollution in all its forms is intertwined with social, health and

economic challenges—and that addressing environmental pollution presents a major opportunity to solve these problems. Indian leaders are starting to embrace this shift in thinking, and are taking steps to tackle a growing and costly health concern—air pollution.

### Air Pollution Is Deadly and Costly

India suffers from some the worst air pollution in the world. The construction boom, increasing car traffic and coal-fired power plants are all contributing to rising pollution levels, especially the presence of deadly fine particles that can lodge in the lungs. The latest data from the Institute for Health Metrics and Evaluation (IHME) links air pollution to the deaths of 1.6 million people in India in 2016.

Dr. Frederica Perera, a professor of environmental health at Columbia University and a co-author of a major new global study on pollution and health in the *Lancet*, points out that children in India, as elsewhere, are disproportionately affected by air pollution. “The developing brain and other organs are especially vulnerable to toxic pollution during the mother’s pregnancy and early childhood. Those impacts may last a lifetime.”

No country can afford to sacrifice a generation to pollution. Nor can the immediate costs of pollution be ignored. The *Lancet* estimates that productivity losses due to pollution can amount to as much as 2 percent of GDP in low to middle-income countries. A 2016 World Bank study calculated India’s total welfare and productivity losses due to air pollution alone at 8.5 percent of GDP.

### Controlling Air Pollution Has Economic Benefits

Here’s the good news: air pollution is a solvable problem. At NRDC we’ve been fighting this battle for more than 40 years, and there’s no question that our vigilance and persistence has paid off at every hard-fought step. Our relentless pursuit of cleaner air has saved millions of lives, and will continue to save many more.

Efforts to clear the air in the United States have a strong track record of providing economic as well as environmental benefits. Every dollar invested in air pollution control since 1970 has yielded \$30 in benefits, according to a 2011 EPA study. That’s an impressive \$1.5 trillion return for a \$65 billion investment.

In California, where filthy smog once blanketed the south coast, statewide air pollution control measures slashed levels of carbon monoxide, nitrogen dioxide and sulfur dioxide levels 80 to 90 percent. And while the air was getting cleaner, California’s population doubled, and the number of vehicle miles traveled almost tripled. California’s economy now outranks France as world’s sixth largest, with a \$2.46 trillion gross state product.

California’s environmental policies have served as a model for other cities and countries, including developing nations. Many strategies—including improving communication about air quality, targeting certain pollutants, and using less polluting forms of energy such as wind and solar—can be adapted to fit local needs.

The city of Ahmedabad, which has some of the highest air pollution levels in India, recently added new tools to its Air Information and Response (AIR) plan, a groundbreaking collaborative effort to protect local residents from air pollution. Developed in partnership with NRDC and local health experts, the city’s plan focuses on communication and community response to air quality measurements. One new initiative involves raising colored flags at schools to advertise air pollution levels. A new local air quality website sends health alerts to residents when air pollution reaches dangerous levels.

Another change I’ve noticed since my last visit to India is that authorities are realizing that monitoring and communication are just the first step. Pollution control has to come next. In New Delhi, a Supreme Court order has prompted an action plan to respond to bad air days, including limiting vehicle use, closing schools, and shifting away from coal power.

In the fight against air pollution, there's no silver bullet. Clearing the air requires a focused, coordinated effort involving local and state governments, industrial leaders, communities and health experts. NRDC, with its partners at the Indian Institute of Public Health, Gandhinagar (IIPH-G) and the Indian Institute of Tropical Meteorology, among others, is committed to developing the policies and implementation plans that will make a dramatic difference in air quality in Indian cities. These first steps in Ahmedabad and New Delhi provide an important model for political and civic leaders to tackle this critical issue and reap the benefits of clean air for their citizens.

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## Air pollution can be more harmful than lung cancer for your body

*Date: 02-Nov-2017 Source: India Today*



With air pollution comes the risk of death through other forms of cancer too.

Air pollution can increase the risk of death from kidney, bladder and colorectal cancer besides causing lung cancer, a study has showed.

According to researchers, air pollution represents a complex mixture of a broad range of carcinogenic and mutagenic substances that may play a role in chronic systemic inflammation,

oxidative stress and DNA damage in tissues that could ultimately prove fatal.

"This research suggests that air pollution was not associated with death from most non-lung cancers, but the associations with kidney, bladder and colorectal cancer deserve further investigation," said lead author Michelle Turner, researcher at the Barcelona Institute of Global Health (ISGlobal) in Spain.

For the study, published in the journal *Environmental Health Perspectives*, the team included more than 600,000 adults in the US and examined associations of mortality from cancer at 29 sites with long-term residential exposure to three ambient pollutants: PM<sub>2.5</sub>, nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>).

Over 43,000 non-lung cancer deaths were registered among the participants. PM<sub>2.5</sub> was associated with mortality from kidney and bladder cancer, with a 14 and 13 per cent increase respectively, for each 4.4 microgram increase in exposure.

In turn, exposure to NO<sub>2</sub> was associated with colorectal cancer death, with a 6 per cent increase per each 6.5 ppb (parts per billion) increment.

No significant associations were observed with cancer at other sites.

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## Increasing levels of air pollution contribute to deteriorating mental health: study

*Date: 04-Nov-2017 Source: Globle News*



A new study from the University of Washington suggests that the risk of psychological distress increased alongside the amount of pollution in the air.

“This is really setting out a new trajectory around the health effects of air pollution,” said Anjum Hajat, an assistant professor of epidemiology in the UW School of Public Health. “The effects of air pollution on cardiovascular health and lung diseases like asthma are well-established, but this area of brain health is a newer area of research.”

According to the study, which was published in the November issue of *Health & Place*, air pollution has also been linked to behaviour changes such as spending less time outside and leading a more sedentary lifestyle. These can, in turn, be related to psychological distress or social isolation.

The study examined the connection between toxic air and mental health, using data provided by over 6,000 respondents from a larger, national study, The Panel Study of Income Dynamics. The researchers then merged an air pollution database with records corresponding to the neighbourhoods of each of the 6,000 participants.

A substance called particulate matter measurements was isolated, which is released by car engines, fireplaces, wood stoves and power plants fueled by coal or natural gas. The study found that psychological distress increased as the amounts of particulate matter in the air increased. In areas with high pollution, psychological distress was 17 per cent higher than in areas with low pollution.

On the plus side, air pollution is a health problem with a clear solution, said Hajat.

“We shouldn’t think of this as a problem that has been solved,” she said. “There is a lot to be said for having federal guidelines that are rigorously enforced and continually updated. The ability of communities to have clean air will be impacted with more lax regulation.”

The UW study relied on some 6,000 respondents from a larger, national, longitudinal study, the Panel Study of Income Dynamics. Researchers then merged an air pollution database with records corresponding to the neighbourhoods of each of the 6,000 survey participants. The team zeroed in on measurements of fine particulate matter, a substance produced by car engines, fireplaces and wood stoves, and power plants fueled by coal or natural gas.



## Delhi Air Quality Falls In Morning Hours As Winter Arrives

*Date: 05-Nov-2017 Source: NDTV*



Air quality improved slightly post-noon, particulate matter PM2.5 level was still four to seven times over the safe limit, ranging between 123 and 184 at 17 locations across Delhi

Reeling under 'very poor' air quality with toxins for the last one month, Delhi today saw pollution levels 12 to 19 times the permissible limit during morning hours. According to data from the Delhi Pollution Control Committee, the major pollutant PM2.5 or particles with diameter less than 2.5

mm, ranged between 317 to 492 micrograms per cubic metre at different locations between 10 am and 11:30 am.

The permissible range for PM2.5 is 60 as per national standards and 25 by the international standards.

The worst PM2.5 situation was at Anand Vihar in east Delhi, highest at 410 and 492 between 10 am and 11:30 am.

Mandir Marg in central Delhi saw PM2.5 peaking up at 339 at 10 am, while in Punjabi Bagh in west Delhi, it was at 372 and the level ranged between 224 and 317 from 9 am to 11:30 am at RK Puram in south Delhi.

Air quality improved slightly from 1 pm onwards, but PM2.5 levels was still four to seven times over the safe limit, ranging between 123 and 184 at 17 locations across Delhi.

According to weather analysts, the sudden drop in air quality could be due to sudden change in wind directions, as the north-westerly winds from neighbouring Punjab and Haryana started entering Delhi again, changing from earlier short-spanned south-easterly winds.

"The speed of the winds is about 10 kmph. However, this time, north-westerly winds will be short spanned," Mahesh Palawat, director of private weather analyst Skymet said.

Sunday also saw a slight dip in minimum temperature.

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## Smog is so bad in India, Pakistan, motorists can't see to drive

*Date: 05-Nov-2017 Source: USA Today*

ISLAMABAD – Smog has enveloped much of Pakistan and neighboring India, causing highway accidents and respiratory problems, and forcing many residents to stay home, officials said Saturday.





travel.

Average air pollution in Pakistan's major cities is about four times higher than the World Health Organization limits.

Similar problems have been reported in the Indian capital, New Delhi, where air quality was rated "very poor" on Saturday. Some private schools in New Delhi have suspended sports and outdoor activities.

India's Supreme Court banned the sale of firecrackers in New Delhi ahead of last month's Hindu Diwali festival to try to curb air pollution in the notoriously smoggy city. Though reports said air quality was better than last year, pollution levels in the capital hit 18 times the healthy limit the night after the festival, as many dodged the ban.

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Associated Press Writer Ashok Sharma in New Delhi, India contributed to this story.

## Delhi air pollution: IMA urges organisers of half marathon to cancel event

*Date: 05-Nov-2017 Source: Scroll*



Event organiser Procam International, however, shot down the demand and called it 'short-sighted and misplaced'.

The Indian Medical Association has urged organisers of the Delhi half marathon to cancel the event, citing air pollution, The Indian Express reported on Saturday. The event is scheduled to be held on November 19.

The IMA said it will write to the chief minister, the High Court chief justice and the National Green Tribunal chairperson to issue a similar directive. "If the AQI [air quality index] is above 100, it is prudent

for race administrators to warn participants and volunteers, particularly those with lung conditions, about the potential risk,” said KK Aggarwal, the national president of IMA.

The Capital’s AQI has crossed the danger mark of 300 in many areas over the last few days while in other places it hovered between ‘very unhealthy’ and ‘severe’ levels.

Aggarwal said marathons and other sporting events around the world have been cancelled because of poor air quality. He cited the example of United States, Malaysia, Singapore. “While deciding the dates, the organisers should take into consideration the air quality at the time of the marathon so that no runner suffers any adverse effects on account of exposure to hazardous levels of air pollution,” Aggarwal added.

However, event organiser Procem International shot down the demand and called it “short-sighted and misplaced”. “The race day keeps cars off the designated 21 km of the city. Salt mixed with effluent-treated water is used to wash the course which ensures that dust pollution is negated making the race a far more conducive environment for running,” the organiser said in a statement, according to The Hindu.

They added that the runners were aware of the air quality situation in Delhi. The organisers said they would set up six medical stations across the distance and deploy seven ambulances.

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## **Arvind Kejriwal calls Delhi a ‘gas chamber’ as air pollution hits severe levels, no respite in sight**

*Date: 07-Nov-2017 Source: Hindustan Times*



Pollution levels spiked to severe levels in Delhi with thick haze blanketing the city on Tuesday, reducing visibility drastically and affecting flights and trains, prompting chief minister Arvind Kejriwal to describe the national capital as a “gas chamber”.

The air quality index (AQI) – a measure of the level of pollutants in the air – shot past 400 in many places in Delhi by 9.30 am, the second time since Diwali and potentially signalled the start of Delhi’s notoriously toxic winter.

The Indian Medical Association (IMA) also issued a stern warning on potential health hazards, describing Delhi as a “public health emergency state” and asking authorities to shut schools as a precautionary measure.

Officials at the weather department said the weather was expected to remain cloudy for the next two to three days and the temperature to fall further, suggesting any immediate respite from the prevailing conditions was unlikely.

Chief minister Kejriwal said he had requested education minister Manish Sisodia to 'consider closing schools for a few days'. "Delhi has become a gas chamber. Every year this happens during this part of year. We have to find a solution to crop burning in adjoining states," Kejriwal tweeted as AQI measurements indicated presence of tiny particulate matter (PM) that can penetrate deep into human lungs and cause severe respiratory problems.

Despite a ban, farmers in Punjab, Haryana, Rajasthan and Uttar Pradesh burn crop residue in this time of the year, leading to toxic smoke to engulf vast areas of north India including Delhi.

Lack of wind speed also leads to the smoke cover settling down over the city for days, which had led to one of the worst periods of smog in decades last year.

Airport officials said at least seven flights were delayed while one flight from Lucknow was diverted to Jaipur.

Train operations were also impacted, as 33 inbound trains were delayed by three hours or more. "Most of these trains were coming in from the east," said a Indian Railways spokesperson.

According to Met officials, runway visibility dropped to around 400m at 8am in the morning but later improved to around 425-725m at 10.30am.

While people on social media described the haze as smog, a combination of fog and smoke, a met official denied it.

"Pollution can be there but if there is no smoke, then the phenomenon is fog. We don't smoke now...," said RP Lal, a scientist at the regional weather forecasting centre.

According to the Central Pollution Control Board, monitoring stations in Delhi-NCR recorded AQIs as high as 446 at 9.30am. Out of 19 monitoring stations in NCR, 12 recorded severe air quality. The lowest AQI was in Gurgaon at 357 at 9.30am, which is classified as very poor.

Areas close to Shadipur in west Delhi, had the worst air quality at 9.30am, with an AQI of 446. The primary pollutant here was PM2.5, which is considered a finer and more dangerous pollutant.

Anand Vihar area, which is usually highly polluted, also had severe air quality with an AQI of 405. However, the primary pollutant here was PM10.

The India Meteorological Department (IMD) said visibility in the capital was at 200m around 5.30am on Tuesday. In Noida, AQI was 430 at 9.30am.

Low visibility city resulted in slow traffic with long queues seen on the Delhi-Noida-Delhi Flyway and Noida-Greater Noida expressway during the rush hour .

"It usually takes me 20 minutes to cover the DND but today, I drove for 45 minutes today," said Dhruv Gupta, a Jangpura-based IT professional.

Noida traffic police said that traffic congestion was mainly near the Noida Gate and Sector 16 A flyover. "Due to low visibility, there was traffic congestion. However, we are trying to clear roads as soon as possible," said Layak Singh, traffic inspector, Noida Police.

In Gurgaon too, morning smog created problems for commuters due to low visibility.

The weather, however, brought down the temperature considerably. The minimum temperature was 17 degrees Celsius on Tuesday which was 2 degree less compared to Monday.

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## **UK government sued for third time over deadly air pollution**

*Date: 07-Nov-2017 Source: The Guardian*



The UK government is being sued for a third time over the widespread illegal levels of air pollution, which cause 40,000 early deaths every year.

Environmental lawyers ClientEarth have already defeated ministers twice in court, forcing a new pollution plan to be drawn up in July. But ClientEarth believes even the latest strategy does not meet the legal requirement of banishing toxic air in the “shortest possible time”, as EU law requires.

“The UK government’s stubborn failure to tackle illegal and harmful levels of pollution in this country means that we have no choice but to take legal action,” said James Thornton, ClientEarth’s CEO. “We need clarity from the government and for that we’ve been forced to go back to court.”

ClientEarth sent ministers a pre-action legal letter setting out their concerns in October but deemed the government’s response inadequate. They have now applied to the courts for a legal hearing. The government has already spent £370,000 of taxpayers’ money in failed attempts to fight air pollution court action.

Nitrogen dioxide pollution, mostly produced by diesel vehicles, has been illegally high in most urban parts of Britain since 2010. The government’s latest plan was condemned as “woefully inadequate” by city leaders and “inexcusable” by doctors.

Air pollution causes an estimated 23,500 early deaths every year from NO<sub>2</sub>, rising to 40,000 when other pollutants are considered. In September, the UN’s special rapporteur on pollution said the government was “flouting” its duty to protect the lives and health of its citizens and in October a major pollution report estimated the number of premature deaths in the UK at 50,000 per year.

Oliver Hayes, at Friends of the Earth, said: “It’s shameful that the government has to keep being taken to court to try to force it to protect the health of its citizens.”

ClientEarth believes there are several grounds for judicial review, including backtracking in the latest plan on “clear air zones” in Birmingham, Derby, Leeds, Nottingham and Southampton. These zones, which would use charges to deter polluting vehicles from city centres, were mandatory in previous plans but are now only “expected” to be implemented.

ClientEarth also say it is unacceptable that the plan requires no action in 45 local authorities with illegal levels of air pollution. These include Leicester, Oxford, Liverpool, Cheltenham and Sunderland, with the government arguing toxic air will fall to legal levels without enforced action.

However, Leicester and Oxford city councils have written to ministers saying that the government has seriously underestimated pollution levels and that by requiring no action, they are stopping the councils getting access to funding to cut pollution. Oxford is planning to ban all petrol and diesel vehicles in the future.

Some motoring groups are campaigning against a crackdown on diesel cars, but the latest data shows car buyers are abandoning the technology, with sales down by 30% in October year-on-year. The government's own analysis shows charging zones to deter dirty cars are by far the most effective policy but ministers have told councils they should only be the option of last resort.

"It's time ministers came clean about the size of the problem and the difficult decisions needed to solve it," said Thornton. He said the forthcoming budget should use tax changes to make diesel cars less attractive and that the motor industry should be made to contribute funding.

"The car industry helped get us into this mess so they should be helping get us out of it by contributing to a clean air fund, as they have done in Germany," Thornton said. The German government recently secured €250m (£220m) from the car industry to help cities reduce pollution.

A spokeswoman for the Department for Environment, Food and Rural Affairs said: "We have put in place a £3bn plan to improve air quality and reduce harmful emissions. We will also end the sale of new diesel and petrol cars by 2040, and next year we will publish a comprehensive Clean Air Strategy which will set out further steps to tackle air pollution."

The decision to take the government back to court came as four air pollution protesters were jailed for staging a series of direct action demonstrations against toxic air in the capital.

The four activists are from the environmental group Stop Killing Londoners, which has been stepping up its campaign calling on the government and the mayor of London to do more to tackle air pollution.

Camberwell magistrates court heard on Tuesday that the group had spray-painted "Cut Air Pollution" on City Hall on Monday night before sitting down and waiting to be arrested for criminal damage.

Roger Hallam, 51, Stuart Basden, 34, Ian Bray, 50, and Genny Scherer, 71, were under strict bail conditions not to go within 50m of the building after they graffitied it earlier this week. The four all deny criminal damage.

In a statement released after the hearing, the group said at least two of those imprisoned would go on hunger strike while being held on remand.

It said Monday's arrests were the fifth action in the past week by the campaign amid growing anger at the air pollution crisis. They have demanded a meeting with environmental secretary Michael Gove and London mayor Sadiq Khan.

In a statement they added: “Today, the four of us are being sent to prison because we apparently care too much. We care about the 25 people who are killed every day in London by the illegal levels of air pollution. We care about the children who will endure a lifetime of suffering due to shrunken lungs. We care, because each breath we take is harming us, and puts even more strain on the NHS as it struggles to cope with unnecessary cuts.”

The chairwoman of the bench, Finola Gowers, remanded the protesters in custody for seven days and said they faced a possible custodial sentence if convicted.

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## Air pollution hits ‘severe’ levels in Delhi

*Date: 07-Nov-2017 Source: The Hindu Business Line*



NEW DELHI, NOV 7: Delhi woke up to ‘severe’ air quality today under a blanket of thick haze, as pollution levels breached the permissible standards by multiple times.

The rapid fall in air quality and visibility began last evening itself as moisture combined with pollutants shrouded the city in a thick cover of haze. By 10 am today, the Central Pollution Control Board (CPCB) recorded ‘severe’ air

quality, meaning the intensity of pollution was extreme.

In light of the sudden dip, measures under the Graded Response Action Plan (GRAP) such as a four times hike in parking fees may be rolled out by the Supreme Court-mandated Environment Pollution Prevention and Control Authority.

If the situation deteriorates further and persists for at least 48 hours, the task force under the GRAP will mull shutting schools and enforcing the odd-even car rationing scheme.

Kejriwal asks Sisodia to shut schools for a few days

Delhi Chief Minister Arvind Kejriwal today asked his deputy and Education Minister Manish Sisodia to consider shutting schools for a few days in view of the high pollution in the city.

“Considering high level of pollution, I have requested Manish Sisodia, Education Minister, to consider closing schools for few days,” Kejriwal tweeted.

The Indian Medical Association (IMA) has also appealed to the Delhi government to shut down outdoor sports and other such activities in schools keeping in view the harmful impact of air pollution on the health of the children.

The last time air had turned ‘severe’ was on October 20, a day after Diwali festivities, when firecrackers were set off. Since then, the pollution monitors have been recording ‘very poor’ air quality, which is comparatively better than ‘severe’ but alarming according to global standards.

A ‘very poor’ AQI comes with the warning that people may develop respiratory illness on prolonged exposure while exposure to ‘severe’ air affects healthy people and seriously impacts those with existing respiratory or cardiovascular diseases.

The CPCB has said high moisture level in the air has trapped emission from local sources and hanging low over the city in the absence of wind. “Total calm conditions, marked by the complete absence of wind has led to the situation. The moisture has trapped emissions from ground level sources,” Dipankar Saha, CPCB’s air lab chief, said.

According to private weather forecasting agency Skymet, wind from neighbouring Punjab and Haryana, where paddy stubble burning is in full swing, has started entering the city during the afternoon hours.

The CPCB also recorded ‘severe’ air quality in the neighbouring Noida and Ghaziabad.

The real-time pollution monitors displayed alarmingly high concentration of PM2.5 and PM10, which are ultrafine particulates having the ability to enter the respiratory system and subsequently the bloodstream of humans and animals, causing harm.

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## **Google and Aclima show you how bad air pollution in California can be**

*Date: 07-Nov-2017 Source: Digital Trends*

If seeing is believing, then Google is here to convert us all — at least, as far as air pollution is concerned. In an attempt to better understand local air quality, Google teamed up with environmental intelligence company Aclima, mapping air pollution throughout California using Google Street View cars outfitted with air quality sensors. The company published initial results of this collaboration earlier in 2017, but now, Google wants to give Californians even more detail about their air quality (or lack thereof). Now, you can view the air pollution levels in three distinct areas of the West Coast — San Francisco, Los Angeles, and California’s Central Valley.

Google’s Street View cars traveled 100,000 miles and 4,000 hours to collect the data to determine how air quality changes by block, by the hour, and by day. The hope is that the results can be used by scientists and air quality specialists to help local organizations, governments, and regulators “achieve greater air quality improvements and solutions.”

In their explorations of Los Angeles, the cars found that congested highways, local streets, and even weather patterns contributed to blowing pollution inland.

In looking at the San Francisco Bay Area, Google found that a significant proportion of air pollution came from cars, trucks, and construction equipment, and industrial polluters like refineries and power plants. Even street-level pollution patterns reflected these sources.



Finally, in the Central Valley, Google and Aclima discovered that the interstate traffic that runs along Interstate 5 and Interstate 99 contributed significantly to air pollution. And even though the Central Valley is largely rural and boasts a significant agricultural population, even this industry creates quite a bit of air pollution. Google pointed out, “weather conditions and topography can trap air pollution between the coast and the Sierra Nevada mountains resulting in a chronic ozone and particulate matter levels that exceed public health standards.”

Google isn’t keeping this information and its data visualizations behind lock and key. Rather, the company is allowing air quality scientists to request access to the data. Thus far, more than 1 billion air quality data points have been analyzed, but it seems that much more information is soon to come. “Air quality impacts our planet and our health,” Google noted. “We hope this information helps us build smarter more sustainable cities, reduce climate-changing greenhouse gases and improve air quality for healthier living.”

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## AIIMS chief compares Delhi air pollution to Great Smog of London

*Date: 08-Nov-2017 Source: The Hindu*



As air pollution hit alarming levels in Delhi, major city hospitals on November 8 experienced a surge in the number of patients complaining of respiratory problems with the AIIMS chief comparing the situation to the killer Great Smog of London in 1952. Doctors also said warned that some of the patients may develop life-threatening conditions.

AIIMS Director Randeep Guleria, who is also a renowned pulmonologist, said that N95 masks and air purifiers, whose sale has increased in the last few days, may not provide full-time protection

and stressed on implementation of long-term measures to tackle the crisis.

While people were seen wearing masks to protect themselves outdoors, there was a spurt in fresh cases in hospitals and conditions of patients with history of asthma, Chronic Obstructive Pulmonary Disorder (COPD) and cardiovascular diseases deteriorated.

### Delhi pollution tracker

“Patients have started coming to the OPDs with complaints of breathlessness, coughing, sneezing, tightness in chest, allergy and asthma complications. There is about 20 per cent rise in patients seeking treatment due to respiratory and cardiac issues,” said Dr. Guleria. “This is a silent killer,” he said.

He also compared the situation in the national capital with the Great Smog of 1952 in London and said pollution is at such a severe level that patients with respiratory and cardiac problems may develop life-

threatening conditions. On December 5, 1952, a thick yellow smog brought London to a standstill for four days and is estimated to have killed more than 4,000 people.

From the pages of The Hindu: October 31, 1953 — Dread of London Smog

Dr. Guleria said the condition of those already having advanced heart diseases or pulmonary problems deteriorates as pollution levels go up and they land up in the ICUs and have to be put on ventilator. He said the current smog situation in the national capital is same to the post-Diwali situation in 2016 and expressed fear that around 25,000 to 30,000 people may lose their lives in Delhi-NCR due to diseases exacerbated by pollution.

The Centre-run Safdarjung hospital also witnessed an increase in patients with respiratory problems in its OPDs and casualty department over the past two days, said J.C. Suri, professor and head of pulmonary medicine at the hospital. He said the immediate effects are cough, throat infections and pneumonia, but in the long term the results could be disastrous as one could also develop lung cancer.

“Elderly and children are more likely to develop infections and allergies due to smog and pollution. So they should avoid going out during early morning and at dusk hours when the toxic level is at its peak,” Dr. Suri said. “Also, when pollution levels rise, the condition of those suffering from Chronic Obstructive Pulmonary Disease (COPD) or asthma or heart disease worsens,” he added.

According to Vivek Nangia, director and HOD, Pulmonology, Fortis Flt Lt Rajan Dhall Hospital, there has been a 25% increase in OPD footfall in the past 24 hours of patients with various kinds of respiratory stress. “These comprise not only first time walk-in patients but also repeat patients. The situation is grim with the disease being more protracted due to the severely poor air quality.

“This is leading to longer recovery times, more dependence on steroids, antibiotics and inhalers. The situation will continue till the pollution levels are brought under control,” Dr. Nangia said.

Rajesh Chawla, senior consultant (Critical care, pulmonary and sleep disorders) at the Indraprastha Apollo hospitals suggested that people avoid indulging in outdoor physical activity and wear good quality masks and keep their eyes, nose and mouth covered.

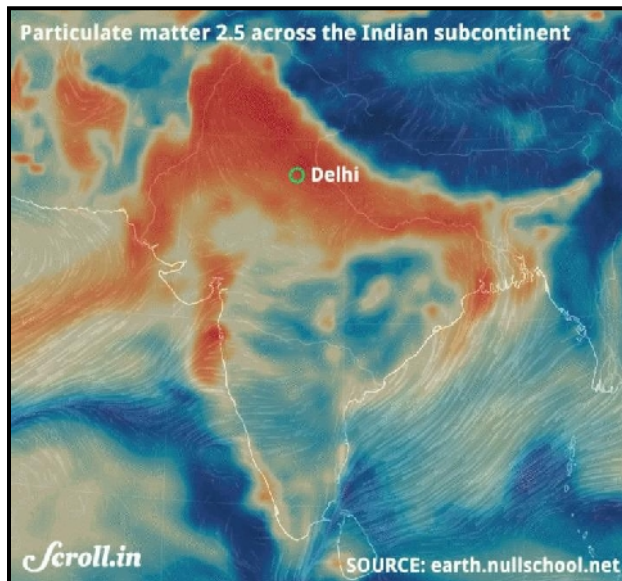
The Indian Medical Association said the capital was witnessing a “public health emergency” and appealed to the government to stop outdoor sports and other such activities in schools to protect the health of children.

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## **North India’s deadly air is unlikely to clear up before the weekend**

*Date: 09-Nov-2017 Source: Scroll*

A lethal cocktail of air-borne pollutants that has engulfed large parts of northern India and Pakistan is likely to clear up only by the weekend.



low-lying pollutants in that area.

Dipankar Saha, a scientist at the Central Pollution Control Board who is monitoring the situation said that this was an “accumulation phase” where there was no chance of dispersion of pollutants because there is no entry of air from outside the circulation area.

“That is why the pollution is increasing day by day,” Saha said. He added that this was not smog. “It is particulate matter and ash in the air.”

An air quality index data for Delhi showed that particulate matter of 10 micrometres, or PM10 had hit 999 in Punjabi Bagh and RK Puram in New Delhi. The lowest reading of PM10 for the National Capital Region was 330 in Gurugram, while other areas in the region ranged between 420 and 700. The Central Pollution Control Board classifies a reading of 100 as “satisfactory”. Last year, index readings touched 500 after Diwali.

The gas chamber-like phenomenon has led to car crashes on the Yamuna Expressway, Delhi’s schools to be shut until Sunday and a public health emergency to be declared in the capital region.

Though the condition developed in conditions favourable to fogs, which are common in northern India at this time of the year, Mohapatra was at pains to clarify that the current situation is no mere fog.

“Fog occurs when there is humidity in the air and so appears in the morning hours,” he said. “However, today in Delhi, the condition was more intense in the afternoon, at which time there is usually is no fog. So weather is not the only factor.”

While Delhi has a dense collection of meter readings, the extent of the pollution is not limited just to the National Capital Region, as this map of particulate matter 2.5 across the subcontinent shows. Even parts of Pakistan along the River Indus and almost the entire Gangetic plain is highly polluted.

“We expect this [weather system] to dissipate from November 10 onwards, following which there will be a relief from the smog,” said M Mohapatra, scientist at the National Weather Forecasting Centre of the India Meteorological Department.

An anticyclonic circulation has developed over areas including New Delhi, Haryana, Punjab and Uttarakhand, Mohapatra explained.

Anticyclonic circulations of air move clockwise around a central region of high pressure in the northern hemisphere. This means that while winds are moving around the periphery of the region, air in the centre remains trapped. This weighs down

While the circulation is likely to dissipate over the weekend, this does not reduce the severity of pollution that has led to it in the first place. These sources included crop burning and industrial emissions in northern India.

Saha expressed his helplessness at the present situation. He said, “We can cut down on ground pollution, but we cannot dilute or churn the air.”

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## Delhi smog live updates: Air quality likely to get worse today

*Date: 09-Nov-2017 Source: The Economics Time*



Delhi's pollution status today:

Despite clampdown, stubble burning in Haryana continues adding to Delhi's worsening pollution levels.

The smog delayed 41 trains in Delhi , rescheduled 9 and 10 were cancelled.

The Capital's average daily air quality index (AQI) is at a season high of 478. To mitigate the effect, the Delhi L-G has banned the entry of trucks inside city limits and halted all construction activities.

The Delhi government issued a health advisory urging Delhiites to use carpooling and public transport, stay indoors, and not to smoke.

Air pollution levels in the national capital continued to be ‘severe’ as dense smog engulfed the city and neighbouring areas, causing delays in flight and train services, even as the health ministry issued an advisory asking people to stay indoors.

Delhi and Punjab governments announced complete closure of schools till Sunday following weather forecasts that situation is unlikely to improve soon with very dense fog expected to cover many places in Delhi, Punjab, Haryana, Uttar Pradesh and north Rajasthan in the morning hours till November 10. People rushed to buy masks to save themselves from the toxic smog as level of particulate matter 2.5 over Delhi touched 517 microgram per cubic metre, which is more than ten times the safe level.

The air quality was equally bad in bigger National Capital Region, and it's forecast to worsen on Thursday. “The situation can become worse and conditions deteriorate as we are in accumulation phase of dust particle due to no winds in the region,” said D Saha, head air quality, Central Pollution Control Board (CPCB). “Things may improve by Saturday,” he said.

Meanwhile, smog and second day of closure of one of the runways at Delhi airport continued to impact operations at Delhi airport, which saw flights operating with delays of up to 2 hours impacting the plans of many fliers. Over 250 flights were delayed at Delhi airport, causing spillover delays across the country

## PREPARE FOR ODD-EVEN

A decision on whether or not to implement the odd-even car-rationing scheme may be taken tomorrow. The metro and Delhi Transport Corporation announced decisions to augment services by pressing more trains and buses into service, in a bid to reduce dependence on private vehicles.

Delhi lieutenant governor Anil Baijal on Wednesday banned entry of trucks into the capital until further instructions.

Trucks carrying essential commodities like food items have been exempted. He has also instructed civic bodies and the Delhi Metro to hike parking fees, as directed by the Supreme Court appointed Environment Pollution Control Authority (EPCA) to dissuade use of personal cars. The three civic bodies are yet to implement parking fee hike, but Delhi Metro has decided to increase train capacity by carrying out 186 additional trips from Thursday.

## NO RESPITE TILL WEEKEND

According to the System of Air Quality and Weather Forecasting and Research (SAFAR), which tracks air quality of different cities in India, strong winds blowing at 15 to 20 km per hour at a height from ground have been bringing external pollutants from Punjab and Haryana into Delhi. With high humidity of 90% and low wind speed, pollutants are getting trapped. SAFAR has forecast increase in the concentration of fine particles of pollutants on Thursday.

Madhavan Rajeevan, secretary, ministry of earth sciences, tweeted: "Delhi smog is not localised as seen in satellite image. Stable atmospheric and wind conditions favour severe pollution. Stable conditions are likely to continue next 2-3 days, which can trap smog close to surface. Weather only a modulator, source however man made. Take care."

## CHECK STUBBLE BURNING

Union environment minister Harsh Vardhan called on the neighbouring states to check stubble burning. "I call for cost effective measures since management of air pollution requires sustained actions over a long period of time to be effective. I'd also like to request the state governments of Punjab, Haryana and UP to implement the ban related to stubble burning," he tweeted.

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## Delhi air pollution spikes again, Kejriwal govt to push for odd-even scheme

*Date: 12-Nov-2017 Source: Hindustan Times*

The Delhi government on Monday will make a fresh push for odd-even road rationing, asking to National Green Tribunal to exempt two-wheelers and cars driven by women from the plan, even as the pollution in the city worsened on Sunday after a small respite over the previous two days.

Delhi's average air quality index (AQI) was 460 on Sunday, rising close to the November 9 season-high of 486. This was because of a fall in temperature, increased cloud cover, lower wind speed at the ground

level, and winds at higher altitudes carrying pollutants from Punjab and Haryana, according to the Central Pollution Control Board (CPCB).

The AQI had improved to 403 on Saturday, when the wind speed at lower altitudes had picked up. For the last six days, the air quality has remained in the “severe” zone across the National Capital Region, prompting to the Indian Medical Association to declare a health emergency.

The figure in other NCR cities, too, was alarmingly high on Sunday – 468 in Faridabad, 498 in Ghaziabad, 460 in Gurgaon and 492 in Noida. Most schools in Delhi are set to reopen on Monday after being shut for four days due to the pollution, but schools in Gurgaon will remain closed.

Though there could be some respite on Tuesday, light rain on Wednesday may make the air quality even worse, warned Dipankar Saha, head of the air lab at the CPCB.

A new pollution-fighting mechanism, the Graded Response Action Plan, is in place in the city. Several steps have been announced -- ban on construction activities, hike in parking fees and ban on diesel gensets -- but ground reports show that the Delhi government and local civic bodies have been sluggish on implementation.

On Saturday, the National Green Tribunal gave its nod to the odd-even scheme, which allows only odd- and even-numbered private vehicles on the roads on alternate days, from November 13 to 17. However, it strongly rejected on the government’s plan to let two-wheelers and vehicles driven by women stay on the roads. Given these new conditions, the Delhi government decided to put the move on hold.

The government is arguing that the added load from two-wheeler commuters would put too much pressure on public transport, but the Opposition parties are blaming the Aam Aadmi Party government for being populist in exempting two-wheelers to protect its vote bank.

“Out of the city’s one crore registered vehicles, 63.2 lakh are two-wheelers. Around 40 lakh run daily on the roads. Even if half of them are exempted from riding during odd-even, at least 20 lakh persons will have to be accommodated in the available public transport. We will explain to the NGT that this will be a problem,” said an official of the government’s transport department, who asked not to be named.

Environment experts argue that two-wheelers are major contributors to air pollution and allowing them to stay on the roads defeats the purpose of the odd-even scheme. The CPCB, during a Saturday hearing, informed the NGT that vehicular emissions contribute 20% to Delhi’s foul air and of this 30% emission is by two-wheelers.

The exemption for women, too, is a sticky subject for the government because crimes against women are a big problem in the city. Immediately after the NGT ruling, Swati Maliwal, the head of the Delhi Commission for Women, urged the government to call off the odd-even scheme in light of the green tribunal’s order.

“We will explain to the NGT that we cannot compromise on women’s security,” a Delhi government official said.

United Airlines has suspended all flights to Delhi from Newark until Monday due to the air quality and was offering alternatives to passengers booked on the route to India, the US airline said on its website.

Some hospitals in Delhi are reporting patient numbers have more than tripled since a dense layer of smog settled over the city of 20 million last week, with people complaining of burning sensation in their eyes and heaviness in breathing.

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## **SC seeks long-term solution for pollution**

*Date: 13-Nov-2017 Source: The Economics Times*

The Supreme Court on Monday demanded an all India plan to deal with the air pollution crisis and demanded firm deadlines from the Environment Pollution Control Authority (EPCA) to introduce a multi-pronged strategy which may not be restricted only to shutting down industries and construction in response to deteriorating air quality or intermittent implementation of the controversial odd-even scheme.

“Where are the timelines? It is not enough to have emergency measures which are reactive to a crisis,” a bench, comprising Justices Madan B. Lokur and Deepak Gupta, observed during a hearing on a long-term graded response to tackle the air pollution that has engulfed Delhi-NCR.

The bench also observed that the problem was not Delhi-specific. “What about other regions of the country?” Justice Deepak Gupta argued. He cited the examples of other cities of north India and Bihar.

The bench asked EPCA to come back with firm deadlines of its plans which covers a switch to cleaner fuels by industry, better enforcement of emission norms, and an overhauling of the public transport system by November 17 — the next date of hearing — when amicus curiae Aparajita Singh said all measures so far had helped curb pollution only by 15-20%.

The apex court was hearing a plea by small and medium industries for extending deadline to switch from ecologically damaging fuels such as pet coke and furnace oil widely used in NCR.

The bench refused to extend any interim relief to the industries, but said it would pass orders as the amicus, assisting the court in tackling the air pollution problem, maintained that they could switch to better fuels that are available in plenty.

The bench also clarified that its ban on use of these fuels covered all the states which had territory in NCR, which includes Uttar Pradesh, Rajasthan and Haryana.

In the first hint of a rethink on the efficacy of the odd-even scheme to tackle deteriorating air quality, the apex court was also told of an alternative EPCA plan to curb vehicular pollution blamed for the deteriorating air quality in Delhi NCR.

The plan was suggested during the hearing was a colour-coded scheme which will ensure that the most polluting vehicles get off the road first in response to any emergency. Amicus Singh suggested the EPCA plan to the bench.

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## Hooda writes to PM, seeks committee on air pollution

*Date: 13-Nov-2017 Source: The Hindu*



Says he will bring in 'Right to Clean Air Bill' in Parliament

Rohtak MP Deepender Singh Hooda has written to Prime Minister Narendra Modi, seeking to set up a committee headed by the PM himself, including Chief Ministers of north Indian States as members, with a defined mandate to propose and oversee implementation of long-term solutions to fight hazardous levels of air pollution in the National Capital Region and other parts of north India.

Mr. Hooda said that he would be bringing in a private members' bill called 'Right to Clean Air Bill' in the winter session of Parliament for which he has sought suggestions from all citizens via social media. The MP said he is willing to act as the postman between the people and the Parliament on the issue so that the

opinion of every citizen can be incorporated.

### Political blame games

Mr. Hooda, the only Opposition MP from the 19 Lok Sabha seats falling in the NCR, said there was a need to rise above political blame-games and find a lasting solution to this problem for the sake of the next generation. All the State governments and the government of India, together, through the sought committee should propose a solid, workable plan with adequate budget allocation.

He said the approach so far has been of "ad hocism and passing the buck". "Sometimes, we resort to banning firecrackers, and sometimes odd even. The NGT steps in on some occasions and the States and political parties start blaming each other. "This needs to stop as this is a shared and joint responsibility," he said, adding that the poor farmer should not be made a scapegoat.

"If we can have the Right to Food Act and Right to Education Act, why can't we have a Right to Clean Air Act," Mr. Hooda said in a brief interaction with media persons in New Delhi.

He also said that "we need to start acting now to ensure that we don't have the same problem next year". "As you would be aware, the problem has reached alarming levels. While a level of 100 is stated to be a health hazard the world over, we are living with levels seven to eight times this limit. The problem starts around Diwali and worsen in the winter months and the people of region have to live with extremely poor air quality," Mr. Hooda has stated in his letter to the Prime Minister.

### Call to come together

He said since other countries had faced similar problems in the past but managed to get the problem under control, we can defeat air pollution if we come together to fight the problem.

Air pollution has turned out to be a major health hazard in the National Capital Region, including Gurugram and Faridabad in Haryana. The air quality has deteriorated in two districts over the past several years and the problem aggravates around Diwali due to stubble burning.

The major hospitals in the two cities also register 20-30% increase in cases of asthma, cough-related illnesses and other respiratory diseases in October-November due to stubble burning.

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## **Air Pollution, Smog: Delhi Schools Reopen With Low Attendance; Parents, Teachers Demand Government Intervention**

*Date: 14-Nov-2017 Source: NDTV*



NEW DELHI: Schools in the capital city reopened today after it was closed for four days last week and many schools recorded low attendance owing to the still persisting severe air pollution levels. Meanwhile angry parents accused the authorities of "playing with children's health" as schools reopened despite a fresh surge in pollution to emergency levels, reported AFP. According to IANS, teachers from several schools suggested that schools be shut for a few more days till pollution levels decreased in the National Capital Region

(NCR), including Delhi.

Schools in Delhi were closed from Wednesday last week after doctors declared a public health emergency when choking smog descended on the NCR.

"There has been no let-up in the pollution levels. So if the situation is the same, action should be the same. Why open the schools now?" Ashok Agrawal, president of the All India Parents Association asked.

Ranju Sehrawat, a schoolteacher at Amar Shaheed Major Sehrawat School in Mahipalpur, said the attendance was around 50 per cent in her class on Monday.

"On one hand the government is saying there is a health emergency and on the other they are playing with children's health. It is so disturbing to see children coughing and struggling to breathe all the way to the school," said Mr. Agrawal.

"The government should keep schools closed for a few more days. No point in asking children to attend classes in this weather," Ms Sehrawat told IANS.

According to Seema Anand, Principal of Ghitorni Government School, only about half of the students were present in the classes she visited and in one class, 29 of the 40 students were present.

Ms Anand pointed to ill-effects of pollution on children and said schools should remain shut for a few more days.

A Principal of another government school said she observed around 60 per cent attendance in a number of classes she inspected during her daily round.

Meanwhile, another section of teachers said, closing the schools is not a solution for the current problem, instead, collective efforts must be made to overcome the situation.

On Monday, according to IANS, pollution in Delhi and neighbouring areas remained at severe level. Delhi recorded an air quality index (AQI) of 463 till 4 p.m., with PM2.5 particles recorded at "severe" 460 microgrammes per cubic metres, about 19 times more than the permissible level globally. The AQI in National Capital Region was 463.

The permissible level for PM2.5 is 60 as per Indian standards and 25 globally.

The situation in neighbouring Ghaziabad was worse, with PM2.5 concentration of 846 microgrammes per cubic metres.

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## Authorities sprinkle water in Lucknow to combat air pollution

*Date: 16-Nov-2017 Source: Money Control*



Authorities here on Thursday sprinkled water to settle the dust, hours after Chief Minister Yogi Adityanath asked the municipal corporation to take a slew of steps to combat the rising level of air pollution.

The state environment department was also looking into the prospects of artificial rainfall, District Magistrate Kaushal Raj Sharma said.

Fire tenders were pressed into service to sprinkle water across the city to control dust, a senior official said.

"A meeting was held with IIT (Indian Institute of Technology) Kanpur officials at the government level to discuss the option of artificial rain through cloud seeding. If there is any such option that is successful, it will be explored by the environment department," Sharma said.

Taking a serious view of the rising level of air pollution, Adityanath had directed municipal corporations to ensure that garbage is not burnt and sprinkling of water is done to control dust.

Adityanath had said that cloud seeding techniques should be explored in collaboration with the IIT Kanpur.

He directed the district magistrates to run awareness campaigns, so as to stop farmers from burning farm waste.

Observing that traffic snarls lead to air pollution, the chief minister said: "Proper traffic operations and movement should be ensured so that there is no traffic jam. To reduce air pollution, old vehicles should be reviewed, and if needed removed".

Adityanath also directed decongestion of the Kaisarbagh bus stand in Lucknow.

Instructions have been issued to fill trenches along the construction site of Lucknow Metro rail, so that dust can be minimised, and air pollution reduced.

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## Outdoor air pollution accounts for 6% of total diseases in 2016: Report

*Date: 16-Nov-2017 Source: Live Mint*



New Delhi: Outdoor air pollution was responsible for 6% and household pollution for 5% of the total disease burden in India in 2016, according to the first state-level disease burden and risk factors estimates released by the ministry of health and family welfare on Tuesday.

Air pollution also remained the second leading risk factor after malnutrition in India as a whole, posing a significant and growing challenge to population health, said the report jointly prepared by the Indian Council of Medical Research (ICMR), Public Health Foundation of India

(PHFI) and Institute for Health Metrics and Evaluation (IHME).

While outdoor air pollution caused 6.4% of India's total Disability Adjusted Life Years (DALY) (measure of overall disease burden, expressed as the number of years lost due to ill health, disability or early death) in 2016, household air pollution caused 4.8%.

State-wise, the DALY rate pattern for outdoor air pollution was highest in Haryana and Uttar Pradesh, followed by Punjab, Rajasthan, Bihar and West Bengal. Outdoor air pollution increased due to a variety of pollutants—from power production, industry, vehicles, construction to waste burning.

"This risk factor encompasses both outdoor air pollution from a variety of sources as well as household air pollution that mainly results from burning solid fuels in the home for cooking and heat," the report said.

"Combined, they make a substantial contribution to India's burden of cardiovascular diseases, chronic respiratory diseases, and lower respiratory infections. The contribution of air pollution to disease burden remained high in India between 1990 and 2016, with levels of exposure among the highest in the world. It

causes burden through a mix of non-communicable and infectious diseases, mainly cardiovascular diseases, chronic respiratory diseases, and lower respiratory infections,” it said.

The summary exposure value of outdoor air pollution increased by 17% in India from 1990 to 2016 and the magnitude of this exposure was higher in the Empowered Action Group (EAG) states group as compared with the North-East and Other states groups. EAG states are socioeconomically backward such as Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttarakhand and Uttar Pradesh and Assam.

According to the report, progress has been made in India in reducing household air pollution from solid fuels, yet this remains a significant problem, particularly in the EAG states and Assam. For household air pollution, too, the DALY rate in 2016 was higher in the EAG states and Assam, with the highest rates in Rajasthan, Bihar and Uttar Pradesh.

“Concerted efforts are needed to curb the sources of this pollution, including power production, industry, vehicles, construction and open burning. Controlling air pollution has to be one of the highest priorities for improving the health of India’s population that would impact generations to come,” the report recommended.

Last week air pollution levels touched “severe” and “emergency” levels in the Delhi-NCR region. Following that, the Environment Pollution (Prevention and Control) Authority (EPCA), which is tasked with implementation of the comprehensive pollution-tackling plan in Delhi-NCR cleared by Supreme Court last year, came out with a series of measures to control it. It had suggested measures like closure of brick kilns and stone crushers, intensification of public transport services, increase in the frequency of Delhi Metro services, intensification of mechanized road sweeping and sprinkling of water, continuation of the ban on use of generator sets in Delhi, immediate enhancement of parking fees by four times, ban on use of coal and firewood in hotels and eateries.

“The situation is grim with respiratory diseases such as asthma being more protracted due to the severely poor air quality. This is leading to longer recovery time, more dependence on steroids, antibiotics and inhalers. The situation will continue till the pollution levels are brought under control urgently,” said Vivek Nangia, director and head of the department, pulmonology, Fortis Hospital.

The air pollution situation is worsening day by day. On Tuesday evening, the air quality index of Delhi-NCR was at 397 (very poor category)—nearly four times the satisfactory levels. The average levels of the two deadliest air pollution components—particulate matter (PM) 10 and PM2.5—across Delhi NCR on Tuesday was 347 (over three times the safe limit) and 397 (nearly seven times the safe limit), respectively.

“Air pollution triggers bronchospasm and chest congestion that can lead to infections including influenza and pneumonitis. The best treatment remains prevention. Apart from staying away from smoke, dust and all other trigger factors, vulnerable people should take vaccines at the start of the season. Two best vaccines for such purposes could be vaccine against influenza and vaccine against pneumococcal infections,” Rajesh Gupta, consultant physician, Apollo Hospital, said.

The report has also shown that malnutrition is the largest risk factor in India and the burden of non-communicable diseases (NCD) are unabatedly increasing in India.



Anoop Misra, chairman, Fortis-C-DOC Centre for Diabetes, Metabolic Diseases and Endocrinology, and chairman, National Diabetes, Obesity and Cholesterol Foundation, said, “In health problems, India is suffering from double jeopardy; diseases related to under and over-nutrition. Also air pollution has become a major concern now. Those states where health transition is rapidly occurring (increase in heart disease, diabetes) are also most urbanised and mechanised. But such changes are dynamic, and will quickly march over to other states. In view of this, several National Control programs need not only strengthening but capacity building to tackle deluge of NCDs.”

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## **BS VI fuels deadline for Delhi advanced to April as air pollution chokes city**

*Date: 16-Nov-2017 Source: Hindustan Times*



Delhi's gas stations will only sell the world's cleanest petrol and diesel from April 1, the government said on Wednesday, advancing the rollout of Bharat Stage (BS)-VI fuels by two years to fight rising pollution in the capital city.

BS-III and BS-IV cars and two-wheelers can run on BS-VI fuels. But any emission gains will only be marginal in a city whose pollution woes are often compared to a “gas chamber”.

The decision also signals a political statement from Prime Minister Narendra Modi's government on tackling pollution — especially given that the Delhi government has come up short on solutions to tackle the problem.

Although the government did not say automakers would have to start selling BS-VI cars and motorbikes, the move could bring pressure on the industry to advance the introduction of such vehicles that are now scheduled for an April 2020 rollout in India.

The government also asked oil manufacturing companies to study the feasibility of providing BS-VI fuels to the National Capital Region by April, 2019.

In a statement, the petroleum ministry said the measures would help mitigate the problem of air pollution in and around Delhi.

“The decision to leapfrog directly from BS-IV to BS-VI is also in line with Hon'ble PM's commitment at @COP21 to voluntarily cut our carbon emissions...,” petroleum minister Dharmendra Pradhan said, referring to India's commitment to reduce emission of greenhouse gases under the Paris accord signed two years ago.

BS emission standards regulate the output of air toxic particles from motor vehicles, identified as one of the biggest polluters in Delhi, a city of 17 million people that has been enveloped in such hazardous smog

this month that schools were briefly ordered shut, coal-fired power switched off and construction work stopped.

BS-VI standards will limit the level of sulphur in fuels. It was 100 ppm (parts per million) under BS-III, halved to 50 ppm under BS-IV and with BS-VI it will be 10 ppm.

A 2016 report by Indian Institute of Technology, Kanpur, showed that a big contributor to Delhi's air pollution is road dust, which accounts for about 35% of tiny particles known as PM 2.5 in the air, followed by vehicles at 25%. PM2.5 acts as respiratory irritants and long-term exposure can lead to lung cancer.

Environment groups welcomed the government move.

"Even though the full air quality gains will come when vehicles also move to BS-VI emissions standards, the current move should not be underestimated in a choking city like Delhi," said Anumita Roychowdhury, executive director of the Centre for Science and Environment.

"With substantially cleaner fuel emissions, control system in on-road fleet will improve and give some emissions benefits."

Fuel norms in India are implemented in a staggered manner, with metro cities enforcing them before the rest of the country. The BS-IV standards were introduced in some parts of the country in 2010 and rolled out nationwide on April 1, 2017.

"A BS-VI engine can only operate on BS-VI fuel. If you allow BS-VI engine to operate on BS-IV fuel then the engine will get damaged. If you allow a BS-IV engine to operate on BS-VI fuel, the benefit of reduced pollution will largely be lost," said Shekar Viswanathan, vice-chairman, Toyota Kirloskar.

The auto industry's reaction was cautious.

"We are already working on a stretched deadline to launch BS-VI vehicles by April 2020..." said Pawan Goenka, managing director, Mahindra and Mahindra Ltd.

"I don't foresee any mainline player with multiple models being able to launch complete portfolio of BS-VI compliant vehicles by April 2018."

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## **From Field to Fuel, There is an Easy Solution to India's Air Pollution Problem**

*Date: 17-Nov-2017 Source: The Wire*

Delhi's air pollution has reached a level of severity where alarm has turned into panic. Every morning its citizens wake up with dread in their hearts, to a dark grey sky. These are not clouds: take a flight to Mumbai, or anywhere for that matter, and at 3,000 feet you will burst forth into a crystal blue sky. Below, on the ground, visibility is down to between 100 and 200 metres; the air spells of smoke. Children waiting for school buses, or the hapless ones who are forced to live in slums cough and sneeze in the frigid,





poisonous air. Every day for the past nearly two weeks, the air quality index has been between 400 and 478 – over eight times the permissible maximum. By contrast it is currently 16 at Ooty, Wellington and Coonoor in the Nilgiris and not much higher in Shimla and Kasauli. But only the rich and the retired have the privilege of escaping to these havens in the mountains or to others by the sea.

The threat pollution poses to people is increasing.

But contrary to what some environmentalists would have us believe, it is an unequally distributed threat. If you are in your teens or even your 60s, healthy, active, do manual work or play sports, and don't smoke, the impact is minimal. It is your infants, your children below five or six and your aged parents – who are frail, may be prone to asthma and cannot stop coughing – who are face imminent risk of death. Both the very young and the elderly cannot be treated with antibiotics, or for very long, without causing complications.

So the smog prevents their lungs from healing and turns these into factories for growth of bacteria. Pollution therefore kills mercilessly at both ends of the spectrum of life. As infant mortality dwindles and the aged live longer, the threat from pollution becomes more severe.

Till as recently as a year ago, environmentalists were blaming urbanisation, incessant construction, the rising number of cars and two wheelers on the road, lengthening traffic jams, Diwali firecrackers and the burning of garbage in the open air for most of the pollutants that now regularly hang in the Delhi air. They were only partly right, for the annual pall of smog arrived in Delhi last year a week before Diwali. This year, Diwali came a month early, on October 19, and thanks to the Supreme Court ban, there were relatively fewer firecrackers let off in the capital. But still, the pall of smog came on October 30, almost exactly the same day as last year.

Residents of Delhi think this smog is their special problem, and the scores of environment watchers who have raised Delhi to the top of their lists encourage them to do so. But this smog is now a North India problem. The trail of cancelled flights and severely delayed trains, and the multiple car crashes on the Yamuna Expressway to Agra last week showed that visibility was equally poor hundreds of kilometres from Delhi. In fact, a blue pall of smoke hangs across the whole of northern India every year from late October till the winter rains finally come, if they come. Even Bharatpur, 200 km south of Delhi, is no longer spared.

#### Problem deeper than stubble burning

This new and deadly threat has been created by the burning of millions upon millions of tonnes of rice straw in the fields of Punjab, Haryana and western Uttar Pradesh after the crop has been harvested. It is a product of the Green Revolution – and is, therefore, the price we have been paying for the food security that it has given to the country. So it is hardly surprising that no one, either in Delhi or in Punjab, has the faintest idea of what to do about it.

Chief minister Arvind Kejriwal has met Haryana chief minister Manohar Lal Khattar and asked him to enforce, and if necessary raise, the fines on stubble burning as an immediate measure. He has also been trying to meet Punjab chief minister Amrinder Singh for days, but to no avail. But even if both Punjab and Haryana agree to penalise stubble burning more harshly, it will have little or no impact on stubble burning. For if farmers cannot remove the stubble from their fields very soon after harvesting their paddy, they will not be able to sow the wheat crop. The dilemma they face was highlighted by the Aam Aadmi Party's own party chief in Punjab, Sukhpal Singh Khaira, when he defied the state government's order and ceremonially burnt crop stubble on October 15.

There is an impression in Delhi that the problem is only the stubble that is left after the crop is harvested. Based on this, there are proposals to deploy rotary root stubble digging machines to plough it back into the soil and enrich it. But stubble is the lesser part of the problem. The greater part is the rice straw and husk that gets left behind after threshing and milling. Punjab harvested a colossal 18 million tonnes of paddy in 2016, but with it came 34 million tonnes of straw and husk. Since rice straw is no longer fed to cattle in Punjab and Haryana, it too is being burned. In fact, what Khaira is seen setting fire to in photos of the event published in Punjab newspapers is mostly rice straw.

#### Possible solution

The only way to avoid burning straw and stubble is to find another use for the crop residue. Fortunately, there is a way. This is to not burn the straw and stubble but gasify it in a two-stage process that yields a fuel gas that can meet cooking, heating and power generation needs in the village in the first stage, and any type of transport fuel – diesel, aviation turbine fuel, methanol or CNG – in the second.

Gasification is the incomplete burning of biomass or coal in a limited supply of air or oxygen. While full combustion yields only large amounts of carbon dioxide, gasification yields a substantial amount of hydrogen, carbon monoxide and methane.

Two other chemical processes, called the Fischer-Tropsch synthesis and the water-gas shift reaction, which have been in use for more than a hundred years in the petro-chemicals industry, can convert this mixture into any type of transport fuel one desires, from CNG to diesel, methanol and aviation jet fuel. They can also produce dimethyl ether, which is a heavy condensate gas that can effortlessly replace LPG as a cooking gas.

The technology chain described above has been perfected to the point where it is now possible to convert any form of biomass – from urban solid waste to crop residues – into transport fuels. In 2011, British Airways signed an 11 year purchase agreement with a US-based company, Solena fuels, to set up a plant outside London that would convert 575,000 tonnes of London's municipal solid waste into aviation turbine fuel every year.

Three other airlines signed memoranda of agreement with the company to do the same. But those, and several other projects that were in the pipeline in Europe, went into cold storage in 2014 when oil prices crashed for the third time since 1985, making future fuel prices uncertain. However, earlier this year, a Texas-based company S.G Preston signed an agreement to provide Qantas with 800 million gallons of Aviation turbine fuel a year, obtained from biomass.

#### Benefits beyond combatting pollution

In India, the large-scale induction of this technology can not only end the annual invasion of smog, but greatly increase farm incomes and save the country valuable foreign exchange. It can therefore solve a multiplicity of problems: give urban solid waste a value and get it off the streets; stop the burning of straw and stubble; and give the farmers a valuable 'lean' gas to use for cooking and generating electricity locally and provide them with biochar, a solid, carbon-rich residue that they can briquette and sell to large scale modern bio-fuel plants of the kind that are being planned for Europe and the US.

Biochar is 70-80% pure carbon, and contains no sulphur, so it is similar to superior varieties of imported coal, and will fetch a similar price. At present, India is importing coking coal for blast furnaces at Rs 22,300 per tonne, if farmers can get half that price for their biochar from bio-fuels plants, they will add Rs 20,000 to the Rs 70,000 that they gross from every hectare of land under paddy.

Finally, it will save foreign exchange. Punjab, Haryana and western UP produce close 45 million tonnes of rice straw and stubble. This is sufficient to produce between 15 and 20 million tonnes of transport fuels. The reduced dependence upon oil imports will convert India's 1.5% balance of payments deficit into a comfortable surplus.

These are not over-the-horizon technologies of the kind that are continuously being proposed by high-tech global corporates abroad to their own and developing country governments, but tried and tested ones, with some of which Indian industry is already familiar, that need only a stable transport fuel pricing environment to take off. India could, for just this once, be a pioneer in providing an enabling price and marketing environment instead of the eternal laggard that it is today.

Prem Shankar Jha is a senior journalist and author of several books. His most recent book, on combating climate change, titled *Dawn of the Solar Age: An End to Global Warming and to Fear*, is being released by Sage Publications next month. He was a member of the Energy Panel of the World Commission on Environment and Development, 1985-88.

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## Air pollution: Delhi's 'dust' screen hiding bigger killers

*Date: 19-Nov-2017 Source: Live Mint*



New Delhi: Dust may be the most visible marker of Delhi's air pollution, but its sheer abundance may actually be masking the bigger killers—emissions from vehicles, thermal power plants and industries.

Studies and research reports have underlined the chemical composition of ultrafine particulates PM2.5 or PM10, and not their volume, which is more crucial in determining the toxicity of air. The Environment Pollution (Prevention and Control) Authority (EPCA), a Supreme Court-appointed

pollution watchdog, made a similar point in a report, that particles from coal and diesel are more harmful than wind-blown dust, as they can lead to an increase in heart disease-related deaths.

“Similarly, particles from diesel combustion are very toxic and have been classified by the World Health Organisation as a class-I carcinogen for strong links with lung cancer, putting them in the same bracket as tobacco smoking and asbestos. “This suggests that we must prioritise the more harmful particulates for action. Combustion sources —vehicles, power plants and industry -- need more stringent and priority action,” the report says.

The EPCA mentioned it separately under a section —addressing quantum vs toxicity.

An Indian Institute of Technology-Kanpur report, which assessed the chemical composition of pollution from various sources in the city, also concluded that combustion -- vehicular and industrial alike -- was responsible for the formation of PM2.5 in greater quantity.

Among PM2.5 and PM10, the most dominant pollutants in Delhi’s air, PM2.5 is deadlier owing to its tinier size—up to 30 times smaller than the width of a human hair—aiding it in lodging deep in the lungs and subsequently entering the bloodstream.

The IIT report found that PM2.5 Nitrate particles formed from nitrogen oxides and sulphate particles formed from sulphur dioxides can be 25% of the total PM2.5 load in the city. Both nitrates and sulphates are classified as ‘secondary particles’, which are formed due to the reaction of gases such as sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) emitted from vehicles, thermal power plants and industries.

“In a broad sense, fractions of secondary particles of both PM10 and PM2.5 in two seasons were consistent and need to be controlled for better air quality in Delhi and the National Capital Region,” the report pointed out.

It estimates that of around 312 tons of NO<sub>x</sub> produced per day in the city, nearly 52% come from industrial point sources such as power plants and 36% from vehicular emissions, “probably making it the most important emission”.

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## Here's how you can fight air pollution

*Date: 19-Nov-2017 Source: The Kashmir Monitor*



The dip in the air quality poses serious health concerns particularly in the children, the elderly and those already suffering with lung diseases and asthma.(Representational Image)

The dip in the air quality poses serious health concerns particularly in the children, the elderly and those already suffering with lung diseases and asthma.(Representational Image)

Delhi's air pollution level has hit a new high this winter, leaving its people grasping for breath.

The smog that blankets the city is a result of high air pollution combined with no-wind cold weather conditions.

"With little or no signs of improvement, we, on an individual level, have to find ways to beat it," says Dr. Walia Murshida Huda, (Senior Medical Officer, Healthians, MBBS, MBA (H.C.A), FICM Walia.

The dip in the air quality poses serious health concerns particularly in the children, the elderly and those already suffering with lung diseases and asthma.

It is not unlikely, that many around must have complained of a heavy chest, itchy eyes and irritation in throat.

The current smog laden air can lead to:

- Burning eyes
- Dry throat
- Itchy skin
- Cough
- Irritation in the nose
- Breathing problems, like increase in lung diseases and asthma
- Rise in blood pressure

The smog crisis has disrupted our lives leaving us with no option but to protect ourselves.

Here are few small but effective steps that can help you fight this battle against pollution.

-Limit your outdoor exposure

Though it cannot be followed by all, staying indoors is the best option available in the current scenario. For children and senior citizens, it is advisable to stay indoors from immediate basis as they are most sensitive to the poor air quality. Avoid going out during the peak hours when pollution is extremely high. Any outdoor sports activities should be avoided. Morning and evening walks should be avoided for now.

-Deep breathing exercises

Certain breathing exercises can help in keeping away the toxic effects of these air pollutants. Yoga exercises practised indoors will help. A deep breathing exercise like Pranayam is recommended. But these should be done on a regular basis.

-Wear a mask and full sleeve clothes

Do not forget to wear full sleeve clothes and a mask when you step out next. N95 and N99 pollution mask are most effective in the given circumstances. If you do not have a mask, use a clean cloth to cover the mouth.

-Eat healthy and drink plenty of fluids

Vitamin C and omega fatty acids will help boost immunity. Add jaggery, tulsi, honey, ginger, lemon, basil leaves and lots of water to your daily diet. Warm water with a dash of honey and two-three tulsi leaves in the morning will help.

-Steam with eucalyptus oil

Add a few drops of eucalyptus oil to hot water and then inhale the steam. This acts as a natural purifier for the lungs.

-Personal hygiene

Wash your hands and face every few hours. Change your clothes when you are home from work. A hot shower daily may help in removing the pollutants from your body.

-Avoid two wheelers and auto-rickshaws. Opt for carpool or public transport

Travelling by an auto-rickshaw and two wheelers will increase your exposure to the toxic air. It is advisable to use various modes of public transport such as a bus or a metro or carpool.

-Purify the air indoors

Plants like money plant, mother-in-laws tongue, areca palm, chrysanthemum, aloe vera, ficus will help purify the air indoors. If you have kids, elderly or asthma patients at home, then it is advisable to invest in a good air purifier.

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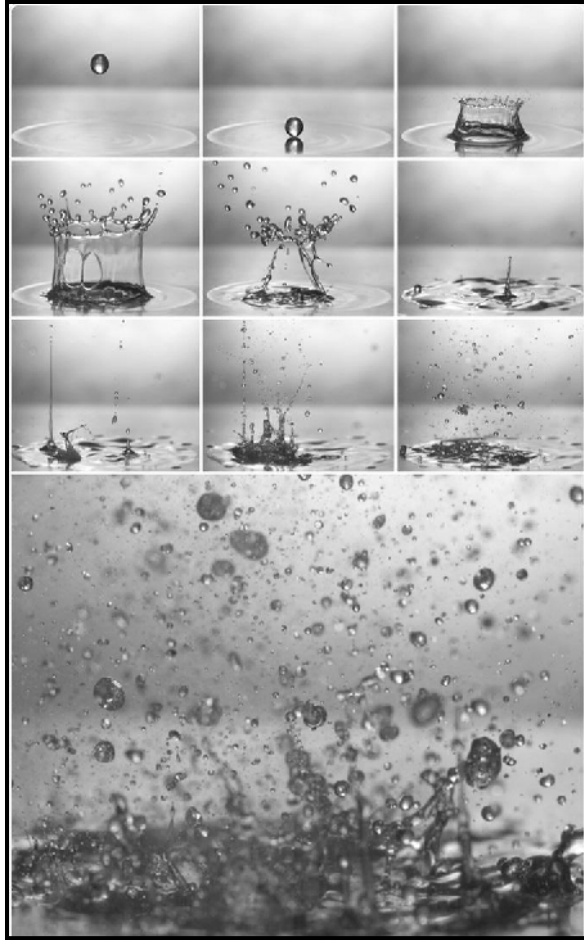
## **Oil droplets from cooking contributes to indoor air pollution finds study**

*Date: 19-Nov-2017 Source: News Medical*

A team of researchers from the Texas Tech University and Utah State University were looking at the properties of the oil droplets that are released when cooking takes place on an open frying pan with oil and found that these oil droplets could contribute significantly to indoor air pollution.

The team presented their study titled, “Out of the frying pan: Explosive droplet dynamic,” at the 70th annual meeting of the American Physical Society’s Division of Fluid Dynamics, being held Nov. 19-21, 2017, in Denver, Colorado.

The oil droplets that are released in air during open cooking in a frying pan are called “explosive” hot oil droplets. When they come in contact with the skin, they can lead to burns and skin damage. This is something that is well known. The contribution to indoor air pollution due to the fluid dynamics of these hot oil droplets was not clearly known till date. Jeremy Marston, an assistant professor at Texas Tech



University who led this study said when a single droplet of water comes in contact with hot oil it is broken into “very large number of small oil droplets” which can dissipate in the air as they jump out of the pan.

To prove their point the group of researchers took a thin layer of oil – peanut, soybean or canola oil. They measured the temperature of the hot thin layer of this oil sample using a thermocouple. Using a high speed video camera they recorded the effect of injecting a small droplet of water on the hot oil surface. Marston explained that the result was instant and “dramatic”. There is an explosion as the water which gets trapped within the hot oil vaporizes within a fraction of a second. The oil film over this vaporized water breaks and the tiny droplets of oil go “flying” everywhere.

Cooking chicken and vegetables involves use of hot oil and introduction of substantial amounts of water. Chicken breast for example is one such food which when cooked can lead to more number of oil droplets flying all over the room. Marston said Chinese cooking methods involve adding water to hot woks and this research would be relevant for them.

The problem with these droplets is their size is below a micron and when inhaled these could be dangerous air pollutants. Marston said that they are looking at the different sizes of the released droplets and how they are spread and distributed within the room with or without adequate ventilation. Marston also spoke about the detailed imaging from the high-speed video saying that they would improve upon it by using “three-dimensional volumetric imaging and thermal imaging” which would allow them to see where these droplets are going. They would be using an ‘aerosol particle sizer’ that can measure the aerosol size with accuracy up to a nanometer to detect particle size.

Indoor air pollution kills millions worldwide Marston explained but we still do not know if cooking in a poorly ventilated kitchen using techniques that release these oil droplets could be one of the reasons behind this. Marston calls these oil droplets “kitchen-based aerosols”. He said that his team is in the process of planning larger and more extensive studies to see how much indoor air pollution can contribute to indoor air pollution and if improved ventilation could help reduce and remove these ultrafine aerosols. They are planning to test “indoor air curtains” that could be part of the ventilation systems to see if they can protect against these aerosols of oil droplets.



## Delhi Air Pollution: 'Dust' Screen Hiding Bigger Killers

*Date: 20-Nov-2017 Source: NDTV*



NEW DELHI: Dust may be the most visible marker of Delhi's air pollution, but its sheer abundance may actually be masking the bigger killers- emissions from vehicles, thermal power plants and industries.

Studies and research reports have underlined that it's the chemical composition of ultrafine particulates PM2.5 or PM10, and not their volume, which is more crucial in determining the toxicity of air.

The Environment Pollution (Prevention and Control) Authority (EPCA), a Supreme Court-appointed pollution watchdog, made a similar point in a report to the top court, that particles from coal and diesel are more harmful than wind-blown dust, as they can lead to an increase in heart disease-related deaths.

"Similarly, particles from diesel combustion are very toxic and have been classified by the World Health Organisation as a class I carcinogen for strong links with lung cancer, putting them in the same bracket as tobacco smoking and asbestos.

"This suggests that we must prioritise the more harmful particulates for action. Combustion sources- vehicles, power plants and industry- need more stringent and priority action," the report says.

The EPCA mentioned it separately under a section addressing number versus toxicity.

An Indian Institute of Technology-Kanpur report, which assessed the chemical composition of pollution from various sources in the city, also concluded that combustion- vehicular and industrial alike- was responsible for the formation of PM2.5 in greater quantity.

Among PM2.5 and PM10, the most dominant pollutants in Delhi's air, PM2.5 is deadlier owing to its tinier size, up to 30 times smaller than the width of a human hair, aiding it in lodging deep in the lungs and subsequently entering the bloodstream.

The IIT report found that PM2.5 Nitrate particles formed from nitrogen oxides and sulphate particles formed from sulphur dioxides can be 25 per cent of the total PM2.5 load in the city.

Both nitrates and sulphates are classified as 'secondary particles', which are formed due to the reaction of gases such as sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) emitted from vehicles, thermal power plants and industries.

"In a broad sense, fractions of secondary particles of both PM 10 and PM2.5 in two seasons were consistent and need to be controlled for better air quality in Delhi and the National Capital Region," the report pointed out.

It estimates that of around 312 tons of NO<sub>x</sub> produced per day in the city, nearly 52 per cent come from industrial point sources such as power plants and 36 per cent from vehicular emissions, "probably making it the most important emission".

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## **Air Pollution Crisis Provides India And Pakistan A Golden Chance To ‘Clear The Air’ Between Neighbours**

*Date: 20-Nov-2017 Source: Outlook India*



US has air quality cooperation agreements with its neighbouring Canada and Mexico. Similarly, the countries of European Union have an agreement, which sets national limit on emission of air pollutants

Pollution levels in India's capital had reached 30 times the World Health Organization's prescribed limits in the first week of November. Delhi is one of the most polluted capital cities in the world, and in the winter, it gets worse. This happens because, in the month of October, farmers in

Punjab and Haryana set their paddy fields on fire after harvesting to burn crop stubble to clear their fields.

The choking smog, which had a few days ago forced doctors to declare a medical emergency in Delhi, not only covers most of the north India but also a large part of Pakistan as well. Pakistan's Lahore suffers from the 'apocalyptic' smog as badly as India's Delhi. Like India blames Pakistan for cross-border terrorism, Pakistan blames India for the cross-border incursion of smoke and ash.

Stubble burning and seasonal dust in the winter are only additions to existing severe pollution in the region due to uncontrolled industrial and vehicle emission. The emergency like situation in the pre-winter months due to smog brings huge media interest for a few days and with it a sense of official urgency. Governments in both India and Pakistan pretend to take a few half-hearted temporary steps to assuage public anger but refrain from working towards a long-term solution.

In order to address this survival issue effectively, both the countries have to realize that the issue like air pollution is transboundary in nature and it demands a regional solution. India and Pakistan have to cooperate as adopting state-centric approach is not sufficient to resolve the smog crisis. Taking the lead, a few days back the Punjab government in Pakistan had tweeted to Punjab's Chief Minister in India: "Environmental hazards threaten our people and habitat. Let us act fast to counter it."

Considering the state of relations between India and Pakistan, it is understandable why Chief Minister Amarinder Singh decided not to respond to the call for cooperation from his counterpart from Pakistan's side. To get the process moving, the central governments of India and Pakistan have to start talking as

there is no other way out rather than work jointly. More than 500,000 Indians and Pakistani die every year due to air pollution.

The relationship between India and Pakistan has remained conflictual for the last seven decades. The severity of air pollution issue and the improbability of finding a country-specific solution should be sufficient to persuade the leadership of India and Pakistan to work together for environmental cooperation. Air pollution issue between India and Pakistan, unlike the Indus water sharing, has not become securitized yet, thus it provides a golden opportunity for both the countries to cooperate and work together.

Countries collaborate to protect their critical environment and these collaborations can have positive spin-offs for peace. There are two possible pathways for peacemaking between two countries over their bilateral cooperation on air quality in particular and environmental issues in general. The first path involves transforming the more immediate problems of mistrust, uncertainty, suspicion, divergent interests, and short-time horizons that typically accompany conflictual situations. A second pathway, consistent with the broader understanding of peace as the unimaginability of violent conflict, focuses less on narrow, short-term interstate dynamics and more on the broader pattern of trans-societal relations. In other words, cooperation would be pursued as an objective in itself, diffusing from air quality across other areas of bilateral interaction.

Such “spill-over” advantages of cooperation over air quality have been witnessed in different parts of the world. The United States has air quality cooperation agreements with its neighbouring Canada and Mexico. Similarly, the countries of European Union have an agreement, which sets a national limit on the emission of air pollutants. Scandinavian countries have developed strong cooperation with East European countries in the areas of air and water quality in the Baltic. The air pollution issue is also being addressed at the regional level in Southeast Asia as well.

Cooperation for cleaner air has the potential to transform the mistrust and suspicion between and among the countries to bring opportunities for shared gains and set up a model of reciprocity. Establishing a bilateral commitment to limit air pollutants can help to overcome the existing mistrust or suspicion between two disputing countries, and create a milieu of reciprocal gains and estimation of national interest on a long-term basis. Cooperation on air quality issues may also bring people together resulting trans-border civil society linkages and build a norm of joint responsibility and bilateral cooperation. The issue of national sovereignty and self-interest maximizing elites in both India and Pakistan are obstacles to the appropriate evolution of cooperation over air quality. However, when the stakes are so high, the logic of cooperation should alter the existing bilateral relations between two countries. Several countries in the world have transformed their bilateral relationship from conflictual to cooperative from the foundation of starting cooperation over critical environmental issues.

The creation of a protected area called the SIAPAZ Park has improved the bilateral relationship considerably between two disputing neighbours, Costa Rica and Nicaragua. Similarly, the other peace-promoting protected areas in Central America are La Amistad International Park between Costa Rica and Panama; and a peace park in the disputed Cordillera del Condor between Peru and Ecuador. The cooperation over forest and biodiversity in these cases have re-established centuries-old relationships among the populations living in the area, and improved relationships between the officials of the countries who were needed to work together.

The cooperation over of water sharing has also seen to improve the overall bilateral relationship between the riparian states of Evros River, Greece and Turkey; and between the riparian states of Jordan River, Israel and Jordan. Even India's relationship with Bangladesh has improved considerably since 1996 after it started to cooperate with Bangladesh over the Ganges water sharing.

While the Ganges Water Treaty has significantly contributed to bilateral peacemaking and has provided the foundation for other forms of cooperation between India and Bangladesh, the Indus Water Treaty of 1960 has failed to do so between India and Pakistan. The basic reason for this failure is the quality of the Indus Water Treaty itself. The Indus Water Treaty is not a water-sharing treaty, rather an extension of the partition between two countries, from land resources in 1947 to water resources in the 1960s.

Thus, the Indus Treaty has failed to provide a space for joint ownership and joint management of critical common property resources. What both the countries have failed to do while dividing the Indus water between themselves, the urgency and danger of smog bring them another opportunity to work towards a comprehensive and cooperative framework to limit air pollutants and with it to improve bilateral relations.

It is true that environmental issues provide opportunities for the countries to build cooperation, but the states have to make use of them. The positive spill-over effect of the environmental cooperation is only possible if the ruling elites of the cooperating states are prepared and interested to take the advantage of it. The ruling elites of both India and Pakistan, need to abandon their narrow political agenda and prioritise survival and well-being of the people, and then both the countries might able to get the other larger benefits of their cooperation over air quality. Time for the rulers to realize, cooperation is essential in the neighbourhood. Smog has just provided them with another opportunity to walk together in that direction.

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## **Metro Matters: Delhi, NCR towns need to fight air pollution together**

*Date: 20-Nov-2017 Source: Hindustan Times*



The Graded Response Action Plan (GRAP) mandated by the Supreme Court to counter air pollution was meant to be an effort in regional cooperation. The entire National Capital Region (NCR), which sees the worst winter pollution in northern India, was to tackle this health emergency together.

But, when air pollution levels peaked to 'severe' ten days ago, what was to be the strength of the

GRAP turned out to be its "Achilles Heel", wrote the Environment Pollution (Control and Prevention) Authority in its report to the Supreme Court.

While Delhi came under flak for running fewer buses than that it did three years ago and therefore failing to enforce blanket road rationing, compliance of even basic anti-pollution measures was impossible in the NCR because of poor infrastructure.

The foul air in Delhi's suburbs remains mostly under the radar. Compared to 37 air monitoring stations in Delhi, NCR towns in 22 districts of Uttar Pradesh, Haryana and Rajasthan have only 10. Even with limited monitoring, these suburbs record pollution levels that equal and often surpass Delhi's.

Unlike Delhi, which has the IIT-Kanpur report quantifying the sources of pollution, the NCR towns have never been studied comprehensively. Be it vehicular emissions, construction dust, pollution from industries and coal-fired power plants or garbage burning, there is little or no compliance with regulatory norms in these areas.

The Centre for Science and Environment estimates that 450,000 vehicles ply on Gurgaon roads daily, about 50,000 are added every year and 900 trucks cross the city every day. Diesel use is also very high because of the huge numbers of diesel cars and SUVs, as well as the 10-14 seater diesel autos used in shuttle services.

Ghaziabad has 18,000 autos and eight-seaters, which are the only mode of public transport. Many of them run on diesel. When pollution soared last week, Ghaziabad borrowed 77 CNG buses from the UP roadways to transport passengers to the Delhi border. In Gurgaon, only 120 buses ply intra-city. Between 2008 and 2015, the annual registration of buses declined by 300% while that for cars increased by 352% and for two-wheelers by 69%.

The NCR towns are also the country's largest construction hubs. Apart from the numerous private residential projects, civil construction works – peripheral expressways, widening of highways, underpasses and elevated roads – disperse dust throughout the year in the absence of any regulation. What is worse, this construction boom has caused mass felling of trees.

These suburban towns also house polluting industries. The Central Pollution Control Board identified Bhiwadi, Faridabad and Ghaziabad among the most polluted spots in the NCR, all located on the industrial belt. A recent inspection showed that Ghaziabad alone had 356 air polluting units. There is still no count of factories operating illegally in the region.

The IIT-Kanpur report states that at least 13 thermal power plants, with a capacity to produce 11,000 MW of electricity, are located within a 300km radius of Delhi. These coal-fired units are major contributors of secondary particles or a super-toxic mix of sulphur dioxide and nitrogen dioxide gases. A month away from the deadline for implementing new emission norms for thermal plants as notified by the Union Environment ministry two years ago, the government has made no efforts to comply.

Low on efficiency, these plants are not enough to meet the power demand of the NCR towns where most gated communities rely on their own backup supply to avoid blackouts. That is why diesel generators could not be shut down as a measure to curb air pollution under the GRAP in the suburban towns.

Air knows no boundaries and fighting pollution requires regional cooperation. Like Delhi, Beijing's pollution problem was not entirely of its own making. The Chinese capital abuts Hebei, a steel-producing region comprising seven of China's 10 most polluted cities. The mismatch in resources and capacity initially slowed down the regional plan. But in the last two years, Beijing has paid \$139 million to Hebei to strengthen its mitigation efforts, reported the China Daily.

This year, 27 cities around Beijing together launched a winter campaign to establish auto-monitoring stations, suspend manufacturing in certain industries, restrict traffic in certain city zones and cut use of coal by 11.2 million metric tonnes. In the same time, the state governments in the Delhi-NCR have fought a series of verbal duels on Twitter.

Hoping against hope, let's call that a beginning.

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## **Delhi air quality is 'very poor' again**

*Date: 21-Nov-2017 Source: The Economic Times*

NEW DELHI: The air quality of Delhi, which breathed relatively clean air over the last two days, once again turned 'very poor' on Monday as the impact of a sporadic drizzle in flushing out pollutants ebbed and more vehicles hit the streets on the first working day of the week.

However, forecasters have emphasised that the city's air quality will remain in the 'very poor' category and chances of it deteriorating further in the coming days is less as incursion of pollutants from external sources has stopped. The Central Pollution Control Board's (CPCB) National Air Quality Index had Delhi in the 'very poor' zone with a score of 326. It was 292 yesterday and 298 on Saturday.

An AQI value between 301-400 is classified as 'very poor'. Prolonged exposure to such air quality may trigger respiratory illness, the CPCB says. "More than Delhi, areas surrounding the city received drizzle. It helped wash out the accumulated particulates. That is the reason the city enjoyed the season's best quality air over the last two days.

"But now the impact of rain is slowly diminishing. Temperature levels have dropped and moisture has also marginally increased. The current air quality is a play of those meteorological conditions and emissions from internal sources," SAFAR project director Gufran Beig said. He said the level of pollutants would show some increase over the next two days but air quality was not likely to turn 'severe' in the AQI scale.

Incursion of emissions from external sources such as paddy stubble burning has stopped and the wind direction has also turned north-westerly, which is bringing cold wave from the upper Himalayas. PM2.5 and PM10 are descriptions for ultrafine particulates which remain suspended in the air and enter the respiratory system with inhalation.

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## **Fairbanks citizens to test air pollution control technology**

*Date: 21-Nov-2017 Source: Alaska Public Media*

Technology that removes fine particulates from wood and coal stove smoke is being readied for testing in North Pole. It's part of a citizen science project.



Local veterinarian Jeanne Olson, and a group of other Citizens For Clean air members installed the electrostatic precipitator device in the woodstove pipe at her clinic last week, and Olson said it's awaiting final check.

"To make sure it's centered right and isn't going to arc. I haven't lit the fire in my stove to check that, but I'm planning to do that this week," Olson said. "And we're looking to get some instruments to test the emissions, all different conditions this winter."

Olson received the \$2,000 Swiss-made unit, called an EcoTube, from company representative Nico Lauer. Lauer travelled to Fairbanks last week to deliver and help install the stack mounted device, which creates a low power electric field inside the stove pipe.

"And this electric field basically ionizes the particles that go through it," Lauer said. "They get charged electrically, and because of the electric charge, it gets attracted to the chimney and deposits there — takes up all of the fine dust out of the smoke."

Electrostatic precipitator technology has a long history of use in power plants and other industrial applications. The EcoTube residential sized unit has been available for six years, but only available in the United States since September. Lauer says only two others have been installed in the US, but thousands are in use in several countries, and it should work here too.

"We have no doubts whatsoever that's going to function right away," Lauer said. "My recommendation is that you do, probably a season's worth of testing to get the insurance that this thing operates well."

North Star Borough Air Quality Control commission vice chair Cathy Cahill has a Ph.D. in atmospheric science with three decades experience studying air pollution.

"We don't have the information necessary to really evaluate its functioning under our conditions," Cahill said.

Cahill said proving the effectiveness of the Eco Tube will require thorough local testing.

"Yes, they've used it other places in the world, but they don't have a long track record of working with the kinds of fuels we work with," Cahill said. "So, I'm definitely interested in seeing how this is actually going to function."

Cahill applauded the citizen science project that Dr. Olson and Citizens for Clean Air have undertaken in North Pole. She said the borough does not have the capacity to test the Eco-Tube.

"At the moment, having people watch what's happening at Jeanne Olson's house in terms of how the ESP works," Cahill said. "It's going to be a key first step, and then we can try to see if we can apply for grants for pilot projects."



EcoTube's Lauer said the company has already gotten the units certified in other countries, and is willing to go through the process to get US approval.

"If there's issues about certification by the EPA, we'll be delighted to do it," Lauer said. "Needless to say, it's approved around the other countries of the world where people are using it."

The technology was brought to local attention by borough assembly member Lance Roberts, who's sponsored an ordinance to allow people who install the devices on their stove pipes to be able to operate them during local burn bans triggered by poor air quality. The measure, which is pending before the assembly, would also allow qualifying residents to be reimbursed the cost of the device through a borough subsidized program.

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## Delhi's air pollution is both a challenge and an opportunity

*Date: 24-Nov-2017 Source: Live Mint*



Awareness of the problem

Air pollution in Delhi has dominated the headlines over the past few weeks and rightly so. The problem is especially urgent because Delhi is not the only polluted city in the country. Eleven of the 20 most polluted cities in the world are in India. Given the massive expansion we expect in the urban population over the next 20 years, and the need to attract investment to create quality jobs, we need to make our cities liveable and attractive to tourists. Success in Delhi could provide a much needed template for the other cities.

Recognizing the problem is the first step towards corrective action and there is progress in this area. A few years ago, an American journalist stationed in Delhi wrote a farewell piece saying that he was leaving Delhi because the air pollution monitors in the US embassy showed that staying in the Capital would put his children's health at risk. There was an outburst of nationalistic outrage that the embassy was probably exaggerating the problem. Since then, a number of government monitoring stations have been established in Delhi and they confirm that the problem is indeed serious.

The figure above reports the level of air pollution by PM 2.5 particles at the Siri Fort station in New Delhi for the 12 months from mid-November 2016 to mid-November 2017. The sharp spikes when readings go off the chart are frightening and attract headlines but the real problem is not these emergency situations. It is that the average for the year, at 142, is far too high. It is more than three times the national standard of 40, and 14 times the stricter WHO (World Health Organization) standard of 10. If the monsoon months are excluded, most of the readings are consistently in the unhealthy range.

Medical experts in India have warned that children exposed to this level of pollution will develop asthmatic problems much earlier than normal. Pregnant women exposed to high levels of air pollution are more likely to deliver low birth weight babies, with all the permanent health problems that it causes. Senior citizens are also at risk.

Many activists have been working hard at raising consciousness and even pushing the judiciary to act. But judicial pushing can only go so far. It is useful in cases where prohibition of activities is all that is needed. It cannot devise a carefully crafted strategy operating on many fronts. This is for the government to do and then implement.

Can pollution be controlled?

Until a few years ago, Beijing was more polluted than Delhi. There were many stories in the international press about the very high levels of pollution in the run up to the prestigious 2008 Olympic Games in Beijing. The Chinese government took firm action to control local industrial pollution, reduce the use of coal in power plants, and also restrain the sale of cars in Beijing. National Aeronautics and Space Administration's (Nasa) satellite data show a 17% decline in the concentration of fine particulate matter over China between 2010 and 2015. The same data show an increase of 13% over India in the same period. Pollution in China is still bad, but it is seen to be slowly coming under control whereas it is rising in India.

An action plan for Delhi

If we want to bring pollution down from the average of 142 to the national standard of 40, we need to (a) reduce pollution by as much as 72% and (b) ensure that it stays at that level notwithstanding growth of population and economic activity. This will require action on a massive scale by many central ministries and Delhi state government bodies acting on different areas.

The Environmental (Prevention and Control of) Pollution Authority (EPCA), established by the Supreme Court, has prepared a comprehensive multi-dimensional action plan for control of pollution in Delhi. It includes proposals for shifting to cleaner vehicles and fuels, restraining the growth in cars and expanding public transport as an alternative, stopping pollution from coal-based power plants, controlling pollution from industry, putting a stop to burning garbage, preventing pollution from construction activities and controlling burning of crop residues in neighbouring states. Some of the actions have to be taken by the central government and others by the Delhi state government and local bodies. Actions that have to be taken by the central government are also spread across different ministries.

Road dust contributes about 38% of the pollution. This component is particularly difficult to control since it reflects both poor road conditions with unpaved footpaths, and the use of traditional technology—hand-held brooms—for sweeping the streets. Such sweeping can shift litter to one side, to be collected separately. It does little to control road dust. It only throws it up in clouds and shifts it to the side, from where it is disturbed again by traffic through the day. Vacuum cleaning devices attached to mechanical sweepers will help, but that would require massive investment in equipment, which may be beyond the funding budget of the municipality. Similarly, proposals for sprinkling water over all the roads in the city would run into water-availability constraints.

Vehicle emissions account for 20% of the pollution and this component is likely to increase as the number of cars multiplies. There is much that could be done in this area. The decision to advance BS VI fuel to 2018 for Delhi, and 2020 for the whole country, is a welcome move. It needs to be accompanied by action to ensure that new cars are all equipped with engines designed for BS VI fuel. The two together will reduce particulate pollution by 70% to 80%. However, since the large stock of older cars will remain for many years, and the total number of cars is also expected to expand, the total pollution load from automobiles may not come down sufficiently over the near future. There is no alternative to actively discouraging car ownership and plan a massive shift to public transport in the capital.

Discouraging car ownership calls for many tough decisions. We need to increase the taxation of cars by introducing an annual or biannual licence fee, as we have for buses. We also need to introduce higher parking charges in the areas of the city that are congested and the charges should be high enough to discourage car usage. We need to eliminate the current favourable tax treatment of diesel compared with petrol to discourage the trend to use diesel vehicles, especially SUVs. The WHO has classified diesel as a No.1 carcinogenic, along with tobacco. Diesel need not be banned since its use in sparsely populated areas will not create excessive pollution, but it should definitely be discouraged in urban locations. A higher licence fee could be prescribed for diesel vehicles.

In the longer run, electrification of cars and scooters will solve the problem, but even if all cars sold from 2030 onwards are electric, it will be a long time before a substantial portion of the stock of cars becomes electric. To accelerate adoption of electric vehicles (EVs) we should announce that all taxis and three wheelers must compulsorily be made electric in Delhi, as soon as such vehicles become available.

Discouragement of cars needs to be accompanied by a parallel effort to expand bus and Metro services. This is widely supported, but it runs into financial constraints. The EPCA has recommended the creation of an urban transport fund to upgrade public transport. All receipts from parking charges, and also the licence fee on cars and buses should be paid into this fund. Those who support public transport often baulk at measures to raise funds to finance it. The Central government could offer to provide matching funds equal to what is raised by the cities.

We should definitely consider ending the use of coal in power plants located close to Delhi. There are gas-based power plants which are under-utilized partly because the utility prefers to buy lower priced coal-based electricity, and partly because gas is not available. Gas could be imported, but this will make gas-based power even more expensive. A regulatory intervention forcing coal-based plants to shut down, ensuring adequate supply of gas, and most importantly, allowing the price of electricity to rise, is needed. Higher energy prices will be resented but they are essential if we want to shift to more energy- efficient outcomes. The present cess on coal needs to be increased steadily over time.

Tough action is also needed to control of industrial pollution. Sunita Narain of the Centre for Science and Environment has been conducting a one-woman battle to ban the import of Pet coke, an exceptionally dirty fuel which is banned in the US, but which is freely imported by us (from the US) and used by many smaller industries. The use of Pet coke is banned in Delhi, and we can monitor domestic refineries to ensure that they don't sell the Pet coke they produce in Delhi. However, if large quantities are allowed to be imported, the ban on its use can only be enforced in Delhi by policing the consumers, which is near impossible. An outright ban on the import of this dirty fuel is a low-hanging fruit

Burning mixed municipal waste in Delhi is highly polluting. We need to shift within the next three years to an effective system of separating municipal waste into biodegradable waste which can be converted into compost and energy, recyclable waste including plastic which can be recycled, inert waste which can be converted into refuse-derived fuel for power generation, and residual non-combustible waste which has to go to scientific landfills. This is a challenge for the Delhi government which it should take on.

Since many ministries are involved, the ministry of environment should be tasked with (a) identifying the actions planned by different ministries, (b) estimating the effect of these actions on the trajectory of pollution, (c) determining whether the resulting trajectory is acceptable as a national commitment towards reaching the national target, and if not pushing for stronger action, and finally (d) monitoring progress on an agreed trajectory to see if pollution is indeed being reduced as projected. If progress is unsatisfactory, then the ministries have to go back to the drawing board.

Something along these lines would put us on a credible path to reducing pollution over time. It will take time, but at least we will know when we can start breathing easy. Anyone who doubts whether the costs are worth it should consider that researchers have concluded that if Delhi's air pollution could be lowered to the national standard, it would increase the life expectancy of Delhi's citizens by six years.

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## **Black Friday to cause spikes in air pollution and plastic waste, warn environmentalists**

*Date: 24-Nov-2017 Source: The Guardian*



The online shopping frenzy of the Black Friday weekend will see 82,000 diesel vans and trucks on UK roads, raising concerns of air pollution spikes on residential streets as more than £7bn of purchases are delivered.

In the UK online shoppers are expected to spend up to £1.35bn today alone, according to analysts at IMRG, the UK's online retail association. Plastic toys, games and electronic goods are among the most sought after items in the biggest weekend of

shopping in Britain and the US, with environmentalists and health experts warning that it will add to the mountain of plastic waste and increase air pollution.

The relatively modern post-Thanksgiving tradition has been adopted from the US, where nearly 70% of Americans – 164 million people – plan to shop this weekend, which spans Black Friday through to Cyber Monday, according to the National Retail Federation.

In the UK, Black Friday is mostly an online event, although retailers also saw queues this morning at shopping centres across the country. 81% of Black Friday purchases include a home delivery, with

Amazon expected to take the majority of sales. A diesel truck will leave an Amazon fulfilment centre every 93 seconds at peak times, according to Staveley Head, which insures trucks and vans for retailers.

Stephen Holgate, professor of immunopharmacology at the Medical Research Council, said online shopping contributed to the air pollution crisis. “Vans are key contributors to diesel pollution. In our RCP [Royal College of Physicians] report we show van use continues to increase. Vans are now up to 10-12% of vehicles in our cities. They, along with small goods transport vehicles, are almost all diesel and make up about 12% of diesel emissions in urban settings.

“Supermarket and internet shopping really drives this and unlike people going to the shops themselves, the vans penetrate into quiet residential roads where vulnerable groups like children and the elderly live in large numbers. These vans sit and idle for hours in the road as they wait to deliver more packages, and this is a huge problem.”

He said the chancellor had missed an opportunity not to tackle “white van man” in the budget. Vans were explicitly left out of increases in tax on new diesel cars.

The weekend also marks the start of the Christmas shopping season, during which air pollution spikes are recorded around shopping centres, according to Gary Fuller of King’s College London. “Any increase in traffic, and especially diesel traffic on our roads, will not be helpful for air pollution,” he said.

Brian Kay, director of Green Business Watch, said reports still suggested online shopping impacted less on the environment than individuals driving to the shops. “What is important is that this online shopping is done in an as environmentally friendly way as possible, so, for example, those 82,000 diesel vehicles should be electric,” he said.

Some retailers are not taking part in Black Friday. In Seattle, outdoor clothing retailer REI is giving its 12,000 employees a paid holiday and will not process any online orders. Instead it is encouraging customers to spend time outside with family and friends.

Greenpeace is launching an alternative to what it labels the “hyper-consumerism” associated with Black Friday. It has organised an international makers festival – called “Make Smthng” – where people around the world are asked to come together to make, upcycle or repair something rather than shop.

“Black Friday has become one of the major peaks of consumerism,” said Chiara Campione, Greenpeace’s global project leader. “This shopping binge also generates greater volumes of waste than ever. This dangerous trend is harming our planet. We buy without thinking for a minute, but the waste we create will sometimes last for centuries.”

Plastic toys and games are expected to be some of the most sought after items over the weekend, according to Euromonitor International. But Roland Geyer, author of the first global analysis of mass produced plastics, said recycling and incineration would not be enough to stem the plastic flow from such consumerism.

“Even if we stay on the current trends of increasing recycling and incineration rates, we will have doubled the amount of plastic waste discarded since 1950 in the next 20 years,” he said.

“The easiest way to reduce plastic waste is to not buy that product made of plastic or packaged in plastic, destined to become rubbish much sooner than we like to think.”

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## **Solution to reverse Delhis air pollution lies in Haryana,**

*Date: 24-Nov-2017 Source: India Today*

New Delhi, Nov 24 (PTI) Chief Minister Arvind Kejriwal today again blamed stubble-burning in Punjab and Haryana for deteriorating air quality in Delhi and said the solution to the problem lies in addressing the issue in the neighbouring states.

He, however, acknowledged that Delhi also contributes to pollution, but the presence of toxic particles in the air spikes several times during October and November, when farmers in Punjab and Haryana burn crop residue.

On an average, Kejriwal said, PM2.5 level remains at 100 microgrammes per cubic metres and PM10 at 300 in Delhi.

"These two parameters should be less than 100. But, between October 28 and November 12 stubble-burning is done in Haryana and Punjab. And in those 15 days, the PM2.5 level reached 750 and PM10 900," he said.

This was also the time when the air quality level plunged to alarming levels in Delhi-NCR.

The pollution level increased due to stubble-burning and a solution to this will come from the two states, he said.

On the criticism his government faced in dealing with air pollution, Kejriwal said: "If the pollution level goes down by badmouthing me, I say all two crore Delhiites should do that. We have to reduce our share of pollution, which we are doing."

Referring to his meeting with Haryana Chief Minister Manohar Lal Khattar on the matter earlier this month, Kejriwal said the neighbouring state has been taking steps to address the issue.

Both Haryana and Punjab have asked for Rs 1,600 crore and Rs 3,000 crore respectively from the Centre to address stubble-burning using technology.

He also said that the Delhi government was in the process of procuring 2,000 buses to improve the public transport system.

Earlier this month, when pollution breached emergency levels, the Delhi government had decided to ration private vehicles on roads based on their number plates - odd and even - but had to call it off at the last moment after the National Green Tribunal refused to grant exemption for women, two-wheelers and government servants.

The NGT had ruled that only emergency vehicles will be exempted during the time the "odd-even" scheme was implemented. PTI PR ABH

## Supreme Court to hear plea seeking steps to curb air pollution, solution to crop burning on 1 December

*Date: 24-Nov-2017 Source: First Post*



New Delhi: The Supreme Court on Friday said it would hear on 1 December a plea seeking a series of steps to curb air pollution, including a ban on sale, possession and bursting of firecrackers across the country.

The plea, which has also sought a solution on the issue of crop burning which is a major source of air pollution in Delhi-national capital region (NCR), was listed before a bench of Justices AK Sikri and Ashok Bhushan.

Initially, when the matter was called for hearing, the counsel appearing for the petitioner sought a pass over which was granted by the bench.

Later when the matter was taken up for hearing, one of the lawyers again sought a pass over after which Justice Sikri said the plea would be heard next week.

"Is there any urgency? We can have it next week on Friday," the bench told advocate Gopal Shankarnarayanan, who appeared for the petitioner.

Besides seeking a ban on firecrackers across the country, the petitioner has also sought directions to have environment friendly vehicles and implementation of regulations on clean fuel and construction.

The apex court had on 9 October said that no firecrackers would be sold in Delhi-NCR during Diwali this year while banning its sale till 1 November.

It had said that its earlier order, temporarily lifting the stay and permitting sale of firecrackers, would be made effective only from 1 November.

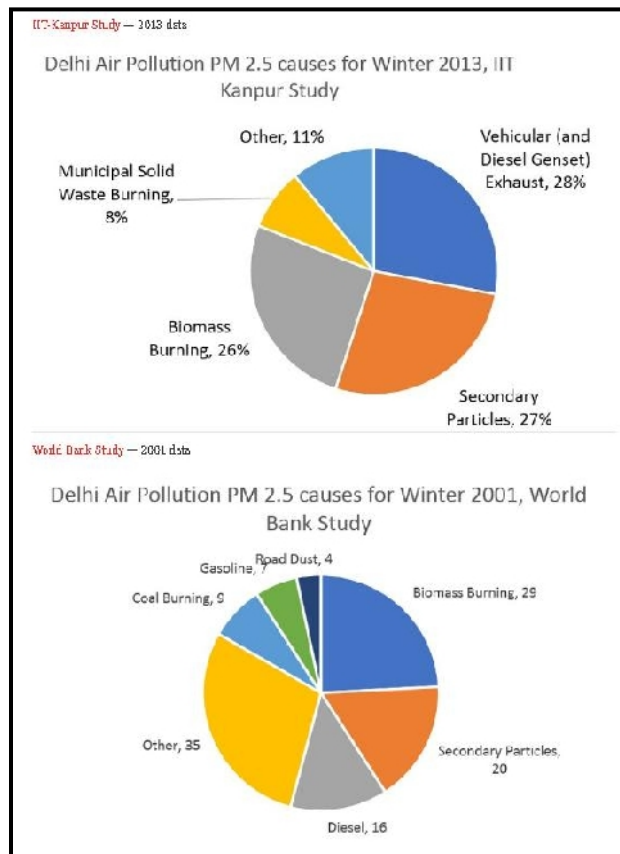
The top court, in its 9 October order, had said the 11 November, 2016 order suspending the licences "should be given one chance to test itself" to see if there would be a positive effect of this, particularly during Diwali.

The court, in its last year's direction, had suspended all licenses which permits sale of fireworks, wholesale and retail within the territory of NCR till further orders.



## Delhi air pollution: From data to civil engagement, five factors for overcoming the problem

Date: 25-Nov-2017 Source: First Post



If there is one question that Delhi residents ought to ask themselves, it is this: What are the success factors that could help in conquering the air pollution problem?

Success Factor#1: The need for data

Let's consider the facts.

Fact#1: Over a million Indians died in 2016 due to air pollution. Delhi is ranked as the most polluted city of the world, losing up to 30,000 people a year to this menace.

Fact#2: There are many causes for Delhi's poor air. They vary by season. Particulate matter levels (or PM levels), especially the smallest, most deadly particles (or PM 2.5), are highest in winter. From several studies (see figures below), the PM 2.5 levels appear to be primarily driven by biomass burning, secondary particles and vehicular (and diesel genset) exhausts. "Secondary particles" is a catch-all term holding particles having multiple origins including coal plants and

industrial emissions. Focussing on controlling the origins of these particles is critical in seeing a reduction in the pollution levels.

But we need more data — not just of pollution levels (PM levels), but also of what caused them. Sporadic studies are not enough. A more personal example will help explain this: suppose I have a child who is not doing too well in Mathematics at his school. I will need to see both his marks in his Maths tests, as well as his answers, to understand what kind of help he needs. Not just that, ideally, I would like to see his monthly marks to ensure whatever help I give him is working. Getting his overall marks every two years will not help.

In the same way, we will need continuous monitoring to know if the actions we take are having an impact. For example, to check if shutting down the Badarpur power plant is helping, we need to monitor secondary particle levels to gauge if this is having the impact we hoped it would.

Importantly, the data needs to be easily accessible by anyone who wants it. We'll come to why in a bit.

This is Success Factor#1 — the need to have complete, online, transparent data on the pollution levels and their sources. PS: this part is NOT very expensive.

Success Factor#2: Overcome tokenism and go for a cheap public transport system with an extensive network and adequate last-mile connectivity

Vehicular Emissions are determined by five factors: number of vehicles, driving style, fuel quality, maintenance and vehicle design. This order of listing is intentional. With thousands of vehicles meandering cheek-by-jowl on the roads, merrily running on first and second gear in an endless stop-and-go dance, neither Odd-Even schemes nor banning trucks — 15 years old or otherwise — will have the impact we desire.

Our actions — Odd-Even, hiking parking charges, banning trucks from entry — have been tokenism, and as can be expected, have not yielded any noticeable dip in pollutants. For doing that, we need to get the number of vehicles down substantially.

To get down the number of vehicles, we need a good public transportation system that provides cheap transport with good last mile connectivity. Public imagination immediately springs to a metro, but a little thought shows that a bus or a tram for the last mile connectivity is critical.

Why?

Since this has been covered in detail in an earlier article, let me summarise the main points:

Convenience — as defined by time — makes bicycling or walking (assuming the necessary infrastructure) the ideal choice for distances less than 6 km, and public transport the most convenient for longer distances.

Cost — both fixed costs and per-km user costs — destroys the argument for metros as the choice for public transport when compared with a light rail or a bus transport system — especially for a country with a large motorcycle population. A lower fixed and running cost with a bus transit system means a much longer and dispersed network — addressing the last mile connectivity that is critical to drive adoption.

So, let us buy those buses, and develop the public transport system that we so desperately need. This is Success Factor #2.

Bans don't work — solutions might. This was the subject of the last column, so I will merely summarise here. At the heart of the solution lies a paradigm shift: getting farmers to see the waste as a resource — worthy of not being burned. Options include:

1. Installing biogas plants — by enabling collection and by ensuring by-products such as compost are marketed.
2. Making the straw into pellets, for easier transport and burning.
3. Using straw in power plants (like the recently announced NTPC tender offer).
4. Mulching and using the straw to fertilise the soil. Making this easier by —
  - Extending the gap between summer and winter crops by using a fast-growing paddy variety
  - Rental of machinery to collect, and incorporate the straw into the soil

- Using special seeders that can plant the winter crop while the straw lies on the field.
- Natural farming – that increases the value of using the straw as fertiliser.

Call this lot of options, collectively, as Success Factor#3.

There is a sub-point here on the role played by municipal waste. The same factor of making waste a resource matters, and will be covered at a later stage.

Success Factor#4: Reduce the size of straw burning problem by examining subsidies

Lastly, we saw that the problem of paddy burning is so big because of the subsidies on electricity, MSP and fertiliser. Transferring some part of the subsidy to machinery rental that reduces the burning of straw could help align incentives of farmers with the air breathing residents of the capital.

Aligning incentives is not going to be easy. Having a process by which ministers of agriculture, environment, commerce and the concerned chief ministers could meet regularly to examine this issue would be Success Factor#4.

Success Factor#5: Sustained civil society engagement

The “play” titled “Solving Delhi’s pollution crisis”, which is a both tragedy and farce, has many actors. First, the citizens, and our leaders, who we choose through free and fair elections.

Let us start with our elected leaders. Given the highly volatile public mood, they need to be seen acting on issues, while the public’s attention remains on those issues. This often leads to knee-jerk actions.

Witness certain recent actions of the Delhi government: Announce the implementation of the Odd-Even rule on 9 November, have the announcement countered by the GRAP taskforce on the same day, have it be questioned by the National Green Tribunal a day later, file a ridiculous review petition on 13 November, have that be questioned by the NGT a day later and withdraw it — and thankfully by then, the pollution levels have dropped.

Why was the Delhi government fighting to exempt women and two-wheelers from the Odd-Even scheme? Because there are not enough buses to cater to the extra commuters if the two-wheelers were banned. And women could feel uncomfortable packed like sardines in a public bus. Fair enough. Quite reasonably, the NGT then asked: what happened to the 4,000 buses you were to buy?

We didn’t have the land to park them, was the gist of the reply. Give us the land, we’ll get the buses. Let us get the buses, and we will include two-wheelers in the Odd-Even scheme. Once we implement the Odd-even scheme, the pollution levels will come down. The Delhi government last bought buses in 2010 and has collected hundreds of crores as a green cess in the past three years, whose use has not been outlined.

Let us stop this for a moment and think of the plight of the poor traffic cop whose job it is to enforce the Odd-Even ban. First, he needs to know the VIP-pecking order. Even nobodies in Delhi turn out to be somebody. Of course, with the exemption of women, two-wheelers and CNG-fitted vehicles, he would need to peer closely through the smog at both the number plates and the sex of the driver.

You begin to see the problem.

Why do we fill our nation's narrative with this nonsense when people are literally dying from this problem?

This is an important question. For, you see, others have conquered this problem. London and Los Angeles have successfully combatted air pollution. Mexico City and Beijing have made great strides against it. One can almost think of conquering air pollution as a rite of passage for governance of cities. A city-puberty, if you will.

Citizens' groups relentlessly pursuing this is one of the factors of success. China's fight against pollution owes a lot to the "Under the Dome" documentary on air pollution which was viewed a 100 million times within a couple of days of release. To ensure groups pursue sensible (and effective) actions, having freely available, good quality data is important.

But the operative word in the above para is "relentless".

But are we? We, as a society, have so many concerns — air pollution, Padmavati's release, cricket, GST — and our attention span is less than that of a goldfish, which leads, depressingly, to this graph:

This is the Google Trends result of air pollution searches originating from Delhi. Google Trends measures the search interest in a topic, which serves as a useful (if imperfect) proxy for public interest in a topic.

If you want to feel more depressed, let us compare Delhi's residents' interest in air pollution vs their interest in cricketing hero, Virat Kohli. The only time Delhi residents' interest in air pollution even equals theirs in Kohli is when their city becomes, in the words of their chief minister, a "gas chamber".

If you were a politician who knew public interest would go away very quickly in this not-easy-to-solve problem, you too might resort to headline-catching, knee-jerk reactions, waiting for the winds and the rain to carry away the problem or the capricious public interest to be diverted.

Good news for the politicians: already the attention is waning.

Political action is NOT a leading factor. Politicians are clever people who respond to election-moving citizen desires. Which makes fact-based, non-emotive, sustained citizen involvement as the most crucial Success Factor#5.

Democracy is not a spectator sport.

The writer is the founder of the Sundaram Climate Institute, cleantech angel investor, teacher and author of a forthcoming book on Climate Change and India. Follow her work on her website; on Twitter; or write to her at [cc@climaction.net](mailto:cc@climaction.net)

## **Solution to reverse Delhi's air pollution lies in Haryana, Punjab: Arvind Kejriwal**

*Date: 25-Nov-2017 Source: Financial Express*



Chief Minister Arvind Kejriwal today again blamed stubble-burning in Punjab and Haryana for deteriorating air quality in Delhi and said the solution to the problem lies in addressing the issue in the neighbouring states.

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## **Delhi's air quality shows slight improvement even as city continues to inhale toxins due to stubble burning**

*Date: 25-Nov-2017 Source: First Post*



New Delhi: While some regions across Delhi-NCR saw an improvement in the air quality from "severe plus or emergency" to "severe" on Saturday, the National Capital continues inhaling toxins with no respite likely for at least a week, officials and experts said.

The stubble burning, which according to the farmers is in the last phase, however, continued in Delhi for the third day and in Punjab, Haryana and Uttar Pradesh since last week.

According to the satellite images from NASA, the stubble burning in Delhi on Saturday was seen at different spots of north Delhi, rather than earlier Narela and Tikri areas.

The speed of the north-westerly winds, which continue entering Delhi from Punjab and Haryana where stubble burning continues despite the National Green Tribunal directions, on Saturday went down leading to a possibility of worsening of the situation.

"For the coming week since the wind speed is low and temperature drops, the pollution levels will increase and vary within being very poor...however chances of a severe-plus or emergency situation are unlikely," Usman Naseem, a researcher at the Centre for Science and Environment and member of the EPCA, told IANS.

According to the Central Pollution Control Board, at 4 pm, the Air Quality Index in Delhi on Saturday was 322 against 335 on Friday, both "very poor", while on Thursday due to high-wind-speed, AQI was 288 considered "poor".

Anand Vihar in east Delhi, Delhi Technical University in north Delhi and Ghaziabad continued suffering a "severe" levels of the air pollution since last three days, with a concentration of major pollutant PM2.5 or particles with a diameter less the 2.5 micrometers, recorded above 300.

The System of Air Quality and Weather Forecasting and Research has predicted the air quality of Delhi-NCR to further worsen over the next three days, ten out of nine of its monitoring stations across NCR recorded a "very poor" air quality by 7 pm, with PM2.5 ranging above 300.

The PM2.5 concentration ranged between 303 to 351 across Pitampura, and Delhi University in north Delhi, Lodhi Road and Pusa in central Delhi, Ayanagar and Mathura Road in south Delhi, Noida, Gurugram and IGI airport. The safe limit for PM2.5 is 25 microgrammes per cubic meters as per international standards and is 60 as per national standards.

"The airspeed on Saturday has further dropped. Towards 28 and 29 November, the pollution levels are expected to rise due to mist or haze formation in Delhi-NCR," Mahesh Palawat, director of private weather analysis agency Skymet, told IANS.

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## **Sunita Narain: Environmentalists raised the alarm against Delhi's air pollution over 20 years ago**

*Date: 26-Nov-2017 Source: Scroll*



In 1996, the air in Delhi was black with smog. The difference between then and 2016 – when the smog came back with a vengeance – was that Delhi did not know what had engulfed it. It was breathing poison. Dirty air had crept upon it. But we were oblivious to all this. There was no information about air pollution and its hazards. We merely put it down to “dark winter days”.

This is when the CSE [Centre for Science and Environment] began its work on air pollution. It was in November 1996 – now over twenty years ago – that we published *Slow Murder*, the deadly story of vehicular pollution in India. The book started with the investigation into the pollution-under-control (PUC) system. It asked if Delhi or any city could clean up its air by checking the tailpipe emissions of each car. Anil Agarwal, one of the authors of the book and our director, had given us a simple task: find out if PUC actually works. He called it “tailpipery”. He posed questions about what it would actually take to clean up Delhi's air – in terms of vehicle technology, emission standards and fuel quality. This was the first such inquiry and it brought results.

For the first time the CSE was not just doing research – we had decided that this was a fight to the finish. *Slow Murder* would launch a campaign to fix what we had found was wrong with Delhi's air. Remember, this was the time when air pollution was not being discussed much. It was not on anyone's agenda yet. In fact, we were asked more than once why we were so worried about some black air.

The lieutenant governor of Delhi said this was only dust, and nothing to be worried about. The health minister said air pollution was not a health concern.

We deliberately called the book *Slow Murder*, as pollution did not kill instantly but instead led to the suppression of the body's immune system, destroyed lung function or added to the cancer or cardiovascular disease burden – it was slow, but murder nevertheless. We indicted the government and industry.



We put three faces on the cover of our fortnightly, *Down to Earth*, November 15, 1996. They were of Jai Narain Prasad Nishad, then minister of environment and forests; TR Baalu, then minister of petroleum (there was no natural gas ministry); and Rahul Bajaj, the owner of Bajaj Motors, and at that time, India's sole auto king.

Why? Because our research had indicted the three. Proposals for vehicular standards were being shunted from one agency to another. This was a time when India had no Bharat Stage (BS) vehicle emission standards. We had absolutely no pollution control measures. The proposal for cleaner fuel was being similarly bandied about, without any resolution. This was when fuel had 10,000 parts per million (ppm) or more of sulphur (today with BS-IV, sulphur is down to 50 ppm and this will go down to 10 ppm when we hit BS-VI).

Rahul Bajaj was on the cover of our magazine because of the extremely polluting two-stroke technology that two- and three-wheelers used. Bajaj had a monopoly on vehicles at that time – this was before the advent of the four-stroke technology. The four-stroke technology saw the rise of Hero Honda and personal car mobility, which in turn saw the rise of Maruti Suzuki and all the other companies. Our agenda was not personal. It was to bring about policies for fuel technology standards and to use this to drive out polluting vehicles. This is what we now call first-generation reform.

We were young and we were angry. But first we did what all gentrified researchers do. The then vice president of India, KR Narayanan, released *Slow Murder*. He agreed to do this at the vice president's residence. This raised the book's profile and brought attention. We followed this up with a public meeting – our very first – at the capital's FICCI auditorium. We said: cough, wheeze, suffocate, or it's time to take a stand. This was on 1 November 1996.

On 18 November – two weeks later—the Supreme Court issued a suo moto notice to the government of Delhi, effectively telling it to “clean up”. This case was merged with an existing matter filed by the lawyer MC Mehta. The case continues to date – writ petition number 13029 of 1985; MC Mehta versus Union of India and others.

As it happens, nothing much changed. A year went by. The automobile industry pushed against any reform and the government shuffled papers around. In 1997, we went to the public again. This time we had data to show the number of deaths caused by pollution. Our analysis (based on a World Bank model) showed that in just three years, between 1991–92 and 1995, there had been a shocking 30 per cent increase in the number of premature deaths because of pollution. Cardiologist Naresh Trehan told us that when he operated on someone, he knew where the person came from by the colour of their lungs.

If they came from Delhi, even non-smokers had black lungs, he said, showing us a photograph. And then he presented one of a resident from Himachal Pradesh, which showed pink lungs.

All this spurred action. In December 1997, Saifuddin Soz, the then Union minister for environment and forests, issued a white paper on pollution in Delhi. This became the basis of an action plan. In January 1998, the Ministry of Environment and Forests constituted the Environment Pollution (Prevention and Control) Authority (EPCA) for the national capital region (NCR). Anil Agarwal was made a member of this organization, which was unusual, as the government normally shies away from including strong civil society organizations in such authorities.

But it was an unusual time. EPCA, also known as the Bhure Lal Committee after its chairperson, who was then a serving bureaucrat in government, also continues to play a key role in pushing clean air policies.

In June 1997, the EPCA put out its first report on priority actions, in which it detailed steps that were needed to clean Delhi's air. These included controls on diesel vehicles and the move to CNG. In July 1998, the Supreme Court's top bench, then headed by Chief Justice AS Anand, issued directions based on EPCA's report. It set a deadline for conversion of all three-wheelers and diesel buses to CNG.

Delhi was now on schedule for a clean-up. But even as the Supreme Court proposed, the government deposed. Powerful vested interests did not allow anything to move. Why? Because diesel had big friends.

Meanwhile, science had discovered the real pollution villain – small particulates. Till then we had only one pollutant in our lexicon – suspended particulate matter, or SPM. Now there was evidence that toxicity really resulted from the smaller particulates, then called respirable suspended particulate matter (RSPM). These were called so because they were small enough to be inhaled. RSPM was later called PM 10, and then PM 2.5, as the size of the particulate became clearer and its deadly toxicity better understood. The first study of RSPM was done in 1998. The monitoring by the Central Pollution Control Board (CPCB) showed that the level of RSPM was five times above the national twenty-four-hour standard. This was deadly. But where did RSPM come from?

By then, global research had begun to point to diesel. The size and toxicity of the particulate depended not just on how the fuel was burnt, but also on the fuel itself. Studies had found 90 per cent of the exhaust from a diesel vehicle to be below 1 micron in size; these were coated in the highly carcinogenic poly-aromatic hydrocarbons (PAH). In 1998, after a decade of work, the California Air Resources Board formally designated diesel particulates as toxic air contaminants. This was followed by studies in Japan, which discovered the most potent carcinogen to be from diesel exhaust.

This news was unpalatable to the automobile industry. They hit back. Things got messy. Really messy.

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## Delhi air pollution on rise as wind speed falls

*Date: 26-Nov-2017 Source: Indian Express*



SAFAR, an agency under the Ministry of Earth Sciences, readings had PM2.5 at 194 and PM10 at 309 micrograms per cubic metre (ug/m3) (File)

Pollution levels in Delhi rose on Sunday leading to a dip in air quality with monitoring agencies forecasting a further spike over the next few days. The Air Quality Index (AQI), calculated by the Central Pollution Control Board (CPCB), was 352 on a scale of 500. A score between 301 and 400 is

considered 'very poor', which can trigger respiratory illness on prolonged exposure.

Yesterday's AQI was 322. Scientists attributed the rise in pollution to a fall in wind speed and increased moisture in the air. The volume of particulate matter (PM), the dominant pollutants in Delhi's air, rose through the day.

SAFAR, an agency under the Ministry of Earth Sciences, readings had PM2.5 at 194 and PM10 at 309 micrograms per cubic metre (ug/m3). When levels of PM2.5 go above 300 ug/m3 and PM10 breach 500 ug/m3, pollution is considered as 'severe plus' or emergency. The corresponding 24-hour safe limits of these ultrafine particulates are 60 and 100.

According to the CPCB's air lab chief Dipankar Saha and SAFAR's prediction, the concentration of particulate matter will gradually rise over the next few days. Saha said that falling wind speed, from yesterday's 7 km/hour to 3 km/hour today, and rising moisture levels are behind the spike as in the absence of dispersion, local emissions are only leading to accumulation of pollutants.

During winters, as temperature drops, pollutants are trapped near the surface due to a slew of meteorological factors. Factors such as high wind speed and bright sunshine and mitigate its impact to some extent.

Earlier this month, on November 9, the AQI had turned 486 as PM levels breached the emergency limits. Authorities announced a set of sweeping measures such as closure of schools and ban on entry of trucks and construction activities to deal with the "health emergency".

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## **Submit action plan on air pollution before December 4: NGT**

*Date: 28-Nov-2017 Source: The Economics Times*

NEW DELHI: The National Green Tribunal today directed the Delhi government and four neighbouring states to submit a comprehensive action plan on ways to deal with the severe air pollution.

A bench headed by NGT Chairperson Justice Swatanter Kumar ordered the AAP government and states of Punjab, Haryana, Uttar Pradesh and Rajasthan to positively submit their plan before December 4.

"This action plan should have a direct nexus to the levels of pollution once the pollution levels of PM2.5 and PM10 increase 300 and 500 microgramme per cubic meter respectively.

"The steps for preventing and controlling the air pollution should automatically come into play and should not depend upon the decision of the government officers in any of the states," the bench said.

The green panel directed the chief secretaries of Delhi and the four states to file the action plan for its approval. The plan should come into force automatically once the parameter crosses limits from severe to hazardous.

"Upon filing of such action plan, the tribunal shall issue further directions as may be necessary," it said.

The green body had earlier directed the Central Pollution Control Board, Delhi Pollution Control Committee and every state pollution control boards to file ambient air quality analysis before the tribunal

on monthly basis and also put up on their websites to enable the concerned authority to take effective steps to control the air pollution.

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## **Air pollution outdoors can make you worse at your desk job**

*Date: 28-Nov-2017 Source: Los Angeles Times*



Poor outdoor air quality is likely to have a negative impact on your job performance, even if you work indoors at a desk, according to a new working paper from researchers at Germany's Leibniz University and the Columbia Business School.

For years, researchers have been connecting the dots between air pollution and poor job performance: In 2011, for instance, a study found that outdoor agricultural workers' productivity declined as atmospheric ozone levels increased. A 2014 follow-up study found that blue-collar indoor workers were similarly affected by levels of outdoor air pollution.

But at that point, it still wasn't clear whether those findings held for office workers too. Desk work is both indoors and far less physically strenuous than packing fruits and vegetables in a warehouse, so one might reasonably conclude that white-collar workers are less vulnerable to the effects of air pollution simply because they're not breathing in as much air.

But that's not the case, as the latest study concludes. For the paper, Steffen Meyer and Michaela Pagel took data on stock trades made by more than 100,000 private investors in Germany from 2003 to 2015 and paired the information with data on air quality, weather and traffic from the closest of more than 1,600 monitoring stations.

Why stock trades? "We interpret individual investor trading, an indoor activity that requires some skill and cognitive but no physical exertion, as a proxy for willingness and ability to engage in office work and thereby white-collar productivity," Meyer and Pagel explained. The stock data is particularly useful because it enabled the researchers to measure human behavior at the individual level.

Outdoor air quality can fluctuate significantly from day to day. Meyer and Pagel wanted to know whether these fluctuations had any effect on individual investors' propensity to log in and make a trade.

To isolate the effect of air pollution, they'd first need to control for a host of other factors known to affect trading behavior: day of the week (markets aren't open every day), day of the year (markets are busier at certain times of year), preceding market returns, changes to daylight saving time, weather and traffic.

With those other factors accounted for, Meyer and Pagel focused on the effect of particulate matter in the air, a measure known as PM10 — particles about 1/7th the thickness of a human hair, small enough to be

inhaled deep into the lungs. These particles come from vehicle exhaust, construction dust, industrial sources, wood burning and other sources, and they are linked to asthma, general respiratory distress, heart attacks and even death.

The researchers found that a modest increase in outdoor PM10 — 12 micrograms of the pollutant per cubic meter — reduced investors' propensity to trade by nearly 10%. They characterized that effect as "large and significant," akin to the decrease in trading observed on a nice sunny day versus a cloudy one.

It's worth pointing out that a 12-microgram increase in PM10 is not a whole lot — on any given day in Germany, levels of the pollutant usually fluctuate between zero and 40 micrograms, and often more than that.

"To the best of our knowledge, this paper is the first to test whether air quality affects investor willingness to sit down and trade, controlling for investor-, environment- and market-specific factors in a commonly found low-pollution environment," the authors concluded. "The negative effects of pollution on white-collar work productivity are much more severe than previously thought."

The finding comes at a time when federal authorities in the United States are working to undo certain air quality regulations. In particular, a number of President Trump's appointees to the Environmental Protection Agency have raised eyebrows for rejecting the broad scientific consensus on the effects of air pollution.

UC Irvine's Robert Phalen, for instance, believes that "modern air is a little too clean for optimum health." Michael Honeycutt, the new chairman of the EPA's Science Advisory Board, has written that federal regulations on ozone are unnecessary because "most people spend more than 90% of their time indoors."

Statements like these run contrary to the consensus view of air pollutants as a key public health concern, as represented by the Centers for Disease Control and Prevention, World Health Organization, National Institutes of Health and the EPA.

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## China's Government Accuses Four Cities Of Air Pollution Failures

*Date: 28-Nov-2017 Source: NDTV*



BEIJING: Four cities in China's northeastern province Heilongjiang were accused by the Ministry of Environmental Protection (MEP) of increasing air pollution due to administrative failures.

"Despite a red alert for bad weather, the cities failed to enforce emergency measures to reduce emissions ... which missed the opportunity to ease pollution," the MEP said in a statement on

Tuesday.

The cities of Harbin, Jiamusi, Shuangyashan and Hegang were covered in a blanket of choking smog on Oct.18-20, with concentrations of hazardous particles, known as PM 2.5, reaching over 400 micrograms.

China's official air quality standard is 35 micrograms, while the recommended level set by the World Health Organization should be no more than 10 micrograms.

To combat air pollution, Beijing has issued guidelines for temporary measures to curb emissions. Some industrial plants in the steel, aluminium, cement and ceramics sectors in northern part of the country were asked to limit production by up to 50 percent during the winter season.

Illegal crop straw burning, which was believed to be the main cause of the air pollution in four cities, was detected by the MEP using remote satellite sensors during the night.

The MEP also found utilisation data for crop straw in the cities had been forged. Almost 90 percent and 70 percent of the data reported by Shuangyashan and Hegang respectively in 2016 was found to have been exaggerated.

Some coal-fired power utilities such as plants controlled by state-backed China Huadian Corporation and Harbin Hatou Investment Co as well as some steel mills and coal producers were found not to be enforcing capacity cuts during red alerts.

Officials at the four cities have been given 20 working days to make improvement plans, the MEP said.

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## **Court tells Delhi govt to set ‘measurable targets’ to mitigate air pollution in Delhi**

*Date: 29-Nov-2017 Source: Live Mint*

New Delhi: Delhi high court on Wednesday directed the Delhi government to formulate “measurable targets” to mitigate air pollution in the state in a time-bound manner.

Consequences should be borne by officials if they fail to implement and enforce such measures, the court said while hearing a suo-moto petition.

“Such targets should be action-based and realistic.. do not set impossible goals,” said the Court.

Counsel for Delhi government proposed procurement of 2,000 CNG-propelled standard low floor buses, 100 low-floor electric buses and 500 electric buses. An expenditure of Rs120 crore and Rs400 crore would be borne out of environment compensation charge (ECC) for low-floor electric buses and electric buses, respectively, counsel informed the court.

A bench comprising judges S. Ravindra Bhat and Sanjeev Sachdeva remarked that procurement of these buses cannot be a mitigation plan against air pollution in Delhi. The need for better public transport arises from the “normal need” of the city and not poor air quality, said the court.

“Funds for these new buses should be made available from the appropriate budget and not ECC...diversion of funds from ECC for such purpose defeats the object for which ECC was created,” the court said.

For future hearing in the matter, the court identified four issues, namely, forest cover, pollution mitigation, vehicles and other related issues such as construction work and garbage burning. Each issue would be heard separately.

Earlier this month, to mitigate air pollution in Delhi, the court issued several suggestions to the Delhi government such as “cloud seeding”, re-introduction of “odd-even scheme” and a complete ban on further civil construction activities for the time being, including a direction to fill all open “dug ups” and pits within three months.

It also directed an urgent meeting of chief secretary of the ministry of environment and forests with the chief secretaries of neighbouring states namely, Haryana, Punjab, Uttar Pradesh, and Rajasthan to decide on a plan to bring down the air pollution level within acceptable limits.

The next hearing will be on 14 December on the issue of forest cover.

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## **UK government 'being dragged screaming' to tackle air pollution**

*Date: 30-Nov-2017 Source: The Guardian*



Ministers have been accused of having to be “dragged screaming” to tackle illegal levels of air pollution across the UK, which kills an estimated 40,000 people a year prematurely.

Neil Parish, co-chair of a parliamentary inquiry into air quality, told ministers from the Treasury, environment, transport and local government departments they were showing no confidence that they would tackle toxic air pollution as soon as possible.

“We are not getting any clear message here about what you are doing about it,” he said. “The government is being dragged all the time screaming to put poor air quality right.”

A new air quality plan to reduce nitrogen dioxide emissions from traffic and other sources was produced this summer by the government. Previous attempts to cut air pollution were found to be so poor as to be illegal by the high court, and the government has been ordered to bring levels of nitrogen dioxide pollution within legal EU levels as soon as possible.

Five cities and 23 local authorities have been selected in the new plan to come up with measures to reduce illegal levels of nitrogen dioxide by December 2018. But the government refused to legislate for more



“clean air zones” that would charge the dirtiest vehicles to enter the UK’s most polluted cities and has stopped short of bringing in a diesel scrappage scheme.

Minister were accused by MPs on the inquiry of passing the buck under the new plan to local authorities to make politically unpopular decisions about charging diesel vehicles.

Thérèse Coffey, environment minister, denied this. She said she was working with the local authorities to support them in drawing up plans. She said all but one of the five most polluted cities outside London – Southampton, Derby, Leeds, Birmingham and Nottingham – were on target to produce their draft plans in March next year and final plans in December 2018 for implementation in 2021. Derby, however, has yet to produce its preferred measures and she said she had concerns about whether they would keep to the timetable.

“Air quality is improving,” she said. “Not as quickly as we would like and we fully recognise we are in breach of one element of the air quality directive. We are actively improving air quality and I don’t agree we are being dragged to try and improve air quality ... We have great urgency which has led us to direct councils to work on their plans.”

Coffey said she has written to all the 28 local authorities identified in the new air quality plan and government was providing help and funding through a £225m implementation fund and £222m clean air fund, which was announced in last week’s budget.

Coffey said councils were anxious about the prospect of charging drivers of diesel vehicles to enter their towns and cities. “We have to get these plans in place to achieve better air quality as quickly as possible, but if charging [drivers] is the only way they can achieve that then we will work with them [local authorities] on that. But I strongly believe most councils are desperate to try and find other ways to improve air quality.”

A Derby city council spokesperson said the council “takes the issue of air quality very seriously and we already have a number of measures in place to tackle it. We are currently undertaking work to develop additional measures to reduce air pollution that work best for the city of Derby.”

The inquiry into air quality has heard evidence from leading health professionals who described air pollution in the UK as a public health crisis. A report by the Royal College of Physicians and of Paediatrics and Child Health said last year that outdoor air pollution is contributing to an estimated 40,000 premature deaths a year.

Prof Stephen Holgate, asthma expert at Southampton University and chairman of the reporting group, told MPs on the inquiry that there were no safe levels of pollution from nitrogen dioxide.

The inquiry challenged ministers on their commitment to encouraging more people to walk, cycle or take public transport.

MPs said £46bn had been spent on funding tax breaks on diesel vehicles but just a small fraction of that amount – millions rather than billions – on air quality initiatives and green public transport.

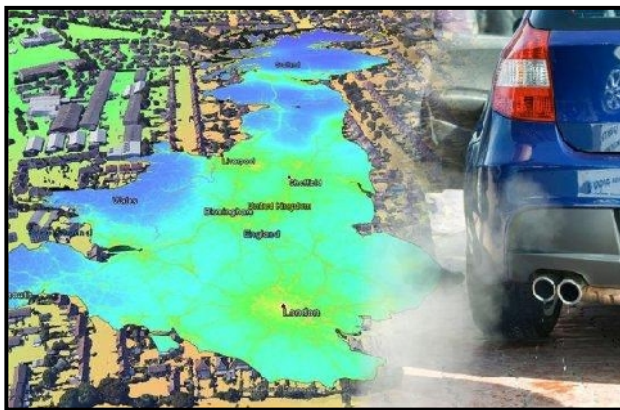
Andrew Jones, Treasury minister, said the government had allocated £3.5bn over 10 years for air quality and cleaner transport initiatives, which he described as a “significant amount of money.”

The government's new air quality plan was published in July, with a promise to ban petrol and diesel cars in 23 years. But leaders of eight of the most polluted cities have written to the environment secretary, Michael Gove, to say it is inadequate. They have called for urgent legislation and a proper diesel scrappage scheme, saying the air quality plan would not enable them to keep to their legal limits on pollution.

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## **New UK map of air pollution provides insights into nitrogen dioxide levels across the country and within towns and cities**

*Date: 30-Nov-2017 Source: Science Daily*



EarthSense Systems -- a joint venture between the University of Leicester and aerial mapping company BlueSky -- has published MappAir® -- the first ever high resolution nationwide map of air pollution.

Combining data from satellites and its own air quality monitoring sensors together with open source data, EarthSense has used complex modelling techniques to create the highly accurate map. Initially available for the whole of the UK at

100 metre resolution, MappAir® shows how air pollution, specifically nitrogen dioxide, changes across the country and within towns and cities, highlighting likely sources and potential clean-air refuge areas.

"Air pollution is making headlines across the world for all the wrong reasons," commented James Eddy, Managing Director of EarthSense Systems. "However, there simply isn't enough data available for those charged with tackling the issue to make informed decisions. MappAir® can provide a street-view to city-wide visualisation of air pollution, and is the first in a series of nationwide products that are coming to market in the next year."

Using the British National Grid, EarthSense has divided the UK into 100 metre squares -- about twice the size of an average football pitch. Air pollution readings from satellites and its own Zephyr air quality monitoring sensors were combined with open data, including traffic emissions and weather conditions, to produce an annual average for each cell.

As additional sensors come online and more historical data is made available, EarthSense plans to produce a range of MappAir® products, including an ultra-high resolution 1m dataset for detailed study areas, a 10m map for urban areas, an historic time series of maps showing how air pollution changes over the course of a day and on different days, and forecast maps giving an indication of fluctuations up to three days ahead. EarthSense will also be releasing a map of PM2.5 (ultrafine pollution particles smaller than 2.5 micrometres) later in 2017.

"Air pollution is not a constant threat," continued Eddy. "Not only does it differ from location to location, as MappAir® clearly shows, but it also changes from morning rush hour to afternoon school run, and from week day commutes to weekend leisure pursuits. This is why we are already working on the next products in the MappAir® range, including near real time altering maps and forecast maps."

With the Government recently outlining its plans to tackle climate change while driving economic growth, accurate map based data, such as the MappAir® products, are designed for a wide range of applications. These include local planning, enforcement and mitigation strategies, as well as commercial applications such as conveyancing and health diagnostics. It is hoped the MappAir® products will also help with public engagement and behavioural change initiatives.

EarthSense Systems is a joint venture between aerial mapping company Bluesky and the University of Leicester. The MappAir® data is available to view and purchase online at [www.blueskymapshop.com](http://www.blueskymapshop.com)

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## Why air pollution in the US will likely never reach India's extreme levels

*Date: 30-Nov-2017 Source: Accweather*



The toxic smog looming over India, more specifically over the nation's capital, New Delhi, poses numerous health and environmental threats. The dangerous conditions have sparked political unrest among citizens, who hope to find a solution.

In New Delhi, air quality has peaked well off the charts for several days at a time, even for over a week, at an Air Quality Index (AQI) significantly over 500. The highest category is listed as "hazardous" at 301-500.

In the United States, the worst AQI is "very unhealthy," which ranges from 201-300. This poor air quality is typically isolated in northwestern valleys, for short periods of time. It occurs during extreme wildfire smoke events, according to AccuWeather Meteorologist Faith Eherts.

Birds sit on electric wires surrounded by smog in New Delhi, India, Wednesday, Nov. 8, 2017. A thick gray haze enveloped India's capital on Wednesday as air pollution hit hazardous levels. (AP Photo/Manish Swarup)

The U.S. has developed a structure to prevent hazardous air quality events of this magnitude from occurring through improvements in policy and regulations.

Air quality in the U.S. was relatively poor prior to the existence of air quality monitoring systems. Cities like New York City, Philadelphia and Pittsburgh would have days of very poor air quality, according to Eherts.

There were short-lived events of poor air quality due to an extended period of calm, dry weather and a lack of industry regulations, Eherts said.

For example, in October 1948, a thick cloud of air pollution formed above the industrial town of Donora, Pennsylvania. The cloud lingered for five days. It killed 20 people and caused sickness in 6,000 of the town's 14,000 people, an U.S. Environmental Protection Agency (EPA) spokesperson wrote in an email to AccuWeather.

"Events like this alerted us to the dangers that air pollution poses to public health," the EPA spokesperson said.

In this June 3, 2017, file photo, the coal-fired Plant Scherer, one of the nation's top carbon dioxide emitters, stands in the distance in Juliette, Ga. (AP Photo/Branden Camp, File)

The United States has made great strides in decreasing air pollution since its peak.

"In 1970, Congress strengthened the Clean Air Act, created the EPA and gave it the primary role in carrying out the law. Since that time, the EPA, along with states, tribes and local air quality agencies, has made tremendous progress in cleaning our nation's air," the EPA spokesperson said.

From 1970 to 2016, the combined emissions of six common air pollutants declined 73 percent in the U.S. Meanwhile, the economy grew, the population increased, energy use increased and people drove more, according to the EPA.

The six common air pollutants are fine and coarse particulate matter (PM10 and PM2.5), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NOX), volatile organic compounds (VOCs), carbon monoxide (CO) and lead (Pb).

Since 2000, concentrations of fine particulate matter have declined 35 percent compared to the agency's annual standard for the pollutant and 45 percent when compared to the 24-hour standard, the EPA stated.

Extremely high levels of particle pollution today are rare. Events such as forest fires can generate high levels of fine particle pollution.

Air quality hot spots in the U.S., outside of wildfire smoke events, occur mainly in industrious valleys. The valleys of California and the Great Salt Lake Basin in Utah are a few such areas.

These areas are generally dry and are home to industrious cities; therefore, pollutants often get trapped in valleys. This results in periods of poor air quality, Eherts said.

The U.S. continues to monitor and improve air quality through the Clean Air Act, through regulation and by working across all levels of government, including the EPA, states, tribes and local governments.

"Technology developments also have played an important role in this progress by improving pollution control. Industries have helped develop new, innovative and more cost-effective methods to reduce pollution," the EPA spokesperson said.

The Clean Air Act provides broad opportunities for public participation. It encourages open access to data about emissions and concentrations of pollution in the air.

Aside from a lack of strong policy and regulation in India, there are several other factors that contribute to extreme levels of pollution not seen in the U.S.

One such factor is the climate. There are few places in the U.S. that experience a lengthy dry season comparable to that of northern India.

While the southwestern U.S. experiences a relatively similar climate, this region does not have the expansive industrious economy or widespread agricultural burning practices that the New Delhi region does, according to Eherts.

While the causes of the extreme pollution are well understood, the Indian government has largely failed to find ways to reduce it.

Politics play a large role in this deadlock, according to The Washington Post. Rural farmers and city dwellers are important constituencies for different political parties, and neither side wants to make concessions, according to the report.

There are pollution control laws in India, but enforcement has been lax for fear of alienating critical voting blocs.

However, India is committed to the Paris Climate Accord. While just under two thirds of India's power comes from heavily-polluting coal power plants, it aims for a target of 40 percent renewable energy by 2030, according to CNN.

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## December 2017

### **Delhi Pollution: Levels In City Rise Again, Air Quality Stays 'Very Poor'**

*Date: 01-Dec-2017 Source: NDTV*



NEW DELHI: Air pollution in Delhi rose today and returned to levels recorded immediately after the severe smog episode last month, according to the Central Pollution Control Board's (CPCB) data.

The concentration of suspended particulate matter PM10 climbed to 412 micrograms per cubic metre (ug/m3) during the day. PM2.5 was recorded over 200 ug/m3.

The last time the level of PM10 was this high was on November 14, when Delhi had just come out of a week-long spell of emergency levels of pollution.

The 24-hour safe averages of these ultrafine particulates are 60 (PM2.5) and 100 (PM10).

The CPCB attributed the rise in the air pollution level to calm conditions marked by a fall in wind speed and incursion of moisture in the air, conditions which favour accumulation of particulates.

The air quality index (AQI) of CPCB for Delhi was in the 'very poor' category with a score of 343 in a scale of 500.

The Centre-run pollution monitoring and forecasting agency SAFAR predicted that concentration of PM2.5, more harmful owing to its extremely tiny size, and PM10 may rise over the weekend.

However, weather scientists have emphasised that the city is not likely to witness another emergency spell of pollution in the near future as external factors such as stubble burning are hardly playing a role anymore.

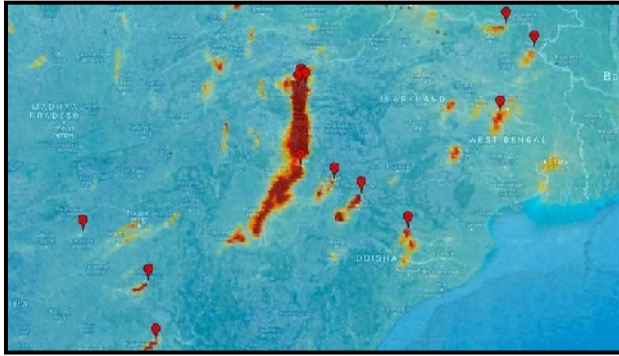
A "very poor" AQI essentially means that people may suffer from respiratory illness on prolonged exposure to such air. On further dip in air quality, the AQI will turn "severe" and "emergency" when it goes off-scale.

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### **Deadly air pollution seen from space**

*Date: 01-Dec-2017 Source: ITV*

Air pollution is known as the invisible killer for good reason. It causes 40,000 people to die prematurely each year in the UK but many of the deadly gases we breath are impossible to see with the naked eye.



Today we got the best ever picture of our toxic air as seen from space. They're from a new satellite called Sentinel-5P which was built in Stevenage and launched into orbit six weeks ago. Today's pictures are ten times sharper than anything we've seen before and put together from twenty million observations everyday.

The images show ozone in the atmosphere, nitrogen dioxide released from factories and even

sulphur dioxide from Mount Agung which has been erupting in Bali.

“Before we used to measure on the size of a region, now we're going to be able to look at towns and cities - 7 by 3 kilometres the pixel size so we can now look at where that pollution came from and where it's moving with the wind as we track it with this daily revisit.”

– LIZ SEWARD, AIRBUS

Combined with weather forecasts, the data from Sentinel 5P will help pollution experts forecast toxic air episodes.

Whilst the resolution of the data is still not as good as monitoring stations at ground level Professor Frank Kelly from Kings College London believes it will be a useful tool in assessing the causes of climate change.

“It will sort of set a base line and we'll be looking at the trends in these different pollutants in time.

Clearly there are a lot of different policies being discussed, being enacted at the moment to reduce pollution and we want to see that those policies are working.”

– PROFESSOR FRANK KELLY, KINGS COLLEGE LONDON

There's just one problem, Sentinel-5P can't see through cloud. So whilst we already have data showing pollution in Italy's industrial north - we'll have to wait for clearer skies before we see more of this country.

## Residents submit petition to MCG, seek action on air pollution

*Date: 02-Dec-2017 Source: The Hindu*

As many as 25,000 signatures in petition submitted to civic body commissioner; major demands include segregation of waste at source, action against open burning

Around 50 concerned residents, including children, submitted a petition with 25,000 signatures to Municipal Corporation of Gurugram Commissioner on Saturday, seeking immediate steps to address high levels of air pollution in the Millennium City.





The signatures on the petition, with eight major demands, were collected by a core group of over 200 citizens, mostly young mothers, under the aegis of “Citizens for Clean Air” from across the city with active participation of the children as well over the past one month. This was done to emphasise the deep concern of the residents over the growing levels of air pollution in the National Capital Region, especially Gurugram, and seek immediate steps to check it.

### Children sign plea

The signatories to the petition included around 3,000 doctors, 2,500 school children and 60 RWAs, besides residents of group housing societies, shopkeepers and people from the semi-urban areas.

The three-page petition demanded to mandate source segregation, promote community-based treatment of organic waste as per Solid Waste Management Rules-2016, set up dry waste collection centres in all wards to stop open burning of waste, ensure compliance of construction and demolition rules and National Green Tribunal construction guidelines, repair of all roads to prevent dust pollution, and installation of air monitoring devices for real time air quality checking among other things.

The residents, through the petition, raised strong objection to the plan of the Haryana government to set up a “Waste-to-Energy” plant arguing that it would create more air pollution and suggested that “waste segregation at source” was the way forward. “While we are highlighting the local contributors of pollution, it is important to state here that according to scientific studies, the major source of energy for waste-to-energy plants comes from “burning plastics” — the most prohibited, environmentally disastrous process. Chemicals emitted by incineration grossly impact health and increase disability in new births,” said the petition.

### Sustainable city

It further added that Gurugram should be given an opportunity to be a sustainable and a healthy city by adopting a zero-waste plan. “This will prioritise safety and well being for all. For this a fully integrated solid waste management policy, factoring in resource conservation and integrating informal sector for optimal resource recovery in decentralised model, would ensure least amount of pollution by not land filling or incineration,” said the petition.

The petition pointed out that the city reported PM 2.5 in excess of the safe norm for over 10 months last year and for close to 200 days the PM2.5 was very poor or severe ranging more than 120 micrograms per cubic metre.

The residents, including doctors and RWA representatives, all gave a presentation to MCG Commissioner V. Umashankar on the issue in a meeting that lasted around two hours.

### ‘Disappointing response’

However, a few of the residents seemed disappointed with the response of Mr. Umashankar to their petition as he refused to entertain any objection against the Waste-to-Energy plant and also categorically refused to incentivise waste segregation at source.

Ostensibly annoyed by the environmentalists' objection to the construction and demolition plant at Basai, Mr. Umashankar reportedly expressed his inability to control reckless dumping of debris across the city.

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## **Delhi's air quality dips further**

*Date: 04-Dec-2017 Source: The Hindu*

The concentration of the most dominant pollutants, PM2.5 and PM10, reached levels as high as 276 and 455 micrograms per cubic metre by 3 pm

A day after Sri Lankan cricketers took to the field wearing anti-pollution masks, Delhi's air turned fouler on Monday with a sharp rise in the level of particulates since morning.

The concentration of the most dominant pollutants, PM2.5 and PM10, reached levels as high as 276 and 455 micrograms per cubic metre by 3 p.m., according to the Central Control Room for Air Quality Management of the Central Pollution Control Board (CPCB).

Pollution is considered severe plus or emergency when the readings are above 300 and 500 respectively. The corresponding prescribed standards are 60 and 100.

The Air Quality Index (AQI), as recorded by the CPCB, also reflected the rise in the levels of these ultrafine air-borne particulates. The AQI was 390, on a scale of 500, around 3.30 p.m. It is classified as 'very poor'. However, it is menacingly close to the 'severe' category.

Sunday's 24-hour average was 351.

A 'very poor' AQI comes with the warning that people may develop respiratory illness on prolonged exposure while exposure to 'severe' air affects healthy people and seriously impacts those with existing respiratory or cardiovascular diseases.

An AQI between 0-50 is considered Good, 51-100 Satisfactory, 101-200 Moderate, 201-300 Poor, 301-400 Very Poor, and 401-500 Severe.

Pollution levels in Delhi usually remain in the 'very poor' category in December.

November witnesses extremely high levels of pollution as smoke from paddy residue burning reaches the city, aggravating the situation.

However, there are phases, when such spikes are seen even during December and January, mostly due to rapid drop in temperature and high moisture content, factors that trap particulates near the surface.

According to an IIT-Kanpur study, the sources of PM2.5 and PM10 during the winter months are: secondary particles like nitrates (25-30%), vehicles (20-25%), biomass burning (17-26%), municipal solid waste burning (9-8%) and to a lesser extent soil and road dust.

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## NGT slams AAP govt for not filing action plan to curb Delhi's air pollution

*Date: 04-Dec-2017 Source: Live Mint*



New Delhi: The National Green Tribunal (NGT) on Monday came down heavily on the Delhi government for not filing a comprehensive action plan on ways to deal with severe air pollution in the city and slammed authorities for holding the India-Sri Lanka cricket match despite bad air quality.

A bench headed by NGT chairperson justice Swatanter Kumar took exception over the failure of the AAP government to file the report despite its specific order. During the hearing, the Delhi

government said it needed more time to file the action plan as the chief secretary and environment secretary have been recently changed.

The tribunal, however, directed the government to file the report within the next 48 hours. “Where is your action plan? Why have you not submitted it? What can we do if you keep on changing everybody? It’s not our problem if people don’t want to stick to you. You keep on doing meetings but tell us a single action or step you have taken in the last four days to combat air pollution,” the bench said.

It said that the pollution in the city has already reached alarming levels yet the government was adopting a “lackadaisical” approach in dealing with the situation. The green panel was also irked by authorities for conducting the third Test between Sri Lanka and India on Sunday which was disrupted due to the choking smog.

The Sri Lankan cricket team had complained of poor air quality that forced India to declare their innings. “Every newspaper has been carrying headline that the air pollution was going to be higher this week. Still you took no action. Even the players were playing match wearing masks. You should have not held the match if the air quality was so bad. Are people of Delhi supposed to bear this?” the bench said.

The tribunal also pulled up the city government for not introducing odd-even car rationing scheme at this point of time when the air quality is severe. “You want exemptions for two-wheelers but you don’t apply your mind that these 60 lakh vehicles cause the maximum pollution,” it said.

It also said that despite stating before the tribunal that 4,000 buses would be introduced to decongest the city roads, the city government has not a single bus even after three years of assurance. The tribunal had

on 28 November asked the AAP government and four neighbouring states- Punjab, Haryana, Uttar Pradesh and Rajasthan to submit an action plan on tackling pollution.

It had earlier directed the Central Pollution Control Board, Delhi Pollution Control Committee and every state pollution control boards to file ambient air quality analysis before the tribunal on monthly basis and also put up on their websites to enable the concerned authority to take effective steps to control air pollution.

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## **Delhi pollution: Air quality gets worse, could breach ‘severe’ level again**

*Date: 04-Dec-2017 Source: Hindustan Times*

Low temperature and absence of winds resulted in very poor air quality on Monday morning with the Air Quality Index (AQI) in Delhi spiking to 386 in “very poor” category, according to the Central Pollution Control Board (CPCB). The air quality is expected to deteriorate further over the day and could breach 400 level to enter ‘severe’ category.

Monday morning’s AQI was 18 points higher than the 368 average on Sunday when the India-Sri Lanka Test match at Feroze Shah Kotla cricket ground had to be halted briefly after players complained of poor air quality.

The Met department has, however, predicted ‘cloudy sky with light rains’ on Wednesday which is expected to clear the sky and wash up some of the pollutants, particularly the particulate matter. The city has been under a grip of very poor level of air pollution over the past few weeks.

The minimum temperature recorded on Monday morning was 8.3 degree Celsius again one notch below normal. The minimum temperature that had dropped below eight degrees Celsius last week is likely to increase to around 11 degrees Celsius from Tuesday. The maximum temperature recorded on Sunday was 23.9 degree Celsius which was one degree below normal.

“It will be cloudy sky with possibility of light rains on December 6,” a MeT department official said.

Delhi has been reeling under “very poor” category air quality for the last many days. This year, the pollution levels entered the ‘severe’ zone on November 7. The AQI hit its peak of 486, this highest so far, on November 9. The last time Delhi witnessed such prolonged spells of severe air quality was in November 2016 when the city faced its worst smog in 17 years.

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## **Air pollution harm to unborn babies may be global health catastrophe, warn doctors**

*Date: 05-Dec-2017 Source: The Guardian*

Air pollution significantly increases the risk of low birth weight in babies, leading to lifelong damage to health, according to a large new study.



The research was conducted in London, UK, but its implications for many millions of women in cities around the world with far worse air pollution are “something approaching a public health catastrophe”, the doctors involved said.

Globally, two billion children – 90% of all children – are exposed to air pollution above World Health Organization guidelines. A Unicef study also published on Wednesday found that 17 million babies suffer air six times more toxic than

the guidelines.

The team said that there are no reliable ways for women in cities to avoid chronic exposure to air pollution during pregnancy and called for urgent action from governments to cut pollution from vehicles and other sources.

“It is an unacceptable situation that there are factors a woman cannot control that adversely affect her unborn baby,” said Mireille Toledano, at Imperial College London, and who led the new research published in the British Medical Journal (BMJ).

The study analysed all live births in Greater London over four years – over 540,000 in total – and determined the link between the air pollution experienced by the mother and low birth weight, defined as less than 2.5kg (5.5lbs). The scientists found a 15% increase in risk of low birth weight for every additional 5 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ) of fine particle pollution.

The average exposure of pregnant women in London to fine particle pollution is  $15\mu\text{g}/\text{m}^3$ , well below UK legal limits but  $5\mu\text{g}/\text{m}^3$  higher than the WHO guideline. Cutting pollution to that guideline would prevent 300-350 babies a year being born with low weight, the researchers estimated. “The UK legal limit is not safe and is not protecting our pregnant women and their babies,” said Toledano.

“We know that low birthweight is absolutely crucial,” she said. “It not only increases the risk of the baby dying in infancy, but it predicts lifelong risk of diabetes, cardiovascular disease etc. You are setting in stone the whole trajectory of lifelong chronic illness.”

The new research shows the impact of air pollution on babies in London is significant, but affects a relatively small number – only about 2.5% of all full-term babies are born with low weight. However, many cities around the world – such as Delhi in India – suffer far higher levels of toxic air, raising concerns of huge impacts on unborn babies.

“Though the new results from the UK are concerning, a global perspective reveals something approaching a public health catastrophe,” said Sarah Stock and Tom Clemens, from the University of Edinburgh, in a BMJ editorial. “The pregnancy effects of extreme exposure environments like Delhi are unmeasured, and there is an urgent need to turn attention to such environments where large numbers are at considerable risk of harm.”

Stock told the Guardian that outdoor air pollution is already causing millions of early deaths every year among adults and children: “And that is not taking into account deaths in utero or resulting from exposure in pregnancy, because we just don’t have the data yet.”

Unicef executive director Anthony Lake said: “Not only do pollutants harm babies’ developing lungs – they can permanently damage their developing brains – and, thus, their futures. No society can afford to ignore air pollution.”

The new BMJ study is based on observations and so cannot prove a causal link between air pollution and low birth weight, but the correlation is very strong, said Toledano: “The power of our study is incredible due to the sheer numbers.” The study is the largest to date in the UK and the link is strengthened by a series of previous studies from other regions that replicate the findings.

There are some uncertainties in the estimates of air pollution exposure and the level of smoking among the pregnant women. But Toledano said: “Could it be that we are slightly off in how much the increased risk is? Yes. Is it going to completely disappear? No.”

She said there are a number of serious public health problems around the world, such as the lack of clean water that kills over 500,000 infants every year, but said toxic air was one of them: “There is no question this is an extremely important public health risk. We have to do something and we can’t just say it is down to the individual mother. Every baby deserves to be born safely.”

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## Delhi may lose winter Tests as BCCI takes note of air pollution

*Date: 05-Dec-2017 Source: Money Control*



Sri Lanka paceman Suranga Lakmal vomited on the field before walking off as Delhi's notorious smog, which may rob the Indian capital of future winter tests, continued to plague the third and final match on Tuesday.

India's second innings was into its sixth over when Lakmal was seen bending over and throwing up. The Sri Lankan physio rushed in and eventually walked off with the player.

Lakmal, who returned to bowl the 11th over, and pace colleague Lahiru Gamage had also walked off on Sunday with discomfort.

The Indian cricket board (BCCI) said it would factor in Delhi's pollution before scheduling a match in the city at this time of the year.

"This point about scheduling matches in Delhi in this particular period can be considered in view of the situation encountered in the last two-three days," acting BCCI secretary Amitabh Choudhary told reporters late on Monday.



"This pollution issue has been spoken about for years ... It can't be seen affecting just one walk of life. The agencies which need to be dealing with it, I'm sure are dealing with it."

Delhi's government last month ordered schools to shut temporarily after pollution readings in some places peaked at 500, the most severe level on the government's air quality index that measures poisonous particles.

The pollution prompted the board to cancel two Ranji Trophy matches in Delhi last year.

"As you are aware, the BCCI is sensitive about this fog and smog over the years when they scheduled domestic games out of Delhi..." Choudhary said.

Several Sri Lankan players had their facemasks on even on Tuesday.

Their coach Nic Pothas has called Delhi's air pollution a "unique" and "well-documented" problem but Choudhary said Sri Lanka Cricket did not raise the issue when the tour was being finalised.

"If they had any (objection), they didn't express it to me," the BCCI official said.

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## Bengaluru to don leadership role in tackling air pollution globally

*Date: 06-Dec-2017 Source: The Hindu*



Bengaluru is the only Indian city in C40 Air Quality Network

Bengaluru will join London in leading a global partnership of 20 countries to tackle air pollution. On Tuesday, Bengaluru Mayor R. Sampath Raj and London Mayor Sadiq Khan announced that the cities would lead the C40 Air Quality Network that will allow leaders of major cities to share ideas on improving the air quality. Ironically, the MoU was signed in Delhi where air pollution is a growing concern.

Bengaluru is the only Indian city on the list. "The city has been recognised as capable of leadership in this because of the initiatives for pedestrian-friendly streets (TenderSURE), cycling and initiatives to increase public transport," said N. Manjunath Prasad, Bruhat Bengaluru Mahanagara Palike Commissioner.

The city has struggled to contain its air quality as urbanisation and rapid vehicular growth has eaten into green space. Since 2010, particulate matter has gone up by over 57%.

While Bengaluru will host the C40 Air Quality Network conference next year, there is hope that the programme will fund schemes to tackle air pollution. For instance, Bengaluru is attempting to increase air



pollution sensors from just 16 to over 800. London is planning to measure near real-time data from 1,000 locations to get an idea of peak pollution in areas.

“Air pollution is a global problem that harms the lives of millions of people. Only by working together will we help beat this international health crisis and protect people from breathing in air so filthy it damages their lungs and causes diseases,” said Mr. Khan.

The leadership role in C40 Air Quality Network comes along with Bengaluru’s participation in the C40 Cities Climate Leadership Group. Five other Indian cities (Chennai, Delhi, Jaipur, Kolkata, and Mumbai) are part of this alliance that includes 90 cities from across the world.

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## Urban Air Pollution Negates Health Benefits Of A Long Walk On City Streets

*Date: 06-Dec-2017 Source: Huff Post*



Air pollution on city streets can wipe out the beneficial health effects of exercise for people aged 60 and older, according to a new study led by scientists at Duke University and Imperial College London.

Short-term exposure to traffic exhaust in built-up areas like New York City’s Broadway or Chicago’s Michigan Avenue can cancel out the positive effects a two-hour walk would otherwise have on the hearts and lungs of these older adults,

according to the findings, published Tuesday in medical journal *The Lancet*.

While participants who walked in a park were found to have a significant improvement in their lung capacity, which lasted as long as 24 hours, those that walked on a polluted main street saw few if any benefits.

“Combined with evidence from other recent studies, our findings underscore that we can’t really tolerate the levels of air pollution that we currently find on our busy streets,” said Fan Chung, professor of respiratory medicine and head of experimental studies medicine at Imperial College’s National Heart & Lung Institute.

Globally, outdoor air pollution causes an estimated 4.5 million deaths a year. Air pollution exposure has been linked to increases in hospital admissions and deaths from cardiovascular diseases, respiratory diseases and lung cancer. A key culprit is cars, since emissions from gasoline- and diesel-powered vehicles are one of the main sources of pollutants such as nitrogen dioxide and particulates.

“For many people, such as the elderly or those with chronic disease, the only exercise they very often can do is to walk,” Chung said. He said he believes the results of the new study, carried out in London, would

be replicable in many North American and European cities. He also said the impacts are likely to apply to other age groups, but further studies are needed on that.

The report calls for stricter air quality limits, better traffic control measures and greater access to green spaces. Chung also said the study indicated individuals should avoid busy, congested areas whenever possible and opt for green spaces instead. He acknowledged that may be hard — and costly — for those living or working in inner cities.

“Our hope is that this study will add to the evidence city leaders need to contribute to policies that will encourage preservation of green spaces,” said Jim Zhang, professor of global and environmental health at Duke and study’s co-author.

He added: “As economic growth and urbanization happen around the world, lots of cities are left with very little green space. ... People like outdoor exercise. We should provide them with spaces to enable that instead of giving them no choice but to walk and cycle through busy, polluted streets.”

Brooke Havlik, communications director for the New York-based nonprofit organization WE ACT for Environmental Justice, said that far from improving the situation, the U.S. is going backward at a federal level when it comes to combatting air pollution.

“The Trump administration and Environmental Protection Agency Administrator Scott Pruitt are actively working to dismantle critical public health and clean air protections,” she said.

Poor air quality is creating a public health crisis in the U.S., said Natalie Nava, project leader at the environmental group Greenpeace USA.

She noted that although the Obama administration proposed stronger fuel efficiency standards for vehicles to fight air pollution, since President Donald Trump took office, “car companies have actually been lobbying ... to get these standards rolled back.”

“As long as American automakers drag their feet on fuel standards and other sustainability regulations, they’re showing that they care more about their short-term financial interests than they do about long-term benefits for public health, the planet, and even the economy,” she said.

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## **Air pollution action plan: Redo and resubmit Thursday, NGT tells Delhi government**

*Date: 07-Dec-2017 Source: India Todays*

The National Green Tribunal (NGT) on Wednesday slammed the Delhi government and neighbouring states Punjab, Haryana, UP and Rajasthan over their action plan on the ways to deal with severe air pollution in the city, and directed them to file a detailed document to tackle the problem by Thursday.

A bench headed by NGT chairperson Justice Swatanter Kumar expressed his dissatisfaction with the Delhi government's action plan, which was submitted on Wednesday, and observed that it wanted all the things to be done by the others.

The tribunal observed that air pollution was never at normal level in the national capital and directed the neighbouring states to file the action plan afresh.

"What are your plans to tackle the pollution level since it is never at the normal level in the national capital? You all (states) tell us what steps you will take at what level of pollution. What are your normal steps to check pollution?" the bench asked.

It directed chief secretary of the Delhi government Anshu Prakash to sit with all the concerned officials, including those of the municipalities and come up with a comprehensive plan by Thursday.

The counsel for the Delhi government drafted the plan, which recommended implementation of odd-even scheme, entry of trucks in the city, ban on construction works and disallowing the children from playing outside when the air quality turns severe.

The green panel questioned the AAP-led Delhi government if it would introduce the road rationing plan in consonance with its directions. The counsel for the Delhi government said he would seek proper instructions and inform the bench accordingly.

### **'ACTION PLANS AN EYEWASH'**

During the hearing, advocate Sanjay Upadhyay, appearing for Vardhaman Kaushik who had filed plea against worsening air quality in Delhi, said the action plans submitted by the states were merely an eye-wash and they have only copy-pasted the recommendations of the Supreme Court appointed Environment Pollution (Prevention and Control) Authority.

The NGT had earlier lashed out at the Delhi government for not filing a comprehensive action plan on ways to deal with severe air pollution in the city.

The NGT had also slammed authorities for holding India-Sri Lanka cricket match at Feroz Shah Kotla stadium in Delhi despite hazardous air quality.

It had directed the Central Pollution Control Board (CPCB), Delhi Pollution Control Committee (DPCC) and every state pollution control boards to file ambient air quality analysis before the tribunal on monthly basis and also put up on their websites to enable the concerned authority to take effective steps to control air pollution.

## **Delhi-centric approach to fight air pollution inadequate:**

*Date: 07-Dec-2017 Source: India Todays*

New Delhi, Dec 7 (PTI) A Delhi-centric approach is inadequate to rid the city of air pollution, a group of activists today said and called for collective action for strict implementation of emission norms.

Participating in a panel discussion on pollution, they expressed concerns over emission of sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) and rued the "absence" of any mechanism to punish the polluting units.

"Delhi-centric approach is not going to help because you need to clean the air in surrounding areas as the city cannot be an island," Ritwick Dutta representing Legal Initiative for Forest and Environment said.

Referring to a study conducted by IIT Kanpur, Greenpeace India representative Nandikesh Sivalingam said the report held emissions of power plants of 18,000 MW capacity within 300 km of Delhi responsible for air polluting in the city.

The activists also cited RTI replies by 17 thermal power plants across the country to highlight lack of adequate measures to check SO<sub>2</sub> and NO<sub>2</sub> emissions.

"Even as the deadline for implementing new emission standards for thermal power plants notified by the Environment Ministry has ended, none of the 17 plants had provided for Flue Gas Desulphurisation to check SO<sub>2</sub> emission and modify burner designs for low emissions of nitrogen oxide," Sivalingam said.

New emission norms for thermal power plants concerning particulate matter, SO<sub>2</sub>, oxides of nitrogen, mercury and water consumption, notified on December 7, 2015, have come into force from today.

"There is no mechanism to punish the violators who flout emission norms. The polluting units seem to have been given a long rope and as far as implementation of steps to curb emissions are concerned, the agencies seem to be ready to wait till the end," Dutta said.

Indian Medical Association (IMA) president K K Agarwal explained the harmful effects of particulate matter on health and called for a "public movement" to deal with the situation.

"IMA has asked its members for a nationwide campaign against air pollution," he said. PTI VIT NSD

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## **After Delhi smog torture, cricket body may include air pollution in play conditions**

*Date: 08-Dec-2017 Source: The Telegraph*

New Delhi, Dec. 8 (PTI): The International Cricket Council might incorporate air pollution in its 'Playing Conditions' clause, having taken a serious note of the plight of Sri Lankan cricketers during the recently-concluded Test match against India in the national capital.



The Sri Lankan players were seen fielding while wearing anti-pollution masks during India's batting with most of their players complaining of breathlessness. Their pace bowlers Suranga Lakmal and Lahiru Gamage also threw up due to uneasiness.

The ICC has now decided to refer the matter to its medical committee, which has been provided the relevant reports as well as data of the prevailing air quality in Delhi.

"The ICC has noted the conditions in which Delhi Test was played and has already requested that the issue is considered by the medical committee for guidance should the situation arise in future. The matter is likely to be discussed in February's ICC Meetings," an ICC spokesperson told PTI on Friday.

As a result, there could be a slight alteration in the clauses of the Playing Conditions, where the health hazard of players related to severe air pollution can be incorporated.

"In ICC's 'Playing Conditions', there is a separate sub-clause for weather. Since this is a first instance in the game's 140-year history that a Test match has been halted for 26 minutes due to air-pollution. The situation as we all know is very unique in nature," an official of the Board of Control for Cricket in India said on conditions of anonymity.

Since the Playing Conditions never had any specific mention of air-pollution, it is expected that permissible Air Quality Index limit to play competitive cricket will be inserted.

The Indian Medical Association's president Dr. K.K. Aggarwal in a letter to BCCI has also urged the cricket's governing body to include a clause on atmospheric pollution.

Dr Aggarwal on his part also provided data as to how it was a serious health issue for players that the match was not stopped.

"The safe levels of atmospheric particulate matter, according to World Health Organisation air-quality guidelines, are 20g/cu mm (annual mean) for PM10 and 10g/cu mm (annual mean) for PM2.5," he said.

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## Air Pollution May Diminish the Benefits of Exercise

*Date: 08-Dec-2017 Source: Smithsonian*

These days, walking is all the rage as an easy way to keep your cardiovascular system pumping and flowing with ease—particularly for older generations. But a new study suggests that for people over 60, where they walk might be just as important as how much they walk. Taking a stroll in an area with high air pollution doesn't lead to the same benefits as a walk in the park, reports Sarah Boseley at The Guardian.



To study the rivaling effects of air pollution and exercise, researchers examined 119 volunteers over 60 years old who were either healthy or had stable coronary heart disease or chronic obstructive pulmonary disorder (COPD). The volunteers were randomly selected to either take two hour walk along Oxford Street—a bus and taxi-congested road in the heart of London—or through the quiet, green spaces of Hyde Park. During the walks, researchers measured the air quality, analyzing concentrations of black carbon, particulate and nitrogen dioxide—a highly reactive gas that primarily results from burning fuel.

The researchers compared blood pressure, lung volume and the elasticity of the volunteers' blood vessels before and after the stroll. All the volunteers received some benefit from walking, but those who walked in the green space away from the majority of the pollution received much more. An indicator of arterial stiffness, for instance, decreased by 24 percent for healthy and COPD patients and 19 percent for heart patients who walked in the park. Those who walked on Oxford street, saw fewer results. For example, for healthy patients there was no significant change the index for arterial stiffness (the largest measured difference was 4.6 percent), while COPD patients saw a 16 percent change and heart patients improved by 8.6 percent.

Overall walking significantly increased lung capacity, with the effects lasting 24 hours. But the effect was slightly magnified for park walkers compared to those strolling down Oxford Street. The research appears in the *The Lancet*.

“It is possible that studies such as this could support new air quality limits, it shows that we can't really tolerate the levels of air pollution that we currently find on our busy streets,” Fan Chung, lead author of the study from the National Heart & Lung Institute at Imperial College London, says in a statement. “For people living in the inner city it may be difficult to find areas where they can go and walk, away from pollution. There may be a cost associated as they have to travel further away from where they live or work.”

Though the study only included people over the age of 60, Chung tells Boseley that it's likely that air pollution has similar impacts on younger people as well. “I think it might well do. The only difference is that young people are much more resilient,” he says.

In fact, a report released earlier this year by the World Health Organization showed that cycling for 30 minutes in 15 of the world's most heavily polluted cities was worse for the body than driving or staying indoors. That's because at a certain point, inhaling fine particulates does so much damage that the benefits of exercise are not worth the effort. They calculated “tipping points” for dozens of cities, finding many in Africa and Asia where exercising two hours or less would be more harmful than beneficial.

None of these studies, however, are carte blanche to skip exercising. “The benefits of active travel outweighed the harm from air pollution in all but the most extreme air pollution concentrations,” Audrey

de Nazelle, one of the authors of the WHO report told The Guardian's Nick Van Mead earlier this year. "It is not currently an issue for healthy adults in Europe in general."

According to this earlier report, people exercising in New York, Paris and London never reach a point where the impact of pollution outweighs the benefit of exercise. So there's no excuse. Next time you step out for a croissant, skip the boulangerie next door; head to the one 20 minutes down the road.

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## **Air pollution a threat to sport**

*Date: 09-Dec-2017 Source: Jamaica Observe*

Cricket lovers watching the recent drawn third and final cricket Test between hosts India and Sri Lanka witnessed an extraordinary sight — that of fielders wearing face masks because of poor air quality.

It got so bad that on the second day the umpires had to stop play for periods accumulating to 22 minutes after players fell ill. In at least three cases, bowlers actually vomited on the field.

The episode in the Indian capital, Delhi, has attracted close attention from cricket's governing body, the International Cricket Council (ICC), which now wants air quality and its consequences to be considered by its medical committee. It is also likely to be discussed at ICC meetings in February.

It's possible that just as rain and poor light routinely stop cricket, air quality will have to be considered by umpires in the not too distant future. Currently, electronic meters are used to measure light during international and other high-level cricket. There are suggestions that soon comparable equipment may be used to measure air quality on cricket fields.

The problem is not confined to cricket. In mid-November, air pollution in Delhi was so poor that some of the 34,000 runners in the city's annual half marathon wore face masks.

Nor is air pollution in sport confined to Delhi or the wider north India. Track and field followers will recall that the Beijing Olympics of 2008, in which Mr Usain Bolt grabbed the imagination of the world, is also remembered for air pollution.

Indeed, media reports say studies show that those Games were the most polluted ever in terms of air quality. Levels of smog and soot were said to be so high at times that sunlight was blotted out. Thankfully, afternoon showers throughout the period of the Olympics in China cleaned up the air enough so that most athletes felt little or no ill effects.

Polluted air is no joke for those involved in sport and other strenuous activity. Experts say air pollution can trigger life-threatening ailments such as lung and heart disease, just as is the case with tobacco smoking.

Further, Jamaicans shouldn't feel that by virtue of distance they are divorced from all of the above. In fact, in October, in this space, this newspaper pointed to the dangers posed by rapidly increasing air pollution levels in sections of the country — not least Kingston and St Catherine, where population centres and industrial activity are most intense.



Indeed, people in that part of the country have first-hand knowledge of the discomfort caused by air pollution as a result of repeated fires at the Riverton dump.

Jamaica's political and business leaders speak eloquently, justifiably, and often of the need for industrial and economic growth. The clear message from India, China and elsewhere for those in the local sports fraternity is that they, like everyone else, have vested interest in being watchdogs — seeking to ensure that economic progress for Jamaica and its people does not come at the expense of air quality and a healthy environment.

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## Delhi smog: Here is the key to clearing air pollution

*Date: 09-Dec-2017 Source: The Financial Express*



Deep forests surrounding the city complemented by emission control measures provide the complete answer to Delhi's air pollution. The city's levels of air pollution are once again as dangerous as they are unrelenting. Everyone is affected — the rich and powerful as well as the poor and vulnerable. The new High Level Committee set up by the central government with the state Chief Secretary as a Member may soon usher in a well-organised and tangibly effective programme in an attempt to resolve this deadly problem. Delhi's air pollution problem arises from vehicular emissions, burning

of cooking gas, farmers burning husk in expanded farm lands outside the city and, above all, massive dust storms from across West Asia, Pakistan, Rajasthan and the Thar desert. Analysis of three-year data (2013-2015) on particulate air pollution (PM 2.5) in Delhi gathered by the Central Pollution Control Board from 10 different locations in the city reveals a systematic wave-like pattern: Air pollution peaks every winter from October to January. My published research has now quantitatively established that the flaring up of air pollution in Delhi in winter is due to an unusual seasonal climate change effect — resulting from a peculiar combination of ambient air temperature and dew point — that amplifies the pollutant particulate density to dangerous levels in winter by a factor of seven. In other words, if the “air quality index” (AQI) is now, say, 350 micrograms per cubic meter, the actual density of pollutants — carbon, dust, rubber particles, etc — will be a well-tolerable 50! This “weather factor” which amplifies AQI in Delhi is lower in the summer and rainy seasons when the Delhi air is washed clean by rainfall.

How then does one address this environmentally overwhelming “weather factor”? The fundamental cure (complementing other technical and administrative measures proposed) is to surround Delhi with a deep ring of forests. Not only will this modify the weather within the city, but the forest will absorb a major portion of airborne dust from across the Thar Desert and from Pakistan that further adds to air pollution levels in the capital city. I recall much more forested areas in and around Delhi in the 1940s. Forests have been replaced by large dense populations, thermal power plants, cars, auto rickshaws and scooters/motorcycles. Without afforestation, even if you take all cars off road or all millions of cars and

auto-rickshaws are made electric, it would just scratch the surface of Delhi's air pollution problem. In my opinion, unless this huge climate-driven air pollution amplification factor and other dust-driven environmental conditions is addressed comprehensively by afforestation, the cost and efforts made by the government will give little relief and large numbers of people living in Delhi will continue to suffer from respiratory ailments.

A massive afforestation programme may take 10 years to implement and call for new land laws in several states surrounding the capital. So the earlier the newly set-up High Level Committee comes around to including afforestation as number one priority in its action plan, the better it is for the people living in Delhi. After all, one cannot have a Swach Bharat without a Swach Delhi! Several enabling new and advanced technologies have already been fully developed and extensively certified in India to eliminate vehicular pollution. Besides, many courses of action are being discussed to stop the annual burning of dry paddy stubs by neighbouring states in winter.

This situation in the capital of India is indeed a case for enlightened people to come forward and address the problem collectively and consistently for at least seven to ten years, unaffected by changing political fortunes, for a tangible impact to be felt. Solutions here could soon be replicated all over India. For if not, as a philosopher said, "When you lose your relationship with nature and the vast heavens, you lose your relationship with man".

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## Delhi air pollution spikes again, rain forecast holds out hope

*Date: 10-Dec-2017 Source: Hindustan Times*



Air pollution in the national capital spiked on Sunday as two weather patterns that surfaced thousands of kilometres away pushed up the level of airborne pollutants in the city.

India's official pollution forecasting system SAFAR has forecast the air quality to dip more on Monday.

But the weather office predicted light rain on Monday night and Tuesday. Winter rain may bring the Celsius down but will also help wash away pollutants, giving Delhi a breath of fresh air.

The air quality index shot up from 305 to 377 on a scale of 0- 500 on Sunday as the landlocked city was caught in the crosswinds of a depression over the Bay of Bengal and a western disturbance blowing from the Mediterranean region.

This is the third time in a month that weather disturbances caused Delhi's air quality to deteriorate. The other two turbulences were cyclone Ockhi over the Arabian Sea early December and a dust storm barreling down from West Asia in the first half of November.

The Bay of Bengal depression has obstructed a strong northwesterly wind that was blowing last week over Delhi and flushing out pollutants.

The wind, moving without hindrances, and light rain on Wednesday night improved the city's air quality and the AQI dropped to 194 the next day. This helped Delhi record "moderate" pollution in December for the first time in two years.

"But the depression over the Bay of Bengal has blocked this clear passage. The cross-ventilation got disrupted and the wind speed dropped from around 15kmph on Thursday to around 5kmph on Sunday," said a senior official with the Indian meteorological department.

"The wind failed to disperse pollutants and the air quality started deteriorating," he said.

Data collated by the Central Pollution Control Board (CPCB) say the city's air quality has been deteriorating over the past three days and the level of particulate matter — PM10 and PM2.5 — has more than doubled.

The level of fine dust particle PM10 and PM2.5, which is even finer and more hazardous for people, is now four times above the safe standard of 100 and 60, respectively.

"This is mainly because of disturbances in the weather," said D Saha, who heads the CPCB's air quality laboratory.

A western disturbance, or storms originating over the Mediterranean, is adding to the problem.

"This has pushed up moisture levels. The result is that Delhi is witnessing misty mornings. This disturbance has helped trigger a cyclonic circulation over Rajasthan. There could be some rain on Monday night and Tuesday," said Kuldeep Srivastava, a senior scientist with Delhi's weather office.

Pollutants are getting trapped because of the low wind speed and high moisture level. The cyclonic circulation is acting like a trap for pollutants in Delhi and its satellite cities.

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## **Mumbai's air quality worsens as pollution levels to remain in poor category**

*Date: 11-Dec-2017 Source: Hindustan Times*

The city woke up to hazy conditions for the third day in a row. While the weather bureau said there was a marginal improvement in foggy conditions, pollution levels further increased from Saturday.

The pollutant-measuring indicator — air quality index (AQI) — was recorded at 240 (poor) on Sunday as compared to 237 (poor) on Saturday.

The System of Air Quality Weather Forecasting and Research (SAFAR) predicted an AQI of 224 (poor) for Monday.

AQI of PM2.5 pollutant — small pollutant particles that can easily enter the lungs and cause respiratory ailments — between 0-50 is good, 51-100 is satisfactory, 101-200 is moderate, 201-300 is poor, 301-400 is very poor, and 400 above is severe.

The India Meteorological Department (IMD) said visibility in the city improved as fog reduced.

Visibility levels were between 4,000 and 10,000 metres. Mumbai's average visibility levels are between 10,000 and 20,000 metres. On Saturday visibility levels were between 1,000 and 4,000 metres, said IMD officials.

Officials from the weather bureau said calm winds were expected over the next two days. "The fog marginally cleared by Sunday afternoon but the layer of dust, due to the process of inversion, is still suspended close to the surface. This is leading to smog formation, which is expected to continue till Tuesday or until winds pick up speed," said KS Hosalikar, deputy director general, western region, IMD.

Of the 10 locations in Mumbai, Navi Mumbai was the most polluted with an AQI of 349 (very poor), followed by Borivli at 320 (very poor), Andheri 311 (very poor), Bandra Kurla Complex 309 (very poor), and Mazgaon 303 (very poor).

While Worli recorded the cleanest air in the city at 116 (moderate), remaining locations were either in the poor or moderate categories. He added that moisture levels were high during the day, which was allowing the hazy conditions to continue.

Mumbai recorded 95% humidity on Sunday morning that fell to 84% by the evening. While day temperature was a degree Celsius above normal, the night temperature was almost 2 degrees Celsius above normal.

The weather bureau has issued a forecast for mist or fog likely to occur on Monday morning.

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## Did air pollution cause a deadly Chinese landslide?

*Date: 12-Dec-2017 Source: Science*



Air pollution in China has led to higher rates of asthma, heart disease, and type 2 diabetes, and—according to *The Lancet*—it contributed to 1.1 million premature deaths in 2015 alone. But now researchers think they have found an unanticipated risk from air pollution that can kill instantly: landslides. A new study suggests that acid rain from pollutants from burning coal can slowly but inexorably weaken certain layers of rock underlying mountain slopes to the point of failure.

The new work is “thought provoking,” says geologist Alison Duvall of the University of Washington in Seattle, who was not involved with the study. “It’s opening our eyes to something we really should be considering.”

Landslides typically occur when an outside force—like rainfall or an earthquake—destabilizes the layers of rock and soil that make up a mountainside. Until then, friction holds the layers together; how strongly they cling to one another depends on the materials they are made of. But when the shaking of an earthquake or the lubrication—or weight—of rainfall lowers the friction between the layers, gravity takes over, and the affected area turns into a sliding zone.

The 2009 Jiweishan landslide in southwestern China, which killed 74 people and injured eight, had no clear trigger—no recent earthquake tremors or heavy rainfalls. But a pair of geoengineers suspected something else was in play: a slow but progressive change within a specific rock layer that loosened the mountain’s slope until it gave way. The culprit was none other than acid rain, which altered the chemical composition of the rock layer and made it more slippery, they report in the 1 January 2018 issue of *Earth and Planetary Science Letters*.

The source of that rain, say the researchers, was coal combustion—the main source of power in southwestern China. Burning coal releases sulfur dioxide, nitrogen dioxide, and other pollutants into the atmosphere. In rainwater, sulfur dioxide and nitrogen dioxide convert to sulfuric acid and nitric acid, which increase the acidity of rainwater. “Acid rain” is anything with a pH of 5 or below, and normal rainfall has a pH of 5.6. Between 1986 and 2014, the average pH of rainfall for the nearby city of Chongqing, China, varied between 4.3 and 5, weather records reveal.

“When the idea came to us, we surprised ourselves,” says study co-author Ming Zhang, an engineering geologist at the China University of Geosciences in Wuhan. To find out whether acid rain was indeed the problem, the team focused on one problematic sliding layer in the Jiweishan avalanche: a thin bed of black shale, which contains slippery clay minerals such as talc, in addition to fine organic material and calcite, which helps cement the shale together. If acid rain dissolved the calcite, the team reasoned, slippery talc would be the main mineral left behind.

In a simple laboratory experiment, they took a sample of black shale from the landslide site and immersed it in an acid bath with a pH of 3, a level more acidic than the rain to accelerate the test. As expected, the acid dissolved the calcite, leaving nothing but a weakened black sponge full of micropores. Acidic water reached the shale layer by percolating through the overlying limestone, the researchers suggest, aided by cracks created by mining operations.

But a second effect within the sliding layer may have played a bigger role. The acid rain supplied extra oxygen and nutrients, including nitrogen, potassium, and sulfur, which could have fertilized microorganisms living inside the shale. A DNA test on a shale sample revealed hundreds of genera of microorganisms, including ones capable of decomposing organic materials within the shale and weakening it. If these microorganisms were sufficiently fertilized, they could eat the organic materials at a faster rate. The same bacteria almost certainly were present in the shale before the avalanche, but heat from the slide erased the DNA signal of the existing microorganisms, says co-author Mauri McSaveney, an emeritus engineering geomorphologist at GNS Science in Lower Hutt, New Zealand.

“It’s an interesting and plausible hypothesis,” says geochemist Richard April of Colgate University in Hamilton, New York, who was not involved with the study. But he points out that naturally acidic rainwater has steadily chipped away at slopes for thousands of years, and that it would be difficult to imagine how acid rain could cause such accelerated weathering in just a few decades.

Zhang plans to collect more evidence in other regions around the world with the same geological and atmospheric settings to prove his hypothesis more directly. If his research holds, he says, this new factor could contribute to landslides in parts of the United States, Europe, and Asia.

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## **SC asks Centre to notify air pollution control plan within two weeks; CSE welcomes ruling**

*Date: 13-Dec-2017 Source: Down to Earth*



In a notable ruling, the Supreme Court bench of Justices Madan B Lokur and Deepak Gupta has directed the Union Ministry of Environment, Forests and Climate Change (MoEF&CC) to notify the comprehensive action plan for Delhi and National Capital region of Delhi (NCR) within two weeks. Centre for Science and Environment (CSE) has welcomed the ruling.

The MoEF&CC has two weeks to finalise the timeline of each action point in the plan with the Environment Pollution (Prevention and Control)

Authority (EPCA). “This is the first ever comprehensive action plan that has been adopted officially to mandate time-bound short, medium and long-term measures to clean up the air of Delhi and NCR with a compliance strategy. This also helps create a template of action for all other cities of India,” says Sunita Narain, member of EPCA and director general of CSE.

“This is a very important step forward as according to the comprehensive action plan, Delhi and NCR will have to reduce particulate pollution by at least 74 per cent from the current level of annual average PM2.5 to be able to meet the clean air standards. Such a daunting challenge can be met only with time-bound action and strong compliance and deterrence framework,” says Anumita Roychowdhury, executive director, Research and Advocacy, CSE.

The CSE researchers say that once this plan is notified, the MoEF&CC and the concerned state governments will have to strengthen implementation. This plan is a comprehensive set of short and long term measures for systemic and transformative changes in the industry, power, transport and waste sectors. While the Graded Response Action Plan helps to respond to daily smog, the comprehensive plan will speed up systemic reforms on an ongoing basis, points out Roychowdhury.

Scope of ban on use of pet coke and furnace oil expanded to include their sale

In yet another momentous decision, the Supreme Court has expanded the scope of the current ban on use of pet coke and furnace oil in four states of Delhi, Haryana, Rajasthan and Uttar Pradesh to also include their sale. This helps to plug a crucial loophole which, if not addressed, can lead to leakages and diversion of these fuels.

Only the cement Industry has been allowed to use these fuels as feedstock—the Court has asked the ministry to amend its current notification within four weeks to allow usage as feedstock in cement plants. Responding to the special case of thermal power plants where furnace oil accounts for 0.03 per cent of the total fuel usage, the bench has allowed a time of one year to the plants to shift from furnace oil to light diesel oil.

For lime industries that have also sought exemption from the ban, the MoEF&CC has sought time to provide information on the size, extent and other details of the industry to the EPCA. The ministry would also notify the emissions standards and inform the court within four weeks.

The Supreme Court also heard the matter of ban on import of pet coke. The ministry has submitted to the Court that it is already considering such a ban, and is in advanced talks with the Directorate General of Foreign Trade. The Court has asked the ministry to also consult the various stakeholders and the EPCA before finalising such a ban. It may be noted that in 2016-17, India imported 14 million tonnes of pet coke which is more than the domestic production. “India is becoming a dumping ground of dirty fuels at a time when other countries such as the US and China are phasing out their use,” says Roychowdhury.

The Court has also remarked that given the current state of air pollution, the MoEF&CC must consider banning the use of dirty industrial fuels such as pet coke and furnace oil across India.

“It is unfortunate that the environment ministry, in its submission to the Supreme Court, has supported the position of the Union Ministry of Power to delay the implementation of new emissions standards for thermal power plants by seven years. These standards were notified in 2015 and were scheduled for implementation in December 2017. But now, the government has appealed for further extension to 2022. This is unacceptable,” says Sunita Narain.

In fact, it was submitted in the Court today that in an ongoing case in the National Green Tribunal the MoEF&CC has mentioned that the deadline of December 2017 will be adhered to. The Supreme Court bench will hear this matter in January.

“The Graded Response Action Plan has already helped to reduce the frequency and intensity of smog episode this winter in Delhi-NCR. In fact, CSE’s analysis shows that while in November 2016 as much as 54 per cent of the days were in severe category, this year in November it has reduced to 41 per cent. But for lasting and enduring results, the comprehensive action plan must get implemented with utmost urgency and stringency,” says Roychowdhury.

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## Air pollution can make kids behave badly

*Date: 14-Dec-2017 Source: Popular Science*

When wildfires started raging through southern California this month, Diana Younan warned her family members living in the path of the smoke to stay inside, as much as possible. Fires send air pollution levels soaring, filling the air with tiny particles. Younan, who studies environmental health at the Keck School of Medicine at the University of Southern California, knows the damage those tiny particles can do.

“It’s very well known that air pollution can affect respiratory function or health. But it’s not as well known that it can also affect the brain,” says Younan. Over the past decade, scientists started to note mounting evidence that suggests inhaling polluted air is toxic to the brain. That is slowly being linked to behavior, particularly for children and adolescents.

It’s similar, Younan says, to the way childhood exposure to lead—which used to be used in paint and gas—was eventually connected to behavioral problems. Some scientists even suspect that the decline in crime seen in the U.S. (and many nations) since the 1990s can be connected to the removal of lead from gasoline. “Lead is what pioneered the whole research on environmental risk factors,” she says.

In an analysis of data from nearly 700 children, Younan and her team found that kids in Los Angeles who were exposed to more air pollution over the course of adolescence were more likely to engage in delinquent behavior. The research was published today in the *Journal of Abnormal Psychology*. It also found that the same amount of pollution exposure had a stronger effect on behavior when kids had bad relationships with their parents, or when their mothers exhibited signs of depression.

The study used data gathered from kids over the course of almost a decade, starting when they were nine years old. Parents completed questionnaires on their children's behavior (which asked about things like lying and cheating, substance use, and vandalism) every few years. The research team then used data on daily measures of air pollution in the area to classify the amount of pollution each child was exposed to near their home over the course of the study.

Younan specifically looked at the pollution from particulate matter 2.5, tiny particles that are 30 times smaller than a human hair. “It’s not smog that people can see,” she says. “But if they can’t see it, it’s bad.” This type of pollution primarily comes from cars and traffic, Younan says.

The connection between pollution levels and delinquent behavior couldn't be explained away by differences in race, socioeconomic status, gender, or other social factors, Younan says, underscoring the driving effect of the particulate matter. But it’s important to note, she adds, that poorer people are more likely to live near a highway, or in more polluted areas, and have more exposure to the particles that can cause these adverse effects.

Younan pointed to a few weaknesses in the study—for example, it didn’t take noise pollution into account, and parents were only able to report on their child's behavior in the home, not during social activities or at school. She hopes that more studies can help validate the findings. “It’s such a new area of research,” she says.

Deborah Cory-Slechta, a professor of environmental medicine at the University of Rochester who wasn't involved in the new study, started her career by looking at lead exposure. But in the past few years, she's moved towards research on air pollution. At the beginning, she was skeptical that pollution could impact the brain. "But it was amazing what we started to find," Cory-Slechta says. "Everyone has been surprised, to say the least, at how dramatic some of these effects can be."

Cory-Slechta studies the effect of air pollution on animal models, and says that the behavioral changes she sees in those studies seem to match onto the type of delinquent behavior observed in Younan's longitudinal study. "Even at relatively low levels of exposure [in animals], we see changes in behavior," Cory-Slechta says. "Things like impulsivity, which can relate to delinquent behavior."

Pollution has a few potential paths into the brain. Particles inhaled into the lungs can travel into the blood, and eventually circulate up to the brain. Particulate matter can also cause stress in the lungs, which could cause the production of inflammatory molecules that then head to the brain. Pollution might also hit the brain directly, when people inhale polluted air through their noses, which are connected to a part of the brain called the olfactory bulb. That path, Cory-Slechta says, means the particles skip past the protection usually offered by the blood-brain barrier.

Particulate matter is often accompanied by metals, organic matter, or other contaminants, all of which can wreak havoc on the brain—particularly during critical developmental windows. "It's a physical response to pollution," Younan says. "It's damaging the brain."

When lead was removed from gas, crime rates went down in response, and Younan speculates that might be the case with air pollution, as well. "Over the past couple decades, air pollution has been decreasing and crime has been decreasing," she says. "It would be interesting to look at see if they're connected."

Research on air pollution and the brain has blossomed in the past five or so years, Cory-Slechta says, but the field is still new, and there's a lot of work left to be done. "In many ways, we're still at the beginning."

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## How air pollution affects pregnant women and their babies

*Date: 14-Dec-2017 Source: Times Now*



Washington DC: Many research studies have shown how air pollution impacts pregnancy, the adverse effects of air pollution on pregnant women and their unborn babies – and the results of each finding are deadly. Air pollution has been linked to various health problems. Among the prominent ones are respiratory problems - such as asthma, bronchitis, chronic obstructive pulmonary disease (COPD) – cardiovascular disease, stroke, etc.

While air pollution can affect everyone, it has the most

severe impact on pregnant women, children, babies, those with respiratory problems, and the elderly.

Now, adding weight to growing evidence of pollution's link to pregnancy, a new study suggests that exposure to air pollution before conception or even during the first month during pregnancy increases the risk of birth defects in children.

Although the increased risk is modest, the potential impact on a population basis is noteworthy because all pregnant women have some amount of exposure.

"The most susceptible time of exposure appears to be the one month before and after conception," says Emily DeFranco, senior author of the study.

"Public health efforts should continue to highlight the importance of minimizing population-level exposure to harmful particulate matter in the air."

To conduct the study published in *The Journal of Pediatrics*, the researchers used birth certificate data from the Ohio Department of Health and particulate matter data from the US Environmental Protection Agency's 57 monitoring stations throughout Ohio.

Dr DeFranco and her colleagues examined fine particulate matter, which is a significant health hazard because these tiny particles can deposit deep into the lower airways and air sacs within the lungs and enter the circulatory system.

Fine particulate matter is a mixture of extremely small particles and liquid droplets that get into the air and, once inhaled, can negatively affect many aspects of a person's health.

They linked the geographic coordinates of the mother's residence for each birth with the nearest monitoring station and calculated average exposures. They then estimated the association between abnormalities at birth and the mother's exposure to increased levels of fine particulate matter in the air during pregnancy.

Dr DeFranco says there are inherent limitations of observational studies such as this but that it provides a good foundation on which future studies can build. Birth defects affect three percent of all births in the United States.

But that's not all, air pollution can also take a toll on men's fertility. As per a recent study published in the journal *Occupational & Environmental Medicine*, men who regularly get exposed to air pollution may be at an increased risk of having poorer quality sperm. In the study, the team of scientists led by researchers from the Chinese University of Hong Kong found a strong association between PM2.5 exposure and abnormal sperm shape, which results in a spell of infertility for a 'significant number of couples'.

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## China has won battles against air pollution, but not the war

*Date: 14-Dec-2017 Source: The Economist*



AT NANYAWO elementary school in Hebei province, near Beijing, the temperature in early December fell below freezing, both outside and in. The teachers took to instructing the six-year-old children in the playground. At least outside it was sunny. The classrooms were unusable because the local government had dismantled the coal-fired boilers for environmental reasons, but not yet installed a replacement heating system. There have been several such incidents this winter in northern

China. In Linfen, in neighbouring Shanxi province, villagers say their coal-fired heaters have been taken away but the pipes linking them to the gas system have not arrived. A new slogan recently appeared on walls in the town: “If you burn coal, we’ll see you in the detention centre.”

The authorities in northern China have imposed emergency restrictions until mid-March to control air pollution, which spikes during the winter. Twenty-six cities plus Beijing and Tianjin (which count as provinces) had promised to replace heating systems that run on coal with ones using electricity or gas for 3m households this year. But they failed to complete the work on time, forcing a rare U-turn: they have allowed a certain amount of coal to be burned in places without any alternative. The government has also limited the output of iron, steel and aluminium smelters, mothballed many big construction projects—leaving cranes atop unfinished skyscrapers motionless against cornflower skies—and, in Beijing and its surroundings, created a new Environmental Protection Agency, with tough enforcement powers.

All countries use a mixture of carrots and sticks in their environmental policies. China does, too (next year it is planning to open the world’s biggest carbon market, for instance). But its sticks—that is, outright bans on polluting activities—are unusually stout. That makes it a good place to judge the impact of command-and-control measures to rein in pollution, as opposed to subsidies or taxes. So far the lesson seems to be that bans work, but only when conditions are right.

Fumes, health problems, action

Beijing’s emergency measures come on top of an even more sweeping set of prohibitions called the national action plan on air pollution, introduced in 2013. (China loves national action plans; it has lots.) This imposed a nationwide cap on coal use, as well as provincial caps requiring Beijing, for instance, to reduce coal consumption by 50% over five years and Tianjin to cut it by 19%. The plan banned new coal-burning facilities (though plants already in the works were allowed) and sped up the use of filters and scrubbers.

The plan seems to be working. The concentration of pollutants with a diameter of 2.5 microns or less (PM 2.5—the most deadly kind) fell from over 100 micrograms per cubic metre in Beijing in 2012-13, at the time of the city’s notorious “airpocalypse”, to around 75 in 2016. That is comparable to London’s clean-

up after the “pea soup” fogs of the 1950s, but quicker. It translated, according to Greenpeace, an environmental pressure group, into 160,000 avoided premature deaths in 2016.

But in 2017 the improvement in PM 2.5 concentrations stopped and the level flattened out. This winter has seen welcome episodes of clear skies but also more days than in 2016 of the worst, choking smog, when daily PM 2.5 levels rise above 300. The annual average level remains about 25% above the target set in the national action plan, and well above the levels that pertain in big Western cities—hence the emergency measures.

Why did bans work at first, then stumble? There are several reasons. First, the measures were more effective when economic change was making China greener anyway, as it was in 2013-16, when the composition of GDP shifted away from heavy industry and infrastructure towards services. But in 2016 the government grew alarmed about an economic slowdown and allowed infrastructure spending to rise again (infrastructure is pollution-intensive because of the amount of cement and steel used in construction). When this happened, the command-and-control measures were unable to do more than stop emissions rising.

Second, such measures only change polluters’ behaviour as long as they remain permanently in force. Many Chinese steel mills and coalmines (especially small privately-owned ones) ramped up output in the months before the curbs went into effect and did the same again when controls were eased. The stop-start character of the bans made them less effective.

Third, banning things probably works better in China than it would in most places. Many of the biggest polluters are state-owned enterprises, so the state can more easily control them. An authoritarian government is also able to issue draconian orders—sometimes far too drastic, as the shivering children of Hebei can testify. The efforts of Xi Jinping, the president, to make local leaders obey the dictates of the central government seem to have turned the former passive resistance at the lower levels of the bureaucracy into overenthusiastic compliance.

China has two other advantages. More than half its pollution comes from coal-fired power stations, which means that by concentrating on coal, the government can do more than in India, say, where the burning of stubble after harvest and other sorts of pollution are big problems. Unlike most developing countries, China has invested a lot in monitoring and measuring, too.

Last, command-and-control suits a country that does not need to justify the costs. The Clean Air Alliance of China estimated in 2015 that the investment cost of the national action plan in Beijing, Tianjin and Hebei provinces alone would be 250bn yuan (\$38bn). That does not include the opportunity cost of suspending construction projects for months on end or shutting down some smelters.

But big environmental controls of every kind are expensive. Germany’s Energiewende, for example, which uses subsidies to encourage greener fuels, cost €60bn (\$66bn) in 2015 and German carbon emissions have not fallen since 2010. At least in China airborne pollutants fell for five years and the benefits in terms of deaths avoided were real. Now the government needs to show that these gains can continue for more than a few years—without leaving children freezing outside.

## Juvenile delinquency could be a result of air pollution: study

*Date: 15-Dec-2017 Source: Down To Earth*



A new study conducted by researchers at the Keck School of Medicine of the University of Southern California has linked the incidence of teenage delinquency with the rise in air pollution levels.

“Studies are beginning to show exposure to various air pollutants causes inflammation in the brain. PM2.5 is particularly harmful to developing brains because it can damage brain structure and neural networks and, as our study suggests, influence adolescent behaviors,” said Diana Younan, a preventive medicine research associate

and the lead author of the paper.

Published Wednesday in the *Journal of Abnormal Psychology*, the study was conducted through a test administered to nine to 18-years-old. A checklist was prepared to assess the children’s behaviours over the years. This checklist was distributed to the parents who filled these at various intervals.

“It is widely recognised that ambient air pollution is detrimental to the respiratory and cardiovascular health of young and old alike. But in recent years, scientists have come to acknowledge the negative impact of air pollution on human brains and behaviors,” said Jiu-Chiuan Chen, an associate professor of preventive medicine at the Keck School of Medicine and senior author of the study.

The study tracked 682 children from Greater Los Angeles for nine years, beginning when they were aged nine. The parent’s responses were recorded four times at intervals through the checklist, which assessed if their child engaged in lying, cheating, truancy, stealing, vandalism, arson, or substance abuse among other rule-breaking behaviours.

“Previous studies have shown that early exposure to lead disrupts brain development and increases aggressive behavior and juvenile delinquency,” Younan said. “Both lead and PM2.5 are environmental factors that we can clean up through a concerted intervention effort and policy change,” she said. She further added that it is possible that growing up in places with unhealthy levels of small particles outdoors may have similar negative behavioral outcomes, although more research is needed to confirm this.

The study identified higher air pollution levels near freeways and in neighbourhoods with limited green space. “Poor people, unfortunately, are more likely to live in urban areas in less than ideal neighborhoods,” said Younan. She added that many affordable housing developments are built near freeways. This close proximity to freeways causes health problems, such as asthma and can perhaps alters teenagers' brain structures. This makes them more likely to engage in delinquent behaviour.

Underlining the shortcomings, the researchers said they were unable to explore early-life exposure effects because ambient PM 2.5 data was not collected until 1999, when subjects were already 9 to 10-years-old. Prenatal and early-childhood are critical exposure periods, which may impart much stronger neurotoxic

effects. Although their analysis did not show an interaction between PM2.5 and age, the possibility of exposure effect on early-life trajectories before age nine cannot be ruled out.

Can parents protect their children?

Youhan said that a bad parent-child relationship causes a stressful family environment and if that carries on for too long, the teenager could be in a chronic state of stress. This chronic stress makes teens more vulnerable to the effects of exposure to small particles. “Many scientists suspect PM 2.5 causes inflammation in the brain or somehow travels directly into the brain and messes with neural network connections, resulting in the observed bad behaviors,” added Youhan.

Youhan suggests that if you live in an area with high air pollution, such as a freeway or in a neighbourhood with little greenery, try to avoid being outside so much and keep windows closed as much as possible, when the ambient PM2.5 levels are high. “Try to compensate for air pollution by having a good indoor environment and healthy family dynamics,” said Youhan.

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## **Acid rain caused by air pollution in China ‘may be causing fatal landslides’, say scientists**

*Date: 15-Dec-2017 Source: Independent*



Air pollution is such a serious problem in China that it may be triggering landslides, a study suggests.

Poor air quality is linked to around 4,000 deaths there every day but in a new study, geoscientists found there was a previously overlooked threat resulting from pollution.

“The pollutants may also be causing fatal landslides,” wrote Dr Ming Zhang and Dr Mauri McSaveney, the authors of a new study published in the journal *Earth and Planetary Science Letters*.

The scientists suggest acid rain resulting from air pollution could weaken layers of rock and trigger landslides.

Rain can become acidic when gases released by burning coal dissolve in it, forming sulphuric acid and nitric acid.

Due in part to its extensive mountains, China is a particularly landslide-prone country.

These natural disasters can sometimes occur when an earthquake destabilises layers of rock in mountainous regions, but there is still plenty of speculation about other mechanisms that trigger them.



The Jiweishan landslide in 2009 was particularly deadly, claiming the lives of 74 people, and for their study the researchers focused on the circumstances surrounding this event.

They concluded acid rain was able to reach layers of shale rock through cracks resulting from mining operations, and this weakened the mountain's composition.

In laboratory experiments, Dr Zhang and Dr McSaveney found that placing shale from the Jiweishan landslide site in acid dissolved a mineral in the rock called calcite.

This left the rock spongy and weak, and with the calcite gone the primary remaining mineral was soft, slippery talc.

If this happened in a mountain, this process could have led to a large mass of rock sliding off a weakened, slippery layer.

Furthermore, the scientists suggested acid rain is capable of effectively "fertilising" the microbes living in the rock, allowing them to grow in number and break down the rock's structure.

"It's not outlandish, what they are proposing," said Dr Andy Gibson, a researcher at the University of Portsmouth who focuses on landslides in China and was not involved in the study.

"We know that acid mine drainage has probably affected stability in some coal mines in the UK, historically," he said.

However, Dr Gibson said while the acid rain could play a role in landslide initiation, this work does not provide causal evidence for it.

Dr Georgina Bennett, a researcher at the University of East Anglia who looks at how landslides respond to climate change, agreed the work presented an intriguing idea.

"Air pollution is not something that I had considered before, so it's definitely interesting," she said.

Dr Bennett said the idea sounds feasible, but even if acid rain was involved in the Jiweishan landslide it is likely to be one of many reasons.

Ascertaining the cause of landslides is difficult to do in a laboratory, said Dr Gibson, as scientists need data from actual disasters.

"The problem we have in applied earth sciences is that we can't simulate this kind of failure in a laboratory, we need natural case studies in order to build up our understanding," he said.

## Delhi pollution: CPCB to install 49 air quality monitoring stations across capital, NCR

*Date: 16-Dec-2017 Source: First Post*



New Delhi: The National Capital Region (NCR), including Delhi, will have total 127 pollution monitoring stations by March 2018 against the present 78, CPCB officials said on Friday.

Central Pollution Control Board (CPCB) officials also said that their target is to increase the total cities across nation, where the air quality is monitored from 53 at the present to 100.

"This will be done very soon," CPCB divisional head D Saha said.

While the national capital already has good number of air quality monitoring stations, more monitoring in the surrounding regions will enhance the understanding of the issue of air pollution and help with exploring more data to tackle it.

At present, Delhi has 10 manual monitoring stations and 38 monitoring stations, while Haryana has only two manual and four real time, Rajasthan has nine manual and two real time and Uttar Pradesh has 10 manual and three real time monitoring stations.

"Haryana is set to get 22 manual stations and 12 real time monitoring stations while Uttar Pradesh will get 10 new manual monitoring stations and three new real time stations," Saha said.

He however added that Haryana has already missed the deadline of procurement, however the new stations will be up and working by March 2018.

The monitoring stations will be focused on the air-pollution parameters that includes particulate matter (PM2.5 and PM10, or particles with diameter less than 2.5 and 10 micrometers), nitrogen dioxide, carbon monoxide, sulphur dioxides and Ozone.

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## NGT again rejects Delhi govt's plea for relaxations in odd-even scheme

*Date: 16-Dec-2017 Source: Hindustan Times*

In a setback for the Delhi government, the National Green Tribunal on Friday dismissed the state government's plea for exemptions, should the odd-even road rationing measure needs to be rolled out when air quality breaches the severe level in the national Capital.



“It cannot be disputed that emissions from two-wheelers are also a major source of pollution. The exemptions sought would defeat the entire purpose of improving the air quality of Delhi,” said a bench headed by NGT chairperson Justice Swatanter Kumar before rejecting the plea.

When air pollution had turned severe for nearly seven days in November this year and the AAP government had proposed to roll out the road

rationing measure, the NGT had refused to allow exemption to women, two-wheelers and government servants.

The government then backtracked on its proposal of rolling out the odd-even, citing women’s safety. It, however, filed a petition before the NGT to review the direction.

Earlier this month, when the NGT asked the government to clear its stand on odd-even, the government claimed that the car rationing scheme would be rolled out as per directions of the NGT. The following day, however, the government made a U-turn, saying that a petition has been filed to review the NGT’s earlier directions on odd-even.

“We had filed a plea before the NGT to review the previous direction. It has been rejected. This means the government, if it wants to roll out the odd-even plan, will have to go ahead without any exemptions,” said Tarunvir Singh Khehar, the government’s counsel after Friday’s hearing.

The odd-even scheme was first implemented in the city in January and the second in April last year. The scheme to fight the Capital’s toxic air was largely inspired by the Beijing model, which was introduced ahead of the Summer Olympics in 2008.

The NGT was earlier informed by the CPCB and DPCC that nearly 30% of the vehicular emissions come from two-wheelers in Delhi. Of Delhi’s total vehicular population of over 10 million, two-wheelers constitute around 6.3 million.

“It is an undisputed fact before us that there are over 60 lakh two-wheelers in Delhi. The number also consists of two-wheelers which are very old and their emissions are beyond prescribed limits,” the NGT observed on Friday.

The bench instead questioned why the state government has failed to buy 2,000 buses as directed by the Supreme Court.

The tribunal had on December 6 slammed the AAP government and the neighbouring states over their action plan on ways to deal with severe air pollution in the city and directed them to file a detailed document to tackle the problem.

It had observed that air pollution was never at “normal level” in the national Capital and directed the neighbouring states of Punjab, Haryana, UP and Rajasthan to file the action plan afresh.

## Heavy air pollution shuts schools in Iran

Date: 17-Dec-2017 Source: Mail Online



Iran shut schools around Tehran Sunday and cancelled sporting events as thick smog blanketed the capital despite curbs on road traffic and industrial activity.

The authorities shuttered primary schools in the province of Tehran, home to 14 million residents, before ordering them to remain closed on Monday.

All sports competitions set for Monday were also cancelled, as restrictions on road traffic were stepped up, including a ban on trucks.

Airborne concentration of fine particles (PM2.5) hit 185 microgrammes per cubic metre in the south of Tehran and 174 in its centre on Sunday morning, local authorities said.

That is far above the World Health Organization recommended maximum of 25 microgrammes per m<sup>3</sup> over a 24-hour period.

The microscopic particles lodge deep in the lungs and are harmful to human health.

"Tehran is suffocating (but) hundreds of thousands of cars are built each year," said Hossein, a man in his sixties who did not give his surname.

"They're building in the mountains, they're destroying our forests. We don't want any more oil, we don't want any more petrol," he added.

Every year, Iran's sprawling capital suffers some of the worst pollution in the world when cool temperatures cause an effect known as "temperature inversion".

The phenomenon creates a layer of warm air above the city that traps pollution from its more than eight million cars and motorbikes.

- 'Not doing anything' -

Authorities also ordered mines and cement factories to close, and called on the elderly, children, pregnant women and people with heart problems to stay indoors.

Residents who ventured out wore face masks while others chose to remain at home.

Ali Ebrahimian, a retiree, told AFP he only stepped outside to sort out "an urgent matter".

Fatemeh Assadi, a woman in her sixties, accused the authorities of failing to prevent the pollution.

"The government's not doing anything," she said.

Iran is expected to produce 1.5 million new vehicles by the end of this Persian year which ends in March, according to official figures, in a country where some 20 million cars and trucks are already on the roads.

In October, Tehran mayor Mohammad Ali Najafi said he wanted to develop public transport and help reduce traffic in the capital, which lies at between 1,400 and 1,800 metres above sea level.

But he warned that a solution would take time.

In the northwestern cities of Tabriz and Urmia, schools remained closed for the second day straight on Sunday, official news agency IRNA said.

While atmospheric pollution in Iran is not as severe as in India or China, it endangers the health of its residents.

In 2014, almost 400 people were hospitalised with heart and respiratory problems caused by pollution in Tehran. Nearly 1,500 others required treatment.

The health ministry estimated that pollution in 2012 contributed to the premature deaths of 4,500 people in Tehran and about 80,000 across the country.

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## China aims to eradicate air pollution until 2021 with clean heating plan

*Date: 17-Dec-2017 Source: Daily Sabah*



China announced on Sunday a five-year plan to convert northern Chinese cities to clean heating during the winter through to 2021, state media reported, amid a deepening heating crisis.

An unprecedented government campaign to switch millions of households and thousands of businesses from coal to natural gas in northern China this winter has backfired.

Severe natural gas shortages have sent prices soaring nationwide, hitting businesses and residents across China's industrial heartland.

The plan was jointly announced by 10 government agencies, including the state planning National Development and Reform Commission (NDRC) and the National Energy Administration, the online edition of Securities Times quoted the China Energy News as saying.

The plan covers 2017 through to 2021.

The government has made "concrete arrangements" regarding geothermal heating, biomass heating, solar heating, gas heating, electric heating, industrial waste heating, and clean coal-fired central heating, the Securities Times said.

Half of northern China would have converted to clean heating by 2019, reducing bulk coal burning by 74 million tons, it said.

It gave no further details.

Factories are closing or operating at reduced capacity, businesses are seeing profits shrink as supply chains are disrupted, and residents are struggling to keep warm in sub-zero temperatures without adequate heating at home or in classrooms, according to interviews conducted by Reuters across the region this month.

The campaign to convert coal to gas is part of long-running government efforts to clean the region's toxic air after decades of unbridled economic growth.

On Saturday, PetroChina began diverting nearly 7 million cubic meters of natural gas from the southern province of Guangdong to icy northern China to ease gas shortages, state television said on Sunday.

Chinese oil and gas major CNOOC had also started supplying some 3 million to 5 million cubic meters of natural gas per day from the South China Sea and its liquefied natural gas (LNG) terminal in Zhuhai city to fill the gap in Guangdong, it said.

The gas swap was organized by the NDRC.

Gas shortages also spread to Changsha city, capital of the southern province of Hunan. Households that have bought 1,500 cubic meters or more this year were limited to buying 15 cubic meters per day from Dec. 15 onwards, state television said.

The gas shortage in Changsha could exceed 60 million cubic meters this winter, it said.

Many in China have been shivering more than usual this winter as authorities have curbed coal heating to fight pollution and the switch to natural gas has been plagued by shortages.

In northern Hebei province, even a hospital and schools have struggled to heat their frigid facilities, prompting some teachers to hold classes outdoors in the sunshine.

"Of course we miss the coal," said a woman surnamed Qin, who had invited neighbors into her grocery store in Niezhuang village -- about 150 kilometers (93 miles) south of Beijing -- to play mahjong, a traditional Chinese game.

Gas power is "completely unpredictable," Qin said. "One moment we have it, the next moment there's none. And then it's freezing."

The environment ministry has imposed tough anti-pollution targets on 28 cities around Beijing. At least three million homes must switch from coal to gas or electric heating.

In Niezhuang, all the coal stoves have been destroyed, according to Qin. Some of their dismantled pieces lay scattered in people's backyards.

"Coal was nice because it allowed us to stay warm and save money," the store owner said.

Sales of the fossil fuel traditionally used in the Chinese countryside was banned in this district of Hebei in the summer.

Niezhuang is part of the Baoding municipality, one of 18 districts in Hebei with a "zero coal" designation, but the transition to gas has been difficult.

Thin yellow pipes now snake along the walls of the homes in the village, spanning alleyways and shifting in the wind. They are marked by a sign: "Caution: Gas Pipes."

The gas pipes came into operation in November.

The heating is inconsistent, villagers said, and the bills costly. According to Qin, a family must spend at least 5,000 yuan (\$750) over the winter -- compared with 2,000 yuan (\$300) for coal -- not including the subsidized price of the gas heater that must be purchased.

In some villages to the north of Baoding, households were cut off from coal without even being connected to gas heating, Caixin magazine reported.

"There was a clear lack of communication and planning," Greenpeace energy campaigner Huang Wei told AFP, noting that authorities had months to prepare for the winter.

One local government waited until October, right before the cold weather started, to begin the bidding process for the installation of a gas pipeline, Huang said.

Officials have been under pressure to deliver results in the fight against smog, which has become a health hazard across swathes of China.

"The year-end evaluation of many local officials is now closely related to the environment and air quality. So this year, the coal-to-gas (policy) has been carried out more intensely," IHS Market analyst Zhou Xizhou said.

In Baoding, long one of the most polluted industrial cities in the country, a resident surnamed Wang beamed up at the blue sky and said he did not miss the coal.

"It was incredibly dirty and polluting," he said from the courtyard of his home where has been receiving gas since last year.

But the surge in gas demand has challenged suppliers.

On November 28, Hebei warned that up to 20 percent of its gas needs were not met and that supply was being rationed.

In Wang's neighborhood, residential complexes and the Hebei University-affiliated hospital went virtually unheated.

The hospital, which serves 3,000 patients, received only about 13 percent of the gas needed to function, the facility said.



The university faced a similar situation, as dormitories were transformed into "ice boxes" for two weeks, one student said.

Schools in Baoding's suburbs were also left without heating as they lacked an alternative to coal burners.

In response to the uproar, the environment ministry reauthorized coal in areas not equipped with alternative heating in early December.

But more challenges loom with Chinese gas terminals saturated, hindering imports as the country's storage capacity is limited, said Zhou, the analyst.

"It's hard for the system to manage seasonal peaks," Zhou said.

Meanwhile people like Sun, a farmer in Hebei, are left with gas bills that are three times higher than coal, making it "unbearable for ordinary folks".

Even in the name of blue skies, Sun said, "sacrifice is difficult".

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## Air Pollution harms Infants' Brains

*Date: 17-Dec-2017 Source: Clean Malaysia*



Pollution kills and debilitates. And of all forms of pollution, air pollution is perhaps the most insidious, for breathe air we must throughout our lives and if the air is polluted we have no choice but to breathe in all that invisible pollution along with the oxygen that we need to survive.

Being exposed to high levels of airborne pollutants has an adverse effect on our lives from cradle to the grave. Literally from the cradle. According to UNICEF, an agency of the United Nations, toxic smog in overpopulated metropolises with persistent miasmas of bad air can harm the developing brain of newborns and infants. In countries like India and China, where air pollution tends to be especially acute in certain cities, millions of infants are affected.

“Not only do pollutants harm babies’ developing lungs – they can permanently damage their developing brains – and, thus, their futures,” said UNICEF’s executive director Anthony Lake. “As more and more of the world urbanises, and without adequate protection and pollution reduction measures, more children will be at risk in the years to come,” he added.

Scientists say that the ultrafine particles from vehicle exhaust fumes and industrial discharges can damage the fine membrane that protects the surface of the brain from toxins. This can cause Alzheimer’s and Parkinson’s in older people, while in the young it can impair cognitive functions, harming verbal and

non-verbal intelligence and reducing the memory of young children exposed to high levels on air pollutants on a constant basis. In addition, an estimated 1.7 million children die from air pollution-related causes, including childhood asthma and other respiratory ailments.

Should parents be worried in Malaysia? Certainly. Whereas levels of air pollution in Kuala Lumpur and other Malaysian cities are relatively low, as compared to cities like Beijing and New Delhi, they are often higher than what is deemed safe by experts. According to Nielsen, Malaysia has the third highest per capita rate of car ownership with around 93% of households owning at least one car. Then of course periodically vast clouds of toxic fumes from burning forests in Indonesia cover much of the country in a thick soup of airborne pollutants.

So what to do? You should keep children safe by closing doors and windows when pollution levels are high outdoors. You can install window mesh screens that can help filter out particles and pollens. And you take children regularly to city parks, leafy streets and trips in the countryside for breaths of fresh air.

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## Mumbai air quality turns ‘poor’, is worse than Delhi

*Date: 17-Dec-2017 Source: Hindustan Times*



For the first time this season and second time in a year, air pollution levels in Mumbai were worse than Delhi on Sunday.

The pollutant measuring indicator - air quality index (AQI) - for Mumbai was 244 (classified as poor), while Delhi recorded 204 during the day that further fell to 183 (moderate) by the evening, according to the System of Air Quality Weather Forecasting and Research (SAFAR). Pune and

Ahmedabad recorded ‘moderate’ air quality on Sunday.

SAFAR predicted an AQI of 254 (poor) for Monday.

On December 10, Mumbai recorded an AQI of 240; it was 232 on November 29. On October 19 (Diwali), Mumbai had recorded poor AQI levels at 204 and 316 (very poor) on October 20, the worst this year. On March 13 this year, Mumbai had recorded an AQI of 312 (very poor) while Delhi recorded 105 (moderate).

AQI levels for PM2.5 pollutant - small pollutant particles that can easily enter the lungs and cause ailments - between 0-50 is good, 51-100 is satisfactory, 101-200 is moderate, 201-300 is poor, 301-400 is very poor, and 400 above is severe.

Researchers said it was a typical scenario seen during this time of the year when these two cities are compared. “In spite of cold weather in Delhi, the wind speed is quite high, which dispersed majority of the pollutants. However, for Mumbai, temperatures are not low but owing high humidity and negligible

wind speed, pollutants are not being dispersed from the city's air. This is leading to haze formation during early morning hours and during the evening," said Gufran Beig, project director, SAFAR.

"People sensitive to air pollution may experience health effects and the general public is less likely to be affected," read the health statement. The concentration of PM<sub>2.5</sub> was almost twice the safe limit. As against safe limit of 60 microgrammes per cubic metre ( $\mu\text{g}/\text{m}^3$ ), Mumbai recorded 109 $\mu\text{g}/\text{m}^3$ . For PM<sub>10</sub> (slightly larger, coarser particles), Mumbai recorded 188  $\mu\text{g}/\text{m}^3$  as against 100  $\mu\text{g}/\text{m}^3$  as the safe limit.

Beig added that Mumbai can expect current pollution levels to continue till Tuesday. "If wind speed picks up, then Mumbai can expect 'moderate' air quality from Wednesday onwards," he said.

HT had reported in September that Mumbai had higher tinier, deadly pollutant particles in winter 2016 than Delhi. Ultrafine airborne particulate matter smaller than one micrometer (PM<sub>1</sub>) was 45 microgrammes per cubic metre ( $\mu\text{g}/\text{m}^3$ ) in Mumbai during December 2016 as against 42 $\mu\text{g}/\text{m}^3$  in Delhi, SAFAR had found.

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## How to reduce air pollution effectively

*Date: 18-Dec-2017 Source: The Daily Star*



Ensuring clean air is one of the major environmental challenges in Bangladesh's larger cities. Although air quality management is a key component of environmental issues, its mismanagement may have a huge adverse impact on the overall socioeconomic development of a country. Recent evidence shows that air quality is deteriorating in many parts of the world, with low- and middle-income countries especially susceptible to the danger.

According to the World Health Organization (WHO), about 98 percent cities of low- and middle-income countries do not meet the WHO air quality guidelines, while this percentage decreases to 56 percent in high-income countries. However, in a study on the air quality standards of 3,000 cities in 103 countries, some major Bangladeshi cities like Dhaka, Narayanganj, Gazipur, Chittagong, Barisal, Khulna and Sylhet were placed at the top of the list. In general, the air quality of these cities has a high impact on public health, increasing chances of stroke, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma.

To understand the importance of air quality management in the SDGs (Sustainable Development Goals), we need to take note of two particular goals—SDG 3 and SDG 11—in which air pollution is mentioned specifically. But the issue has many drivers and relevant sustainability impacts connecting almost 14 out of the 17 SDGs set by the United Nations. These goals and related targets and indicators are connected with several drivers, while the best outcome of ensuring clean air can be achieved through an integrated approach of air quality management. Otherwise, the dream behind the SDGs will remain unfulfilled.

In our cities, air pollution usually becomes most severe in the dry season (winter). If the city air pollution level is considered between summer and winter, then the control strategy should be separated from the overall management policy. The types of local pollutants and seasonal public health status could be assessed for effective air quality management. However, a control mechanism can be suggested in the context of our country, which requires that air-polluted cities are continuously evaluated and effective local measures are implemented. In general, there should be a strategy covering all aspects of air quality management in all the cities. The country's clean air act, for example, could be used based on multi-criteria evaluation conducted by multi-stakeholders.

Determining the priority pollutants helps develop the strategy for air quality control. In the context of location-specific pollutants, health problems arising from poor air quality will be measured to form a location-specific solution. For example, context-specific control system can be developed in areas where they are industrial zones, waste disposal sites, construction sites, marketplaces, etc. So, it's very important to identify the sources of air pollutants.

In our cities, we face an increasing level of dust pollutants around us, which is gradually becoming a serious health hazard with other pollutants in the air. So, developing a cost-effective air control strategy must involve incorporating control measures based on minimising the source points of dust as well. Other major source points—brick kilns, solid waste, construction (road and building mainly), and transportation system—should also be kept in mind considering the SDG targets and indicators.

On a personal level, citizens can also help reduce air pollution. They can, for example, drive less or wisely (e.g. avoiding unnecessary driving, using fuel-efficient vehicles and public transports, walking, cycling, etc.), promote home deliveries (e.g. online selling, buying, etc.), promote plantation (e.g. growing trees, gardening, etc.), and also ensure waste disposal in a sustainable manner (e.g. disposing waste in the way advised by waste removal experts).

However, an integrated system has to be developed to get better response in city air quality management. Under the sustainable framework, an air management system must satisfy three broad categories of requirements—environmental, engineering and economic sustainability. We have many constructive policies, rules and regulations for air quality management, but we lack enough programmes of compliance and enforcement, which not only reduce air pollution, but also help the owners of source points get information required for their control mechanism and also to further develop and update their system.

Usually, our policymakers take a conventional regulatory approach to the air control system. This system mainly sets specific standards for polluters in the industrial sectors. This may be a good step for one sector only, but the government should expand the mechanism to target all types of polluters and may offer economic incentives to reduce pollution at all levels of the points of origin. Though, currently, a limited incentive mechanism exists, but it can be expanded to include various programmes and events such as emission-related tax incentives, subsidies for waste treatment, deposit refund systems for disposal of different types of waste, etc.

Finally, our control strategy relies heavily on the regulatory authorities functioning within the SDG framework when we should, actually, encourage greater participation of the public in the system. With proper guidance, knowledge and motivation, the public can be made a crucial part of the air quality management.

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## Delhi Government Mulling Over Anti-Smog Guns To Fight Air Pollution

*Date: 18-Dec-2017 Source: NDTV*



NEW DELHI: To deal with haze during winters, the Delhi government is mulling over using anti-smog guns to bring down pollution level in the national capital, officials said.

As per the plan, a trial run of anti-smog gun will be held at east Delhi's Anand Vihar ISBT on December 20.

Environment Secretary Anil Kumar Singh today apprised Lt Governor Anil Baijal of the trial run of

anti-smog gun in a meeting to review the detailed action plan of agencies and stakeholders on measures to combat air pollution.

In the meeting, the Lt Governor directed authorities to ensure management of municipal solid waste completely in a time frame of 16 months. "The plan should cover a time-frame not exceeding 16 months and also indicate the exact requirement of funds. The chief secretary has been asked to coordinate and finalise it," the L-G office said in a statement.

Meanwhile, Deputy Chief Minister Manish Sisodia and Environment Minister Imran Hussain reviewed the trial of the fog cannon to control dust particulate matter at the Delhi Secretariat today.

Mr Baijal also directed all three corporations to ensure that no methane fires occur at the three landfill sites and for this, help should be sought from experts of the Science & Technology Ministry, the statement read.

The L-G also asked all three municipal commissioners to procure the requisite mechanical sweepers, litter pickers, water sprinklers within a stipulated time.

In the meeting, the Lt Governor was informed that Badarpur Thermal Power Station will be permanently closed by July 2018.

"It was also informed that at present over 800 acres ash pond is in O Zone and NHAI is lifting 600 MT ash daily. The L-G stressed for optimal future utilisation of this huge land parcel. Apart from this, measures to provision full gas for Bawana plant were also discussed," the statement stated.

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## Scientists Discover Unexpected Side Effect to Cleaning Up Urban Air

*Date: 18-Dec-2017 Source: Caltech*



An imbalance between the trends in two common air pollutants is unexpectedly triggering the creation of a class of airborne organic compounds not usually found in the atmosphere over urban areas of North America, according to a new study from Caltech.

For decades, efforts to reduce air pollution have led to cleaner air in U.S. cities like Los Angeles, with subsequent improvements in public health. Those efforts have targeted both nitric oxides and hydrocarbons. Nitric oxide is a compound of

nitrogen and oxygen emitted from engines (especially those powered by diesel fuel) and from coal power plants. Hydrocarbons, meanwhile, are the family of molecules made from chaining together hydrogen and carbon. These molecules are emitted from many sources including gasoline-powered cars, trucks, solvents, cleaners used both at home and in industrial settings, and even trees.

One way researchers track the changing rates of nitric oxide emissions and hydrocarbon emissions is by examining the ratio of the levels of non-methane atmospheric hydrocarbons to those of nitric oxide (methane, a powerful greenhouse gas, is tracked separately). From 1987 and 1997, that ratio dropped by a factor of two.

Regulations aimed at improving air quality in urban areas like Los Angeles have made rapid progress on reducing nitric oxide and hydrocarbon emissions. As old cars have been taken off the street in favor of cleaner new cars and diesel trucks have been retrofitted or replaced, nitric oxide emissions have dropped rapidly. Compared to 1970 models, new cars and trucks produce about 99 percent fewer common pollutants, according to the Environmental Protection Agency. During the last decade, for example, the amount of nitric oxide in Los Angeles's air has dropped by half.

Air pollution regulations have also led to reductions in hydrocarbon emissions, but these decreases are slowing. Hydrocarbons come from a variety of sources, making it tougher to crack down on them. For example, these compounds are released by the two-cycle engines used in leaf blowers and lawn mowers—equipment that tends to stay in service longer than cars and is subject to fewer regulations.

The sharp drop in nitric oxide levels compared to the slower decline in hydrocarbons is important: according to a new study led by Caltech's Paul Wennberg and the University of Copenhagen's Henrik Kjaergaard, this disparity can lead to the production of chemicals called organic hydroperoxides.

Organic hydroperoxides already exist in nature. In rural areas and other regions that lack large amounts of engine exhaust—and therefore places where nitric oxide levels are exceedingly low—the molecules can form when trees off-gas volatile organic compounds that then interact with sunlight.

The team led by Wennberg found, however, that there is another chemical pathway for forming organic hydroperoxides—one that occurs at nitric oxide levels substantially higher than can be found in the atmosphere over unpopulated regions. "This is chemistry that does not exist in any of the models of how nitric oxide and hydrocarbons interact," says Wennberg, Caltech's R. Stanton Avery Professor of Atmospheric Chemistry and Environmental Science and Engineering and director of the Ronald and Maxine Linde Center for Global Environmental Science.

Significantly, the atmospheric nitric oxide concentrations over Los Angeles and in urban regions across the country are now dropping to the levels at which this process—called gas-phase autoxidation—occurs.

Gas-phase autoxidation takes place when there are not enough nitric oxide molecules for hydrocarbons to react with. As a result, hydrocarbon molecules react with themselves. Gas-phase autoxidation has been observed in other settings—for example, the process can form skin-irritating organic hydroperoxides in certain cosmetic products that have gone bad and causes butter to go rancid and wine to spoil. But researchers had thought that it could not occur in the atmosphere, given current urban nitric oxide concentrations. Wennberg and colleagues have found otherwise.

"As these nitric oxide concentrations go down by another factor of two over the next five to seven years, we're going to start making more and more organic hydroperoxides in urban areas," Wennberg says. In the air, these hydroperoxides are known to form particulates—aerosols. "The problem is that we haven't seen large concentrations of hydroperoxides in heavily populated areas, so we don't know how the formation of gas and aerosol hydroperoxides will impact public health. But we do know that breathing in particles tends to be bad for you," he says.

Wennberg and Kjaergaard's findings will be published online by the Proceedings of the National Academy of Sciences during the week of December 18. The study is titled "Atmospheric autoxidation is increasingly important in urban and suburban North America." Wennberg's co-authors from Caltech include Brian M. Stoltz, professor of chemistry; graduate student Eric Praske; postdoctoral scholar J. Caleb Hethcox; and staff scientist John D. Crounse (PhD '11). Other authors of the paper include Rasmus V. Otkjær of the University of Copenhagen. This research was funded by the National Science Foundation and the University of Copenhagen.

Written by Robert Perkins

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## **Can CSR funds aid efforts to tackle air pollution?**

*Date: 19-Dec-2017 Source: Live Mint*

New Delhi: With air quality in the National Capital Region, centred on Delhi, hitting hazardous levels in the winters and air pollution a perennial problem across northern India, sustainable farming and agro-waste management initiatives supported by corporate entities offer prospects of some relief.

Agricultural residue burning, one of the factors behind air quality turning toxic, has emerged as a national problem now, says Anumita Roychowdhury, executive director, research and advocacy, at the Centre for Science and Environment (CSE).





“Higher rates of mechanization of harvesting and crop diversification, resulting in shorter periods of fields lying fallow, have perhaps contributed to this increase in crop residue burning,” she said.

In November, the power ministry directed state-run power utility NTPC Ltd to mix crop residue with coal to generate power in all its thermal plants.

“We have been asked by the government, and we shall soon come up with a policy about this,” said

a senior NTPC official, who did not wish to be named.

On whether the project would be part of NTPC’s corporate social responsibility (CSR) plan, the official said it was a work in progress and a decision would be taken soon.

CSR Rules, which came into effect on 1 April 2014, state that companies with a net worth of Rs500 crore or revenue of Rs1,000 crore or net profit of Rs5 crore should spend 2% of their average profit in the last three years on social development-related activities such as sanitation, education, healthcare and poverty alleviation, among others

Amid a growing public outcry over worsening air quality, a few companies working with the farmers community as part of their CSR activities are realising the need to address the agro-waste management problem.

Ambuja Cements Ltd, through its foundation, is working with farm producer companies (a collective of farmers and private limited companies) to gather crop residue. It is seeking to incentivise farmers by buying agro-waste and using it as a biomass fuel for factory operations.

Pearl Tewari, head of Ambuja Cement Foundation (ACF), said many cement companies are looking at alternative fuels to substitute coal in their factories.

“We realised, if we are trying to substitute it with all other biomass, why not agro-residue?. We tried this out in Rajasthan as a pilot in 2012, and it worked wonders. We bought 50 to 60 tonnes of agro-residue, and farmers have made some amount of money on that. This is a sustainable model,” she says.

ACF has set aside Rs26.3 crore in fiscal year 2017 for CSR spending on agri programmes.

Mars Wrigley Confectionery, which works with farmers on sustainable cultivation of crops, focuses its CSR programmes on sustainable practices for mint, rice and sugar crops.

“Collaborations with farmers will be critical to making progress on climate change. We’re working to improve agronomic practices, reduce greenhouse gases emissions,” says Kim Frankovich, global vice president, sustainability, at Mars Wrigley.

Divya Tiwari, chief executive at Bengaluru-based non-profit Saahas, which focuses on waste management, says, “The government should subsidize collection of agro-waste, or companies can utilise their CSR funds to buy out compost from farmers.”

She explains that due to higher labour costs in Haryana, Punjab and Uttar Pradesh, the cost of agro-waste collection, transportation and shredding is significantly higher than the value realized from crop residue. That prompts farmers to burn the residue instead, adding to air pollution.

The commercial supply chain and ecosystem for alternative use of farm residue, says Roychowdhury, is nearly ‘non-existent,’ and needs to be created, enabled and sustained through policy changes and corporate strategy.

Whether companies will persist with these efforts also remains a question. While a few are investing in sustainable farming practices, these efforts still remain minuscule considering the scale of the problem.

“Whatever is happening on ground is not enough as is evident from the scale of crop burning and pollution from it. Role of policy and industry has remained limited and ineffective,” says Roychowdhury.

Tiwari of Saahas says the limitation with CSR funding is that most companies are keen on taking up projects in their direct impact zones, and agro-waste management may not be a priority for them. “But, since the issue (crop burning) has gained so much attention, there could be some companies coming forward,” she says.

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## Can CSR funds aid efforts to tackle air pollution?

*Date: 19-Dec-2017 Source: Deccan Chronicle*



Higher levels of air pollution may increase the risk of delinquent behaviour among teenagers, a study has warned.

Tiny, toxic particles creep into developing brains, cause inflammation and may damage brain pathways responsible for emotion and decisions, researchers said.

The finding is a reminder of the importance of clean air and the need for more foliage in urban spaces, they said.

Tiny pollution particles called particulate matter 2.5 (PM2.5) - 30 times smaller than a strand of hair - are extremely harmful to health, according to Diana Younan, lead author of the study.

"These tiny, toxic particles creep into your body, affecting your lungs and your heart," said Younan, a research associate at University of Southern California (USC) in the US.

"PM2.5 is particularly harmful to developing brains because it can damage brain structure and neural networks and, as our study suggests, influence adolescent behaviours," she said.

The study, published in the *Journal of Abnormal Child Psychology*, showed that ambient air pollution increased delinquent behaviour among 9- to 18-year-olds in urban neighbourhoods in Greater Los Angeles.

The insidious effects are compounded by poor parent-child relationships and parental mental and social distress, researchers said.

The study followed 682 children in Greater Los Angeles for nine years starting when they were aged nine.

Parents completed a child-behaviour checklist every few years and noted if their child had engaged in 13 rule-breaking behaviours, including lying and cheating, truancy, stealing, vandalism, arson or substance abuse. Up to four assessments were recorded per participant.

Researchers used 25 air quality monitors to measure daily air pollution in Southern California from 2000 to 2014.

They computed each participants residential address and used mathematical modelling to estimate the ambient PM2.5 levels outside each home.

About 75 per cent of the participants breathed ambient air pollution that exceeded the recommended levels of 12 microgrammes per cubic metre. Some areas had nearly double the recommended amount of these particles.

The data was adjusted for gender, ethnicity, socioeconomic status, neighbourhood socioeconomic characteristics and neighbourhood quality, researchers said.

"It is widely recognised that ambient air pollution is detrimental to the respiratory and cardiovascular health of young and old alike," said Jiu-Chiuan Chen, an associate professor at USC's Keck School of Medicine and senior author of the study.

"But in recent years, scientists have come to acknowledge the negative impact of air pollution on human brains and behaviours," said Chen.

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## **If air quality hits dangerous levels, close schools, NGT tells Delhi government**

*Date: 19-Dec-2017 Source: Scroll*

The National Green Tribunal also criticised the Aam Aadmi Party government for not installing air purifiers in schools.

The National Green Tribunal on Monday urged the Delhi government to close schools when the air quality touches emergency levels, PTI reported.



“Why don’t you close schools whenever the particulate matter levels are found to be beyond 900 microgram per cubic meter,” a bench headed by the tribunal’s Chairperson Justice Swatanter Kumar asked the Aam Aadmi Party government. “Ask the schools to run on Saturday and Sunday if required.”

The lawyer who represented the Delhi government countered that it was difficult to implement this order as air quality in the winter months is bad for at least three months, and shutting schools for so long would affect students’ academics.

But the National Green Tribunal rebuked the government: “You don’t do your duty and now you are giving reasons...You are spoiling the lives of children. Infants are taking antibiotics in Delhi. Why should they suffer?”

The bench said that the Delhi government has not taken any steps to bring the air quality down to permissible limits in the last 12 years. “If the lungs of children are affected today, imagine the disease they will have after 20 years,” it said and directed the government to consider its suggestion. The tribunal also criticised the government for not installing air purifiers in schools.

During the proceedings, the Delhi government submitted an action plan for periods when air quality touches emergency levels. The tribunal said that it would pass a detailed order on ways to handle air pollution after going through the reports submitted by Haryana, Rajasthan, Punjab and Uttar Pradesh governments.

## Delhi should follow Beijing’s example in tackling air pollution

*Date: 20-Dec-2017 Source: The Conversation*



Delhi’s air pollution crisis made international headlines in early December when a cricket match between India and Sri Lanka was suspended due to poor air quality.

Smog has also led to numerous school closures and flight cancellations in India’s capital and largest city. It has also been blamed for highway accidents.

Delhi is home to 20 million residents, and the city’s more than 10 million vehicles are a major contributor to air pollution. Industrial emissions are also to blame. Thirteen coal-fired power stations operate within a 300 kilometre radius of the city. Conditions reach crisis level every winter, when the capital’s already poor air quality is further degraded by smoke from post-harvest burning in the neighbouring agricultural states of Haryana and Punjab.

The concentration of airborne particulate matter (PM<sub>2.5</sub>) recently reached 999 in parts of Delhi. This measurement was literally off the charts of maximum thresholds for air pollutants. The alarming fact is that Delhi is not even India's smoggiest city. By one measure, four other Indian cities typically suffer even worse air pollution.

There is little evidence that either the central or Delhi government has any effective policy strategy for air pollution. Now is the time for India to peer through the smog and learn how another major city, Beijing, is taking meaningful steps to stabilise its own air pollution crisis. While China still has progress to make, some lessons from the country's capital are a useful guide for clearing Delhi's air.

#### China's response

According to the World Health Organisation, ten of the world's 20 most polluted cities are in India, and three in China. The two countries top the ignoble list of deaths related to air pollution, with more than one million each in 2015. The two are the world's most populous countries and also have among the highest proportions of deaths related to air pollution.

Nevertheless, China is making progress. The central government has taken a systematic and coordinated approach to managing air pollution. It has adopted a suite of policies that promote alternative energy and punish regulatory breaches.

The country is rapidly scaling back capacity for coal-fired power and steel, whose production is suspected of threatening respiratory health. China is also soliciting foreign investment in green energy technologies, and has intensified inspections of major polluters around Beijing.

In Beijing alone, fines for pollution topped USD\$ 28 million in 2015. To combat vehicle exhaust smoke, which is responsible for one-third of Beijing's emissions, an annual quota of 150,000 new cars was established for 2017, with 60,000 allotted only to fuel efficient cars. Beginning in 2018, this quota will be reduced by one third, to 100,000 annually. This will limit the total number of cars to around 6.3 million.

Beijing is also aiming to reduce coal consumption from the current 11 million tons per year to under 5 million by 2020.

There is some evidence that these measures are working. In the Beijing-Tianjin-Hebei region, PM<sub>2.5</sub> levels decreased by 27% between 2013 and 2016.

#### India's apathy

By comparison, India's political inefficiency is making regional air pollution a nearly intractable problem. Although the states of Haryana and Punjab have banned farmers from burning straw, implementation has been minimal. Policy coordination is also weak across states governed by rival political parties. For example, the leaders of Delhi and Haryana have publicly clashed about who is to blame for air pollution. They have also failed to hold discussions about the problem or to find feasible solutions.

Farmers constitute a significant voting base in Haryana and Punjab. This has led state governments to demand compensation from central government for losses farmers incur by ceasing burning. Such focus on short-term political gain is distracting policymakers from collaborating on regional solutions. The consequences of territorial grandstanding are deadly.

Another difference between India and China is the level of apathy among the government and general public. In China, years of seething public anger prompted Prime Minister Li Keqiang to “declare war” on pollution in 2014.

In India, public outrage over air pollution is still “seasonal” and rarely swells beyond social media. The central government has remained largely silent about pollution while state leaders indulge in meaningless inter-party squabbling and political theatre.

Amid this discouraging accountability vacuum, India’s Supreme Court recently assumed the mantle of leadership on air pollution. It banned fireworks in the capital during the Diwali festival and pushed for response focused action planning. While these are encouraging steps, bypassing the legislative process on such fundamental public health issues is hardly ideal or sustainable.

Progress is needed

India has made remarkable progress lifting millions of people out of poverty in recent years. It aspires to be a global superpower, but has singularly failed to curb air pollution. Central government must intervene to coordinate collaborative policy among states and hold officials accountable for inaction. Central government should also reinforce state-level initiatives to minimise burning and promote sustainable farming.

More broadly, it may be time to ask whether highly argumentative democratic models are always the best solution for problems that transcend city and provincial boundaries. Sensible and informed policy leadership is needed to solve environmental challenges. India must rise above petty politics, lest the country bicker its way into smoggy irrelevance.

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## Need people’s help in checking air pollution: Yogi Adityanath

*Date: 20-Dec-2017 Source: Indian Express*



Adityanath said the high level of pollution today is the result of “continued neglect” for a prolonged period, illegal mining and unscientific development.

The matter came up in the Zero Hour when Agarwal broached the subject of air pollution in major cities.

Uttar Pradesh Chief Minister Yogi Adityanath on Wednesday called for people’s participation in checking the high level of air pollution in the state’s major cities. “Guidelines have been issued after a state-level meeting on checking high level of air pollution but people’s participation is a must,” he said in the state Assembly while responding to an adjournment notice moved by Samajwadi Party MLA Nitin Agarwal.

Adityanath said the high level of pollution today is the result of “continued neglect” for a prolonged period, illegal mining and unscientific development, reports PTI. “This dangerous level of pollution has not been reached in a day...it was (first) noticed when people started having breathing problems and experienced burning in the eyes,” he said, adding that the government has taken necessary steps and will continue to do so.

The matter came up in the Zero Hour when Agarwal broached the subject of air pollution in major cities, how it has reached a critical stage and is causing hardships to people.

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## **Air pollution is now the biggest killer in Africa**

*Date: 21-Dec-2017 Source: ZME Science*



AIDS and malaria are often in the limelight when international health organizations discuss distressing issues in Africa. The continent is plagued by a far more menacing killer, though. According to a new research, air pollution is responsible for most the premature deaths on the continent.

### **The silent killer**

In 2015, lower respiratory infections like pneumonia and bronchitis replaced AIDS as the leading cause of death in Africa, being responsible for cutting short roughly one million African lives.

Susanne Bauer and colleagues at the Earth Institute have now found a new dark lord. The researchers employed a model which took into account satellite imagery of particle matter to create a map of where burning was taking place, then fed this data into another economic model which estimates how many lives each type of air pollution shortens.

In sub-Saharan Africa, burning crop residues is common practice, proving a cheap and readily available cleanup method. On the flipside, doing so releases a lot of smoke. The most worrisome part are the particles smaller than 2.5 microns (PM2.5) which can easily infiltrate our airways where they can wreak havoc. High levels of particle matter in the air have been associated with a larger risk of lung cancer, heart attack, lung disease, stroke, heart disease, and more.

Bauer says that her team’s work suggests air pollution kills 1.2 million Africans yearly. AIDS, which is far more famous killer, is responsible for 760,000 premature African deaths.

A surprising find was that it wasn’t man-made air pollutants but instead the natural kind that were responsible for the most deaths — and by far. Saharan dust which is carried by winds all over the continent is responsible for roughly one million premature deaths on the continent. Industrial and urban emissions were the second deadliest source of air pollution, claiming 324,000 lives per year, according to



the team's estimates. Gases emitted by vehicles and factories—such as ozone, carbon monoxide, sulfur oxides and sulfates—as well as soot and organic carbon were the most common. This kind of man-made pollution ranks between meningitis and malaria as a leading cause of death in Africa.

Bauer says that society is not nearly aware of how dangerous air pollution is, likely because it gets far less press and attention than more dramatic health risks, like AIDS. Curbing air pollution won't be easy either but that doesn't mean that we shouldn't try. Her team estimates that measures aimed at cutting particle matter levels from the atmosphere like improving land management techniques, distributing masks, and informing people about the dangers of dust storms could save 350,000 lives yearly.

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## Lucknow's air quality 'severe' again

*Date: 21-Dec-2017 Source: Hindustan Times*



Air quality in many cities of UP worsened on Wednesday with Lucknow, Kanpur, Varanasi and Ghaziabad coming under the 'severe' category, as per the air quality index (AQI) chart of the Central Pollution Control Board.

Fog engulfed the state capital and other cities in the morning.

The air index value in Lucknow at 4 pm was registered at 473 (severe category). The permissible level is 60 microgram per cubic meter air.

The air index value in Kanpur was 462 (severe category), Varanasi 461 (severe) and Ghaziabad 473 (severe). Lucknow and these cities experienced severe air pollution levels with air quality index between 400-500 (the worst category).

The AQI in Agra was 374 (very poor), Moradabad 364 (very poor) and Noida 378 (very poor).

The state capital has been witnessing poor air quality for the past over a month and this has led to a rise in the number of patients with breathing disorders. Doctors said those having breathing problem needed to take precaution while moving out of their home.

"Pollution level is very high during early hours, hence morning walks can be delayed," said Dr Sandeep Kapoor, director, Healthcity Hospital.

On November 13 afternoon, the fine particulate matter (PM 2.5) – the nasty air pollutant – touched a new high of 695.97 micrograms per cubic metre air (the permissible limit is 60 micrograms per cubic metre air).

The state capital has over 19 lakh registered vehicles, one of the key reasons for air pollution.

The minimum temperature in Lucknow rose to 9 degrees Celsius. The forecast for the next 24 hours was mainly clear sky, fog/mist likely in the morning. The maximum and minimum temperatures would be around 24 and 8 degrees respectively.

The Met department predicted shallow to moderate fog at a few places over the state. There was a warning for dense to very dense fog at isolated places over the state.

JP Gupta, Met director, Lucknow said, "Increase in humidity level may have led to fog-like situation in the city." He said so far the indication is that this year the winter would not be as intense as previous years.

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## Traffic Pollution Tied To Low-Birth-Weight Risk

*Date: 21-Dec-2017 Source: Eyewitness News*



NEW YORK - Air pollution, but not traffic noise, appears to be linked to an increased risk of having low-birth-weight babies, reports a new study from the UK.

Previous studies have tied road traffic air pollution to low birth weight. Road traffic produces noise as well as pollution, but studies of noise pollution have had conflicting results, say the authors.

"We know that noise is associated with adverse health effects, e.g. sleep disruption, increased blood pressure, and cardiovascular disease, so it could plausibly have an impact on mothers' health in pregnancy and the health of unborn babies," study leader Dr Rachel Smith at the School of Public Health of the Imperial College in London told Reuters Health in an email.

Smith's team wanted to investigate the effect of exposures to both traffic-related air and noise pollution during pregnancy on babies' birth weight.

"We found increased risk of babies being born with low birth weight or small for gestational age, at term, to mothers with higher exposure to air pollution from road traffic during pregnancy. We did not see an independent effect of road traffic noise on birth weight," she said.

As reported in The BMJ, Smith and colleagues used national birth registers to identify over 540,000 live, single, full-term births occurring in the Greater London area between 2006 and 2010. Specifically, the study team was interested in low birth weight (less than 5.5 pounds or 2.4 kilograms) and being born small for gestational age.

Mothers' home addresses at the time of birth were used to estimate the average monthly exposure to traffic-related pollutants including nitrogen dioxide, nitrogen oxides, and fine particulate matter, or PM2.5. The researchers also estimated average day and night-time road traffic noise levels.

Increases in traffic-related air pollutants, especially PM2.5, were associated with 2 to 6% increased odds of having a low birth weight baby and about 1 to 3% increased odds of a baby being small for gestational age, even after taking road traffic noise into account.

The risk associated with air pollution should be considered in context, i.e. the size of the effect of air pollution on an individual baby's birth weight is relatively small compared to the well-recognized effect of smoking, said Smith.

"However, at the population level the impact could be large, because collectively more women are exposed to air pollution than are exposed to smoking during pregnancy," she said.

There is a limit to what individuals can do to reduce their exposure to air pollution because making major changes to lifestyle, travel or where they live is just not feasible for the vast majority of people. Improving air quality and reducing air pollution in our towns and cities, and thus reducing health impacts of air pollution, requires action by policymakers, said Smith.

The study "should increase awareness that prenatal exposure to small particle air pollution is detrimental to the unborn child," Sarah Stock and her colleague wrote in an editorial in *The BMJ*.

Stock, a researcher at the University of Edinburgh Queen's Medical Research Institute in Edinburgh, UK, said air pollution from traffic is well known to be detrimental to child and adult health.

"This study provides further evidence that air pollution from traffic is also harmful to unborn babies. However, it shows that traffic noise is unlikely to be related to low birth weight in babies," Stock, who was not involved in the study said.

Pollution should be high on agendas at a local and national level, with pollution control integrated into development planning, said Stock.

"Key initiatives include enforcing emission control technologies in motor vehicles; ensuring easy access to affordable and efficient public transport; encouraging walking and cycling; and mandating clean air zones," she said.

Unfortunately, women have few options to reduce their risk on a personal level, said Stock.

"Avoiding air pollution is difficult, and we have no evidence that lifestyle measures, or wearing protective masks actually reduces chronic exposure to harmful pollutants. We do know avoiding exposure to tobacco smoke is really important. More research in this area is needed to find out the best ways for women to reduce their risk," she said.

## **Air pollution: Officials won't wait for EPCA order to implement**

*Date: 22-Dec-2017 Source: India Today*

New Delhi, Dec 22 (PTI) The emergency action plan to tackle air pollution has been streamlined in Delhi with authorities deciding not to wait for the EPCA's directions each time pollution turns severe or severe plus.

The Delhi government's Environment Department today apprised the Environment Pollution (Prevention and Control) Authority of the decision, which was welcomed by the Supreme Court-appointed panel.

The decision was taken at a meeting chaired by the city's environment secretary Anshu Prakash on Thursday, when air quality had dramatically fallen due to a rapid accumulation of pollutants.

"Next time, as soon as air quality turns severe plus or emergency as defined by the Graded Response Action Plan (GRAP), we will initiate action listed under the plan. The Delhi Pollution Control Committee will notify the concerned departments," a government official told EPCA.

EPCA member Sunita Narain lauded the government saying the decision effectively puts the GRAP on auto-mode, something which the EPCA itself has been trying to put into place.

Yesterday, EPCA chairman Bhure Lal had written to Delhi, Uttar Pradesh, Haryana and Rajasthan to gear up for another round of tough measures under the "emergency" category of the GRAP keeping in mind the rising pollution levels.

However, the situation has improved since then and air quality is now very poor as against yesterday's severe according to the readings of the CPCB.

Under the GRAP, pollution is considered severe plus or emergency when readings of ultrafine particulates PM<sub>2.5</sub> or PM<sub>10</sub> are above 300 and 500 µg/m<sup>3</sup>, respectively.

Measures listed under the emergency category are rolled out when these conditions prevail for 48 hours at a stretch.

On the odd-even road rationing measure, which is supposed to be implemented as part of the emergency measures, the EPCA said all major towns of the National Capital Region will be included the next time the scheme is enforced. PTI SBR KJ

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## **Varanasi chokes: Holy city's air quality 20 times above WHO's safe levels, worse than Delhi**

*Date: 22-Dec-2017 Source: First Post*

By Bhasker Tripathi

Air Quality Index In The Indo-Gangetic Belt On November 10, 2017		
City	Air Quality Index	Monitoring stations
Varanasi	491	1
Patna	426	1
NCIDA	470	2
Muzaffarpur	409	1
Lucknow	462	3
Kanpur	481	1
Ghaziabad	485	1
Gurgaon	480	1
Faridabad	428	1
Delhi	468	14
Agra	404	1

Source: Central Pollution Control Board; Figures are 24-hour averages. Major pollutant is PM 2.5

On 21 December, 2017, as Delhi's air quality plunged to levels 19 times worse than World Health Organisation (WHO) standards, the only consolation its people could take was that things were likely to be worse in other northern cities.

On 10 November, 2017, when national attention was focused on Delhi's poisoned air, the holy city of Varanasi registered worse air quality – a PM 2.5 concentration of 491 micrograms per cubic meter

or  $\mu\text{g}/\text{m}^3$  against Delhi's 468  $\mu\text{g}/\text{m}^3$ , according to an IndiaSpend analysis of hourly averages for 24 hours.

A similar situation exists across many cities of the India-Gangetic belt, but unlike Delhi, these cities do not even have adequate air-quality monitoring systems, let alone plans to fight the pollution. Varanasi has only one PM 2.5 monitoring station; Delhi has nearly 40.

People in Varanasi were breathing air nearly 20 times worse than the WHO 24-hour average safe levels of 25  $\mu\text{g}/\text{m}^3$  and eight times worse than the national ambient air quality 24-hour average standard of 60  $\mu\text{g}/\text{m}^3$ .

Varanasi reported no more than seven days of good air quality over two months to December 10, 2017, (of 62 days monitored) – when the average levels of fine, toxic dust called PM 2.5 was below national air quality safe levels – according to an analysis of Central Pollution Control Board (CPCB) data from 10 October, 2017 to 10 November, 2017. There were no data available for 10 of the 62 days monitored.

PM 2.5 – emitted by burning coal, kerosene, petrol, diesel, biomass, cow dung and waste – is about 30 times finer than a human hair. These particles can be inhaled deep into the lungs, causing heart attacks, strokes, lung cancer and respiratory diseases. Their measurement is considered to be the best indicator of the level of health risks from air pollution, according to the WHO.

Varanasi's air has been bad for a few years now. In 2015, the north Indian cities of Varanasi and Allahabad had no days (of 227 and 263 monitored, respectively) with good air quality according to a December 2016 report, in which IndiaSpend was a collaborator.

The report illustrated how public attention is largely focused on Delhi, while other north Indian cities report air-quality levels as bad or worse than the national capital.

'Varanasi Chokes', by the Centre for Environment and Energy Development (CEED), IndiaSpend and Care4Air, used the PM 2.5 national safe standard of 60  $\mu\text{g}/\text{m}^3$ , which is two-and-a-half times more relaxed than the WHO standard of 25  $\mu\text{g}/\text{m}^3$ .

The air quality in Varanasi has worsened during the winter of 2017, with more than 60 percent of days with 'very poor' to 'severe air quality', said Aishwarya Madineni, a Bangalore-based researcher and author of 'Varanasi Chokes'.

Air quality has six classifications: Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. These categories describe the Air Quality Index (AQI), a composite marker of various pollutants including PM 2.5 and its larger cousin PM 10.

Varanasi not among WHO list of cities with worst air, but Indian agency says it's among three worst

In 2016, the WHO's list of 20 most polluted cities in the world featured 10 from India, with four of the worst – Allahabad, Kanpur, Firozabad and Lucknow – in Uttar Pradesh. While Varanasi is not on the WHO's list, the Prime Minister's parliamentary constituency is among India's three most polluted cities, according to this 2015 CPCB bulletin.

Most northern Indian cities across the India-Gangetic plain this winter have been recording 'severe' to 'very poor' air quality levels, said Madineni. Unlike Delhi, there is little or no public awareness about the scale of the crisis and its corresponding health impacts. Cities like Varanasi do not have plans to control air pollution, she added.

Delhi's Graded Response Action is the only available default programme for all of northern India. The plan entails a number of actions to be taken as soon as the air quality plunges. The actions include stopping of garbage burning, banning trucks from entering the city, shutting down power plants, closing brick kilns and stone crushers.

"Heavy industrial activity in the India-Gangetic belt has led to rapid degradation of air quality across North Indian region," the 2016 report said. Changing wind patterns, especially during winter, carry power-plant emissions several hundred kilometres away, causing a spike in the regional pollution levels, the report said, quoting studies by Urban Emissions, a Delhi-based advocacy.

Inadequate monitoring

The AQI in most north India cities is generated from less than three monitors, making the data unreliable and inconsistent.

"Air pollution monitoring stations measuring PM 10 and PM 2.5 are limited to less than three for most cities across the India-Gangetic Plain," said Madineni.

Not only does Varanasi lack adequate air quality monitoring stations, right-to-information data on the air-quality stations in Varanasi revealed significant gaps in PM 10 values, the report said.

While the WHO asks countries to measure PM 2.5 as an air-pollution yardstick, some countries, such as India and China, continue to measure PM 10, which is less than 10 millionths of a metre in diameter – six times finer than a human hair. PM 10 is a record of air pollution from non-combustion sources, such as road dust and dust storms.

The author is a principal correspondent with IndiaSpend.

## Can Big Data Help Control India's Spiraling Pollution?

*Date: 24-Dec-2017 Source: Business Today*

On November 8 this year, Delhi earned the dubious distinction of being named the world's most polluted city. If that wasn't bad enough, Delhi was only one among the nine Indian cities that ranked among the world's 20 most polluted cities. The other eight include Gwalior, Allahabad, Patna, Raipur, Ludhiana, Kanpur, Firozabad and Lucknow. China in comparison has only four cities in this list and Saudi Arabia has three. These were the cities where the concentration of harmful PM 2.5 particles topped 700 micrograms per cubic metre (mpcm). So while Delhi's PM 2.5 concentration was 122, London's average PM 2.5 is 15, in Paris it is 18, in Los Angeles it is 11, and in Beijing it is 85. India also ranks at number eight among the world's top 20 countries with the most polluted urban areas. Both Pakistan and Bangladesh outrank us while Nepal and China trail us in this list.

Anyone who's lived in a big Indian metro has had to deal with smog - especially in winter when dense cold air settles down, making it difficult for pollutants to be 'breezed away.' This smog is an outcome of not just vehicular exhaust fumes but also construction and desert dust, factory and power plant emissions and finally the burning of garbage and crop residue. According to the World Health Organization, over 5.5 million people die each year due to problems associated with breathing polluted air. The lack of clean air is even touted to be the third leading cause of death after heart disease and smoking.

The measures to address pollution range from the immediate to the long term and almost all of them have limited outcomes given multiple geographic and climatic variables in addition to those that are man-made. In such a situation what can our policy makers do? Several cities across the world are adopting interesting initiatives to address the problem. These include combining big data along with IoT and artificial intelligence. Using a network of connected sensors, scientists can, not just measure exactly where pollution is coming from, they can pinpoint the numerous factors that contribute to it, and ultimately, reduce it. And doing this over a period of time allows them to measure the cause and effect of pollution on a real-time basis. This in turn gives researchers options to use predictive analytics to 'forecast' pollution (as is being done in cities as disparate as Dubai, Chicago, Pittsburgh London and Beijing to name a few) to manage it more effectively and intelligently. So what can and should Delhi and other cities across North India do? First things first - they need to put out a widespread and integrated network of air quality monitoring sensors across the cities to begin real-time monitoring of air quality. This should be accompanied by a policy change to ensure that civic agencies install pollution meters across factories, commercial establishments (such as malls and office complexes), dump-yards and even locations such as schools and hospitals to begin monitoring of emissions and pollutant levels. Air quality levels should be monitored across a wide spectrum of emissions so that civic agencies and citizens get information on spikes and dips in specific pollutants, allowing them to pin-point the cause to a specific source. Pollution control certificates whether for automobiles or factories and commercial establishments should be made real-time instead of being periodic (as it is now).

The data should also include other sources such as weather monitoring stations and satellites, traffic systems, industrial data, farm data, and even social media. By combining all this disparate data, predictive analytics can create highly accurate models to predict pollution trends in advance allowing civic agencies to make relevant predictions and changes to prevent spikes and keep pollution levels in check. A comprehensive and widespread network such as this to track the causes of pollution at source will allow



government agencies to create smarter strategies to combat pollution - and when combined with predictive analytics, predictions in some cases can even be made in advance.

Big data and analytics can also help improve traffic management in addition to just monitoring pollution levels. Sensors will ensure that traffic flows and incident feeds are updated every second, with traffic-impacting incidents such as accidents, closures, and detours, also considered. Combining all this data will allow predictive analytics to throw up both predictive and historic traffic flows along with predictions of incidents basis which traffic police can gain improved insights into how traffic is behaving as well as anticipate and address problems before they happen. Over time smarter management of the causes of pollution - from traffic to power plants, to emissions from factories can help reduce and even contain pollution.

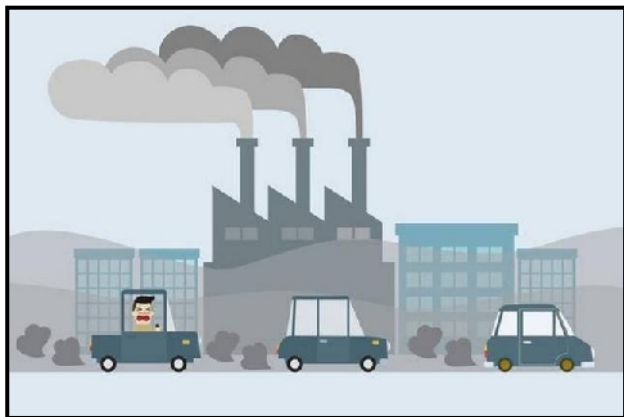
Reports put out by the WHO say that 90 per cent of the deaths caused by air pollution are in low and middle income countries. India is one of them. We need to adopt a pragmatic approach that makes use of technology to address an issue which by any account is alarming. By embracing the power of big data and analytics, policymakers can provide civic agencies the relevant tools and resources that, when used optimally, will help reduce pollution thereby enhancing our quality of life. This will be aided by new developments in sensor technology to ensure that pollution and its resultant impact can be monitored literally on a street-by-street basis. It is time we gave this serious thought.

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## Technology alone isn't the solution: on the air pollution crisis

*Date: 25-Dec-2017 Source: The Hindu*



To tackle air pollution, we also need to reimagine and rethink our use of urban space

In the annals of the story of air pollution, December 3, 2017 will likely become a pivotal moment. On Day 2 of the final Test match between India and Sri Lanka in Delhi, bowlers Lahiru Gamage and Suranga Lakmal left the Kotla cricket ground early in the game complaining of breathing difficulties. For the first time in Test cricket, a match was disrupted because of air pollution. Indian captain Virat Kohli later asked

publicly what Indians are doing about it.

There has been a lot of finger-pointing at the Delhi and Central governments for not being prepared for the dreadful air quality episodes during north India's winter season. Most people, across party lines, have been nervous about this winter ever since Diwali in 2016, when an unexpected confluence of conditions caused terrifyingly high concentrations of particulates and a witch's brew of indeterminate gases.

No government can eliminate air pollution within the span of a single term in office. Neither the previous United Progressive Alliance government nor the current National Democratic Alliance government is alone culpable — business, the media, and the middle and upper classes are equally to blame. In fact, the government may not even have the tools to ‘solve’ the problem of air pollution in our cities. It may take years of worse conditions before things get better, unless some transformational alternatives are seriously considered. You need not be a cynic or a pessimist to see why this is so. Air pollution science has an almost artless arithmetical logic, simple in its details.

### Explaining urban air pollution

Urban air pollution refers largely to the mixture of gases and small particles in the lowest hundred or so metres, a result of human activity associated with vehicles, road dust, domestic cooking and heating, power plants and other industries nearby, diesel generator sets, and the open burning of waste.

In Delhi, in recent weeks, concentrations of particulates below 2.5 thousandths of a millimetre in size, which settle deep in the lungs, were 22 times the World Health Organisation (WHO) standard. In November 2016, they were 16 times the standard. Other cities are slightly better, but still worse than the standard. Polluting gases are mostly colourless and odourless and include carbon monoxide, oxides of sulphur and nitrogen, ozone, and volatile organic compounds. Monitoring air pollution requires well-calibrated and spatially well-represented networks of measurement equipment, which do not exist in most parts of India.

It is logical to expect things to get worse before they improve. Air pollution depends on meteorological factors, but primarily on how much is emitted. This is the number of polluters times the rate of emissions per source. In principle, the amount of pollution from each brick kiln, truck or two-wheeler, car, power plant or field can be estimated. The total pollution is the sum of all the activities times the pollution per activity.

We already know that the number of polluters will rise with population and economic growth. The trick has been to try to find ways to reduce the emissions per activity, referred to as emissions intensity.

Emissions intensity can be divided into technological and non-technological elements. In cars, for instance, engine technology that uses less polluting fuels could improve efficiency. Cars now offer the tantalising prospect of reducing emissions intensity to zero, with battery and other energy-storage technologies. But it will take at least three decades for the current fleet to turn over sufficiently towards zero-emission vehicles, before their contribution to air pollution reduces significantly.

However, this is not sufficient if the total number of cars increases or people drive a lot more. It is vital, therefore, to pay attention to non-technological aspects such as urban planning, to reduce driving, and to increase cycling, walking, and use of public transport.

The need for travel may also have to go down by voluntary reductions in consumption, not viewed as loss of welfare but rather as opportunities to enhance leisure time, health, and recreation. This would be a reduction in activity, not just in emissions intensity.

### Policies needed

It would be criminal to ignore the plight of millions who are likely to have severely compromised lives because of excessive air pollution. Using the best available technologies for various sources is absolutely essential. Other ways of reducing emissions intensity are also needed.

But, it is just as important to take back urban space for use by people, not their machines. This would mean a great reimagining and rethinking of urban space with expanded walking, non-motorised cycling, waterways, and footpaths. Many cities in Southeast Asia, Europe and the Americas have shown how this can be done, and several Indian mayors and bureaucrats are already familiar with these models.

There are also opportunities to reduce polluting activities in other sectors such as power generation and industrial production. This would mean reducing emissions intensity, but also avoiding certain activities or substituting them with others. Such approaches also offer co-benefits such as improved health, reduced carbon emissions and new forms of collaboration across social class.

Policymakers now rely almost entirely on technology, technologists and technocratic views by economists for policymaking, thus offering a limited view of the problem and its solutions. They also need to overcome the corruptive and overwhelming influence of motor vehicle manufacturers, power producers, developers, and other large stakeholders on decisions taken. While small changes in a few cities and some protests have been seen, other transformative movements are needed by voters in partnership with social institutions to take back urban space.

There are many reasons why there could be political support for policies to promote more democratically driven land use and transport. Mainly, this is because alliances can potentially be made across many social classes.

Unlike water pollution, where the better off can buy or use filtered water, the rich cannot pay their way out of air pollution. While they may not be as exposed to the worst levels suffered by the very poor living in informal settlements on roadsides, filters and hermetically sealed living spaces offer only temporary reductions and the fantasy of clean air. In fact, ozone, a dangerous air pollutant, can eat into filters, just as badly as it can destroy the lungs of even healthy youth.

It is not ethically appropriate to delay the resolution of deadly air pollution in cities for an entire generation that would suffer greatly in the interim. If there are sustainable modes that are worth pursuing, why not have more living laboratories of such social experiments around land use and transport?

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## **Mumbai air quality slips to 'poor' level**

*Date: 25-Dec-2017 Source: The Times of India*

MUMBAI: A week after 'almost clean' air, the city's air quality index on Sunday reached the 'poor' category.

According to System of Air Quality Weather Forecasting and Research (SAFAR), Mumbai recorded an Air Quality Index (AQI) of 203 as compared to 155 on Saturday. The AQI in Delhi was 303 on Sunday.

The AQI is determined by the highest concentration of the pollutants in the air. An AQI between 201 and 300 is considered poor and people sensitive to air pollution may experience uneasiness.

Mumbai last recorded a poor AQI on December 17. Thereafter, the air quality of the city has remained in the moderate category-between 101 and 200-which is considered safe for most people.

SAFAR has forecast that the pollution levels will be back in to the moderate category on Monday. The AQI predicted is 133.

Researchers at SAFAR said the constant change in pollution levels could be attributed to wind speeds in the city. "The frequent changeover is all wind play. When the wind speeds pick up, the pollutants are carried away from the city. The weather patterns suggest that wind speeds will pick up again on Monday and hence the air is expected to clear up," said Gufran Beig, project director, SAFAR.

Winter temperatures too are a cause for higher pollution levels. On Sunday the minimum temperatures recorded by the India Meteorological Department (IMD) Colaba observatory was 20.5 degrees Celsius while the IMD Santacruz observatory recorded minimum temperatures of 16.6 degrees Celsius. Humidity levels, also a contributor to higher pollution, too remained in above 85% at both observatories.

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## **Thousands Were Saved Between 1990 and 2012 as Air Pollution Declined**

*Date: 26-Dec-2017 Source: Futurism*

### **CLEARING THE AIR**

When it comes to climate change, it can be difficult to remain optimistic about the fate of the planet. We are already feeling impacts such as increased forest fires and sea level rise, and as global temperatures continue to rise we can only expect more. People and most governments around the world are accepting that battling our changing climate is a matter of survival.

But, while countries like the United States seem to be dismissing its threat, we all still face the same brutal reality of our warming planet. However, amid a series of worrying projections, one recent study stands out as a silver lining. It finds that the amount of gases derived by the combustion of organic matter, such as fossil fuels and forest fires, decreased in the United States from 1990-2012. The dip in what scientists call "organic aerosols" averted 180,000 deaths that would typically be associated with their exposure.

Globally, exposure to these gases is estimated to cause over 4 million deaths every year. The researchers believe that by tracing back the causes of the recent emission decline, we could inform policies that would save many of those lives.

### **LONG LASTING IMPROVEMENTS**

David Andrew Ridley and his colleagues isolated the trend by analyzing the concentration in the air of organic aerosols and black carbon, the sooty dark fumes created from the incomplete combustion of fossil fuels and biomass.

Soot can come, for example, from old diesel cars, wood burning or cook stoves and is particularly dangerous for the lungs and heart.

The research team found that between 1990-2012, organic aerosols and black carbon decreased by 40% and 55%, respectively. Overall, this is a 30 percent decrease in particle pollution in the U.S.

These findings are particularly impressive, considering that the increase in the number of wildfires should have contributed to this type of pollution. But other sources of aerosols were so drastically reduced that the negative impacts of forests burning was eventually offset.

The study's authors believe that the encouraging trend could be a byproduct of the Clean Air Act, a federal law introduced in 1970 that regulated the emissions of hazardous pollutants.

As environmental protection is rolled back in the U.S. and fossil fuels are promoted as a means to create jobs for the poor, the study comes as a reminder that good environmental governance is not just a matter of politics: it can deliver concrete, long lasting benefits.

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## **Calls made to tackle air pollution, including 'no-idling' zones for schools**

*Date: 26-Dec-2017 Source: Telegraph & Argus*



LIBERAL Democrat Councillors have called on Bradford Council to do more to tackle air pollution across the district, including the introduction of 'no idling' zones outside schools.

A motion was put to the Full Council by Councillor Brendan Stubbs (Lib Dem, Eccleshill) in which he voiced concerns that, according to a recent air quality report, Bradford had a 4.2 per cent mortality rate attributable to particulate air pollution in 2015, equating to around 2,300 years

of life lost per year due to the health effects of particulates.

Cllr Stubbs said one of the biggest issues was cars outside schools being left with the ignition on "pumping toxic fumes into children."

He said: "It is an urgent problem in our city. Air pollution is something that slowly takes its toll and attacks the youngest, the most vulnerable, and the oldest in our society. Because we can't readily see it we risk not taking the action we should do."

“This is about stepping up and taking this action further so that the residents in our city are breathing clean air. I’d hate to think we wouldn’t all stand up and fight for the best-possible air quality for our citizens.”

Councillor Jeanette Sunderland, the leader of the Liberal Democrat group on the Council, added: “It is not okay to sit outside school with your engine running because you need to get away that little bit sooner. We do need to start a public awareness campaign that tells people to turn off their engines. It is unacceptable and we need to stop it.”

Councillor Val Slater, the Council’s portfolio holder for health and wellbeing, said the authority was currently bidding for government funding to support work around improving air quality.

Putting forward an amended Labour group motion, which was passed, she said she was “quite happy” to talk to officers about an awareness campaign about the impact and dangers of air pollution around schools.

She said: “We do want to do more, but I’m a pragmatist and we have to be cognisant of what is achievable in the current budget situation and the wider regulatory situation.”

On no-idling zones, she said: “I have some practical worries about how we would go about it. It sounds easy, but there are lots of processes to go through.

“When you’re trying to get behaviour change you have to have a carrot and a stick. To get the stick you have to take legal steps, and then you need the powers to enforce. I’m not ruling it out, and if we get this money from the government it is one of the things we can have a proper look at.”

In response, Cllr Stubbs said: “We have a duty to be inspirational, not pragmatic. I think sometimes pragmatism is actually inertia, and that is what I was trying to avoid.”

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## Legal levels of air pollution are killing the elderly

*Date: 27-Dec-2017 Source: Quartz*



Scientists are just beginning to understand that there is no safe level of air pollution exposure. Breathing polluted air has lasting, insidious effects, including asthma, allergies, cognitive delays, developmental disorders, and premature births. All of these can contribute to shorter life spans, and in some cases can abruptly end a life. Countries, including the US, have air-quality standards to presumably prevent the worst of these health effects, but a new body of emerging research

shows that people are dying prematurely from breathing the air even in places where air pollution levels were deemed “safe” by the US.

The latest of these studies was published Dec. 26 in the Journal of the American Medical Association (JAMA). It found that even one summer of Americans breathing air with pollution levels well below US national standards leads to a rise in premature deaths. The study looked at 22 million deaths of Medicare recipients (so, Americans over the age of 65) over a 13-year period from 2000 to 2012. It included air pollution data from the US Environmental Protection Agency, as well as other pollution data sets, processed through neural networks to predict air pollution concentrations “at each 1-km ×1-km grid in the continental United States, including locations with no monitoring sites.”

“We found that the mortality rate increases almost linearly as air pollution increases,” Francesca Dominici, professor of biostatistics at Harvard’s school of public health, and a senior author on the paper, said in a statement. Though the study focuses on the US, its basic conclusion applies broadly: the “safe” levels laid out by national health agencies everywhere are inherently far from safe. “Any level of air pollution, no matter how low, is harmful to human health,” Dominici said.

In the US, the air pollution impacted different demographics unevenly: The researchers found that low-income people (measured by eligibility for Medicaid) had a 225% higher mortality risk when exposed to air with even slightly elevated PM2.5 levels than people who were wealthier and therefore not eligible for Medicaid. Overall, women had a 25% higher mortality risk than men from the same pollution. The researchers speculate that “poverty, unhealthy lifestyle, poor access to health care, and other factors may make some subgroups more vulnerable to air pollution,” but the study didn’t specifically investigate the causes of these discrepancies. “The exact mechanism is worth exploring in future studies,” the researchers write.

In the US, exposure to very fine particulate matter known as PM2.5 is considered safe by the US Environmental Protection Agency’s national ambient air quality standards so long as a person breathes in an average of 12 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ) or less per day over the duration of a year. In the short term, the US considers it safe if PM2.5 levels don’t go over 35  $\mu\text{g}/\text{m}^3$  within a day, so long as the yearly average comes out to 12  $\mu\text{g}/\text{m}^3$  per day (in other words, a few days of higher PM2.5 here and there is acceptable, so long as there are only a few).

But in their study, the Harvard researchers found that for every 10  $\mu\text{g}/\text{m}^3$  increase in daily PM2.5 exposure over the course of one summer, the daily mortality rate among adults 65 years and older increased by slightly more than 1%—even at levels within the acceptable 35  $\mu\text{g}/\text{m}^3$  one-day limit. When it comes to ozone, the US considers exposure to 70 parts per billion over an eight-hour period to be the safe limit. The researchers found that every 1 ppb increase in daily ozone during the summer (again, at levels still below the 70-ppb limit) raised the daily mortality rate by 0.5%.

That might sound small, but extrapolated over the whole US population over the long term, those small increases add up. For each 1  $\mu\text{g}/\text{m}^3$  of PM2.5 added to the daily level over the course of one summer, 550 more people die prematurely every year. Likewise, 1 ppb more of daily ozone over the summer leads to 250 extra deaths per year.

This study on short-term air pollution followed work published by some of the same researchers in June showing that multiple years of exposure to air pollution—even at levels well below the “safe” level mandated by the US government—increased premature deaths in the country. That research concluded that if the level of PM2.5 could be lowered by just 1  $\mu\text{g}/\text{m}^3$  nationwide, roughly 12,000 premature deaths



would be avoided every year. And if ozone levels could be lowered by just 1 part per billion, another 1,900 premature deaths would be avoided annually.

The US EPA's air quality standards are reviewed formally every five years and updated periodically; revisions for PM2.5 and ozone were last published in 2012 and 2015 respectively. The next time they're reviewed, the Harvard researchers write, they hope officials will keep their research in mind. "This risk occurred at levels below current national air quality standards, suggesting that these standards may need to be reevaluated," they write.

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## **Dutch court takes heat off government in air pollution fight**

*Date: 27-Dec-2017 Source: Reuters*

AMSTERDAM (Reuters) - Air pollution in the Netherlands is worse than European rules permit, but the government is doing enough to limit emissions, a Dutch court ruled on Wednesday, reversing a previous verdict in which it had criticized the government for inaction.

The ruling was a surprise defeat for environmentalist groups which brought the case since the same court had ordered the government to take immediate action to limit air pollution only three months ago.

The court said on Wednesday that the government could not be accused of doing too little to improve the quality of the air, although emissions in various parts of the country are in breach of European rules.

"Excess pollution is mainly caused by traffic at certain points in the centers of Amsterdam and Rotterdam", the District Court in The Hague said. "These problem areas are very difficult to solve as they are critical for keeping cities accessible."

Overall, emissions had been reduced in recent years and measures to further limit pollution were being taken, the court said.

The Dutch health ministry has warned that current levels of nitrogen dioxide and particle matter emissions, mainly caused by road traffic and factories, can lead to respiratory illnesses, with chronic exposure shortening life expectancy by more than a year.

Emissions of particle matter should have been limited six years ago, while the deadline to adhere to European rules on nitrogen dioxide was the start of 2015.

"We are very disappointed", spokeswoman Anne Knol of environmentalist group Milieudefensie said. "Air pollution makes people sick and is the cause of thousands of deaths each year. This has to stop."

Deputy Environment Minister Stientje van Veldhoven on Wednesday said she will present new measures to limit emissions in the coming months.

The government needs to adhere to the European rules as soon as possible, but is not expected to do so in the coming years.

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## 12-point draft plan formulated to combat air pollution

*Date: 27-Dec-2017 Source: The Economics Times*

NEW DELHI: Coordinated action to combat stubble burning, commissioning studies and launch of a hotline and an app to report violations are some of the measures in the 12-point draft plan formulated by a high-level task force to combat air pollution in the NCR region.

The draft action plan also calls for formulating a journey planner app which integrates the Metro, the DIMTS and the DTC services and integrated ticketing across the DTC, cluster and metro within six months.

The high-level task force headed by the principal secretary to Prime Minister Narendra Modi has formulated the draft 'Air Action Plan - Abatement of Air Pollution in the Delhi NCR' and has invited suggestions in 15 days to make it more "effective and practical".

"The action plan lists key actions that the task force will monitor. It is recognised that the agencies responsible for the various determinants of air quality will take a number of other steps based on their assessment of need.

"The secretary, MoEF will be responsible for overall coordination of the action agenda," said the draft which has been put up on the Environment Ministry's website.

The draft proposes coordinated action to combat stubble burning in Punjab, Haryana and Uttar Pradesh and also monitor enforcement measures to reduce stubble burning.

It also calls for implementing rollout of a plan for properly disposing of crop stubble and ensuring that independent data on stubble burning is available in real time in collaboration with department of science and technology among others.

The plan says that in collaboration with the Delhi Pollution Control Committee (DPCC), it should be ensured that the Delhi-NCR has an adequate network of air quality monitoring stations.

"Commission and validate source attribution studies for the NCR (annually). Set up an anti-pollution helpline in the NCR districts to register complaints of specific violations.

"A pollution app should also be prepared wherein citizens can take a picture of the violation and upload it for quick remedial action," the plan said.

For power plants in the NCR region, it calls for NOx curtailment measures in a time-bound manner by the NTPCBSE 0.11 % and other operators and asks the Environment Ministry to develop a 'Dashboard' of all the 'Red Category' polluting units in the NCR.

Each of these units should install a certified pollution meter within their premises, it said.

"Strict action should be taken regarding brick kilns operating in the NCR, especially in areas like Bagpat (UP), Jhajjar (Haryana) without environmental clearance. Enforce all brick kilns to migrate to zig-zag technology," the draft said.

Noting that mechanised road sweeping is about 15 per cent in Delhi, the draft plan also says that it should be increased to at least 40 per cent in the next four months.

It also asks the Delhi PWD, the Irrigation Department and the MCDs to take up green paving of central verges, roadside berms, sides of drains, over the next one year with monitorable targets.

It has asked the corporations in Delhi to reduce dust and ensure that SoPs are followed at construction sites in terms of curtaining and sprinkling water among other measures.

The draft also asks for procurement of additional buses and improvement of last mile connectivity while increasing the number of metro coaches.

"Ensure that non-destined trucks do not enter Delhi. Ensure compliance of the toll and municipal charges for entering of trucks in Delhi," the draft said.

The draft also asks divisional commissioners to assess the management of municipal solid waste in their jurisdictions and within 15 days, prepare a plan to ensure 100 per cent collection and processing.

"The plan must have monitorable timelines and an independent verification mechanism. Steps will be taken to combat road dust and dust arising from construction activities, broadly following the model set by Delhi," it said.

It also asks for completion of Eastern and Western Peripheral Expressways within target dates.

"Encouraging electric vehicles and promoting shared and connected mobility. Policy support to encourage electric vehicles, prioritising the use of EVs for public transport and promoting shared and connected mobility.

"In collaboration with the traffic police, identify choke points and take up projects to reduce congestion at these points. Similar exercise may be done in respect of Meerut, Rohtak and Gurugram divisions," the draft says.

In the draft, the MCDs have also been asked to increase decentralised processing of bio-degradable waste and to fill the gap between the waste collected and processed.

"An independent verification mechanism should be set up to check whether 100 per cent solid waste is actually being collected--with specific focus on poor communities such as slums and JJ clusters," it said.

The draft also calls for steps to be taken to ensure that no fires break out at sanitary landfills among others.

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## 8 States Sue EPA Over Midwest Air Pollution

*Date: 27-Dec-2017 Source: Huff Post*

NEW YORK (Reuters) - Eight northeastern states said on Tuesday they sued the Environmental Protection Agency to force it to impose more stringent controls on a group of mostly Midwestern states whose air pollution they claim is being blown in their direction.

In the latest development of a legal saga that began during Barack Obama's presidency, the lawsuit by New York and seven other states challenges a Trump administration decision to allow nine upwind states to escape tighter smog pollution controls.

"Millions of New Yorkers are breathing unhealthy air as smog pollution continues to pour in from other states," said New York Attorney General Eric Schneiderman, who led the coalition of states that filed the lawsuit dated Friday.

The coalition urged the U.S. Court of Appeals for the District of Columbia to overturn the EPA's decision not to add the nine upwind states to the congressionally created "Ozone Transport Region," which requires stricter pollution controls.

An EPA spokeswoman declined to comment.

Northeast and mid-Atlantic states have long contended that emissions from coal-fired power plants and other air pollution in the Midwest is carried eastward by prevailing air currents.

In a statement, Scheiderman said the EPA was empowered to add states to the "Ozone Transport Region" if the EPA has reason to believe that their air pollution significantly causes states already in the region to exceed federal pollution standards.

The lawsuit was filed by the attorneys general of Connecticut, Delaware, Maryland, Massachusetts, New York, Pennsylvania, Rhode Island and Vermont, which in late 2013 originally asked to have nine upwind states added to the "Ozone Transport Region."

That case resulted in a consent decree that forced the EPA to decide by the end of October 2017 whether to add Illinois, Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, Virginia and West Virginia to the region.

EPA chief Scott Pruitt declined to add the states.

Scheiderman said the EPA's own studies show that pollution from upwind states substantially adds to harmful levels of smog in New York, and cited an American Lung Association report showing that the New York City area ranks as the nation's ninth most smog-polluted city.

## Milan and Turin ban cars to combat smog and air pollution

*Date: 28-Dec-2017 Source: Independent*



A pair of northern Italy's largest cities have introduced traffic restrictions in a bid to tackle air pollution and smog.

Bans on certain types of vehicle have been introduced temporarily in Milan and Turin, both of which have exceeded safe limits for pollution in recent days.

Despite hopes that rain and lower levels of traffic during the holiday season would help combat smog, air pollution has crept to dangerous levels in recent weeks.

A daytime traffic ban has been extended to include relatively clean Euro 5 diesel cars in Turin, as the city raises its air pollution alert level to “red”.

As a result, half-a-million cars and vans will not be able to drive on the city's roads between 8am and 7pm every day, La Repubblica newspaper reported.

In Milan an “orange” warning is in force, limiting vehicles classified as having Euro 4 emission standards or lower. Euro 4 vehicles include petrol cars, vans, minibuses and other specialist vehicles.

There are now similar traffic limitations in place across much of northern Italy. Across the Veneto region, 85 municipalities have introduced similar measures.

Earlier this year, a report from environmental organisation Legambiente, revealed that 25 cities in Italy had this year exceeded the EU's air quality standards by mid-October.

PM10 pollution, which consists of fine particles less than 10 micrometres in diameter that can easily be inhaled, was a particular problem, it said.

European Union standards dictate that cities should have no more than 35 days of poor air quality, when PM10 levels rise above a threshold amount, every year.

In Turin safe limits have been exceeded for 15 consecutive days.

Restrictions on cars are not new to Italy and major cities including Rome have previously attempted to address the country's air pollution problem by implementing vehicle bans.

Current bans follow a trend of particularly poor air quality in the “industrial triangle” of northern Italian cities.

Between January and mid-October, Turin had 66 days of poor air quality and Milan had 50. Other cities with extended periods of excessive pollution include Venice, Cremona and Padova.

Further east in Verona, a ban has been implemented on stoves and fireplaces in an effort to curb its levels of pollutants.

As bad weather continues, there are hopes it will help to alleviate the air pollution problem and allow local politicians to lift the temporary bans.

Verona's environment councillor Ilaria Segala told the Corriere della Sera newspaper that Arpav, the environmental protection body for the Veneto region, was unlikely to "trigger further restrictive measures" when it releases its new bulletin later this week, because of the weather forecast for the next few days.

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## **Govt taking steps to reduce air pollution in Delhi-NCR:Vardhan**

*Date: 28-Dec-2017 Source: India Today*

New Delhi, Dec 28 (PTI) Union Environment Minister Harsh Vardhan said today that the Centre was taking steps to reduce vehicle emissions and promote green mobility, and attacked the Delhi government for not taking steps to deal with the rising air pollution in the National Capital Region (NCR).

Vardhan said the Union government was doing its best to reduce pollution levels but there was a need to create a mass movement involving people from all walks of life, including the youth.

"Government of India is doing its best what can be done regarding the matter. The work done in last three years is more than what has been done earlier," he said, replying to a debate in the Rajya Sabha on the air pollution situation.

The pollution levels did not touch the severe category on 214 days this year, compared to 181 days in 2016, due to the proactive steps taken by the central government, he said.

He said while the Centre was working to tackle the problem, the Delhi government has lacked in taking proactive measures to combat the problem.

"There are certain critical issues like water sprinkling to curtail air pollution. Likewise, landfill sites are not being maintained properly," Vardhan said criticising Delhi's Arvind Kejriwal government.

He said the Delhi government was not following guidelines to manage solid waste and dust mitigation.

Earlier today, participating in the debate, Rajiv Shukla of the Congress said heavy vehicles should be taxed more in order to discourage people from buying such models.

"The money generated through such measures should be diverted into strengthening public transport," he said.

Cutting across the party lines, Rajya Sabha members sought concerted efforts by the government to deal with rising pollution levels in Delhi and its adjoining areas.

The members also asked the government to refrain from putting the blame on farmers for causing pollution by burning stubble or husk after harvest and suggested steps to help the farmers for proper disposals of this agriculture residue.

Initiating a short duration discussion, SP leader Naresh Agarwal said, "farmers are blamed for causing pollution by burning stubble/husk. The government should take steps to deal with the situation rather than blaming farmers because vehicle /industrial emissions and others area also the reasons for it."

Referring to the 12-point charter unveiled by the government to deal with the issue, Agarwal said that pollution will not come down just because the government would give directions to states or departments.

He expressed unhappiness over the non-spending of Rs 800 crore cess collected in the name of environment by the Delhi government as it said it does not have the right to spend the money.

Agarwal said the government should not refrain from taking steps to curb pollution because of fear of media criticism.

T S Reddy (Congress) also expressed dissatisfaction over the governments 12-point charter to deal with the issue, saying he wanted to understand the 12 points charter. He drew attention towards solid waste management saying garbage was being dumped in an improper manner.

Referring to the governments plan to use electric cars for officials, he said there was a need for an electric public transport system, including buses and metro rail, to reduce dependence on fossil fuels.

He was also of the view that the state governments of Uttar Pradesh, Punjab, Haryana and Rajasthan should take steps to deal with stubble burning after harvest.

A Navaneethakrishnan (AIADMK) also echoed similar views and asked the chair to consider conducting Parliament session in winters in Chennai where pollution levels are low.

Derek O Brien (TMC) said a large number of lives have been lost due to pollution and suggested that the government should also look at other metropolitans and small town to deal with the problem there.

He suggested that the government can ask people to plant one sapling on the birth of every girl child as practiced in West Bengal, where 15 lakh saplings have been planted.

Prasanna Acharya ((BJD) and Harivansh (JDU) expressed similar views and asked the government to take steps to deal with the problem, instead of blaming farmers.

C P Narayanan (CPI-M) said people of Delhi were suffering from pollution due to lack of coordination among the Centre, state governments and local government. He also spoke about the need to educate people on waste management.

Veer Singh (BSP) suggested that industrial units should be shifted from the national capital and action should be taken against big farmers for burning crop residues.

D Raja of the CPI said air pollution was a health issue and was not limited to Delhi alone and suggested that public transport should be encouraged and massive efforts should be taken to shift towards cleaner



fuel. Raja said farmers should be given subsidy for adopting to new technology to re-plough crop residues in the field.

INLD member Ram Kumar Kashyap said trees should be planted to tackle pollution, while Pratap Singh Bajwa (Congress) urged political parties to make Delhi liveable by forgetting their differences. On crop residue burning, he said farmers would have to incur additional cost to remove residues and they should be adequately compensated.

Satyanarayan Jatia (BJP) said pollution levels have increased and there was a need to find a solution, while Kanimozhi (DMK) said the pollution problem was not only in Delhi but also in other cities of the country. Many cities of Tamil Nadu were facing similar situation because of industrial pollution, she said, adding that emission norms should be adhered to.

The DMK member said farmers should be given alternate choice so that they stop burning of crop residues. The government should not intervene and help farmers, she said. PTI MSS KKS MJH ABH

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## **Air pollution is not just a Delhi problem, whole of India is running out of breath**

*Date: 28-Dec-2017 Source: Daily O*

As television news channels beam live the visuals of Delhi-NCR's smog and hold heated debates about what could have been done, what can be done, who can do what, et al, people from other states, barring few obviously polluted towns, sit pretty, thinking, "Oh, Delhi air is so bad. We are so lucky!" Well, if you are one of them, here is some food for thought:

1. Only 303 cities out of 6,166 census cities and towns – that is a mere five per cent - are monitored for pollution.
2. Of the 303, only 57 cities have continuous real-time monitoring stations.
3. The rest follow manual monitoring that does not allow daily reporting of real-time air quality data.
4. Of the 46 Indian cities with the population of more than a million, Delhi has the maximum number of real-time air quality monitors (30).
5. 19 of these 46 cities have just one real time monitoring station each.
6. 17 of these 46 cities do not have any real-time monitoring station.

And then the most important factors:

1. In 2007, 60 per cent of the cities monitored had PM10 levels officially classified as critical; in 2016, the same had increased to 88 per cent.
2. In 2007, 13 per cent cities showed "good" air quality (50 per cent below the standard); in 2016, it has reduced to a mere two per cent.

These were some of the alarming statistics presented by Anumita Roychowdhury, the executive director (research and advocacy) at the Centre for Science and Environment at a media briefing in Delhi on December 27.

The analysis was based on data presented to the Rajya Sabha for these cities. Calling it a “data eclipse”, Roychowdhury pointed out: “The rest of India cannot sit back and do nothing. The first question that each city’s people need to ask is: how many air quality monitoring stations are there and where are they located.”

For instance, scores of cities have just one real time monitoring station, that too located somewhere in a green area, which does not show the correct picture. And for the manual monitoring stations, there is simply no way of trusting the data as there is no transparency about when that data is collected, whether it is collected daily, et al.

“It is a conspiracy of silence. You don’t inform people, so people think we are safe,” said Roychowdhury. “Science has to be used for policymaking. We have licence to pollute because we have no data,” said Sunita Narain, CSE’s director general.

Air pollution increases disease burden

In November 2017, when the pollution levels in Delhi hit the roof, the Indian Medical Association (IMA) declared a “public health emergency” and rightly so, even as the government continued to be in denial.

The 2017 state level Global Disease Burden report shows that air pollution has moved up the ranks as a major killer in nearly all states across India and among the diseases, ischemic heart disease and chronic respiratory ailments are the top killers.

The 35-60 age group is the most vulnerable to non-communicable diseases and has witnessed increased vulnerability to air pollution. What was frightening in the report was that the relative rank of air pollution as a risk factor has gone up in Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Odisha, Rajasthan and Uttar Pradesh.

Dr Sanjeev Bagai, senior consultant paediatrician and neonatologist, reminds us: “India has just 2 per cent of total landmass against which we have a humongous 21 per cent Global Disease Burden.”

Unfortunately for Indian authorities and citizens in general, “Prevention is not fashionable to discuss.” Dr Bagai warns: “We have just two options when it comes to air pollution: eliminating the stimulus, which is tough, and taking smaller preventive steps – creating awareness is the first.”

And now, the PM’s task force

Multiplicity of agencies has always been blamed for Delhi’s woes. Planning, planning and then some but zero implementation aptly describes the situation in Delhi today. To top it all, there is now a competition of sorts between various authorities as to who will come out with a better action plan to combat air pollution. But this has confused Delhi-NCR residents more than proving useful.

The EPCA has been at it for long and has put in place a Graded Response Action Plan (GRAP) since January 2017; then there is NGT’s “Comprehensive Air Plan”.

Today, we have yet another action plan: this time, straight from the prime minister's office. The draft "Air Action Plan – Abatement of Air Pollution in the Delhi National Capital Region", formulated by a high-level task force set up under the chairmanship of principal secretary to the Prime Minister Narendra Modi, has suggested a 12-point action plan that lists key actions that the task force will monitor.

"It is recognised that the agencies responsible for the various determinants of air quality will take a number of other steps based on their assessment of need. Secretary, Ministry of Environment, Forests & Climate Change (MoEF&CC) will be responsible for overall coordination of the action agenda," said the draft notice, inviting suggestions and comments from citizens and experts.

Even as it seeks coordinated action to combat stubble burning in Punjab, Haryana and Uttar Pradesh, it has acknowledged Delhi has its own point sources of pollution and suggested "annual commissioning and validating source attribution studies for the national capital region".

Two other things among the various measures suggested are a "journey planner app integrating Metro, DIMTS and DTC services" and "integrated ticketing across DTC, cluster and metro in six months (basically, all kinds of mass public transport)".

This draft action plan calls for "collaboration with the traffic police, identifying choke points and taking up projects to reduce congestion at these points", but does not forget to suggest that a "similar exercise may be done in respect of Meerut, Rohtak and Gurugram divisions". It's high time the government woke up to pollution problems in tier-II cities.

Meanwhile, in Delhi, the mess continues

Details of the steps to be taken after the GRAP kicks in can be found here. But a major aspect about public transport mentioned in it is what the Delhi government has failed to achieve. First, there is no incentive for those driving cars or two-wheelers to abandon their personal vehicles and opt for public transport. More importantly, the number of buses continues to go down with each passing year.

A few days ago, lawyer Ritwik Datta, who takes up environmental issues at the NGT and other courts, made a very apt observation. "There is this one problem of air pollution... and then there are three courts – the Supreme Court, the Delhi High Court and the National Green Tribunal – looking at it for years and yet none is able to solve the problem."

But Sunita Narain of CSE, who is also a member of the Supreme Court's EPCA (Environment Pollution (Prevention & Control) Authority for Delhi and NCR) is of a different view.

"Although it took a pretty long time, action started happening around 2015. After the Supreme Court pushed for it, the Graded Response Action Plan (GRAP) for daily emergency response was kicked off this year. And our analysis shows, there is some improvement... slight, but yes. And now it is important that we do not lose this momentum till we are able to bend the pollution curve."

Narain said CSE's analysis of the air quality trend shows the following change: while in November 2016, 37 per cent days were slotted in the "emergency" category and 20 per cent in the "severe" category; in November 2017, 24 per cent days were in the "emergency" category and 17 per cent in the "severe" category.

Similarly, in December 2017, 12 per cent days are in the “emergency” category as opposed to 17 per cent for the same period in the previous year. While the levels are still very high, the severity and frequency of smog episodes are slightly lower.

For Delhi-NCR, a "severe plus" category was introduced, so when the pollution level comes down to “poor”, it indeed is a good sign! The idea is to continue sustained action.

Stop the blame game and act

The Delhi government is not doing enough – from its pollution control committee to the transport department to the public works department to the environment and forest departments, the list goes on, and the list of what each of these are supposed to do will be even longer.

But then, neither is the Centre doing enough — we have the Union ministry of environment, forests and climate change, the central pollution control board, the ministry of health and family welfare, the ministry of power and the ministry of road transport and highways. Each stakeholder has an identified role and, yet, even as some steps are taken by few agencies, the overall effort is just too weak.

The peak days of the November smog saw the Union and Delhi governments blaming each other, with little action or progress.

The Global Disease Burden report has ample proof of how air pollution is taking a toll on all of India’s citizens. There is no deterrence for causing pollution across India — there are no or not enough prosecutions. This is a major lacuna in India’s fight against air pollution and calls for immediate corrective measures.

Because as it talks about “demographic dividend” on the world’s stage or in speeches by mantris/babudom, India can ill-afford to have a stunted generation.

And if we allow it to happen, it will be criminal.

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## **Air Pollution: Centre approves Rs 100 crore project to tackle stubble burning**

*Date: 28-Dec-2017 Source: The Times of India*

NEW DELHI: Seeking to handle issue of stubble burning in a comprehensive and coordinated manner, the environment ministry has approved launching of a regional project to tackle the menace that adversely affects air quality and soil health. The project will be implemented in a phased manner under the National Adaptation Fund for Climate Change (NAFCC).

The first phase of the project, costing approximately Rs 100 crore, was approved on Thursday for Punjab, Haryana, Uttar Pradesh and Rajasthan.

Initially, awareness generation and capacity building activities will be undertaken to encourage farmers to adopt alternate practices which would also help diversify livelihood options and enhance farmers' income.

"Based upon the performance in the first phase, the scope could be enhanced and more activities can be supported subsequently", said the Union environment secretary C K Mishra who chaired the meeting of the National Steering Committee on Climate Change that approved the project.

"The project not only aims to mitigate climate change impacts and enhance adaptive capacity, but will also counter the adverse environmental impacts that arise from (stubble) burning", said the environment ministry in a statement.

It said, "A slew of technological interventions will be undertaken for timely management of crop residue in addition to effective utilisation of existing machineries. Implementable and sustainable entrepreneurship models will be created in rural areas through upscaling successful initiatives and innovative ideas."

The problem of crop residue burning has been intensifying over the years with Punjab, Haryana and Uttar Pradesh being the major stubble burning hotspots. It affects air quality in Delhi and National Capital Region (NCR) after every post-harvest season.

Increased mechanisation, declining number of livestock and absence of economically viable alternative to use crop residue are some of the reasons for residues burning.

An official said that the regional project to deal with the issue of stubble burning under the NAFCC would be in addition to what the high-level central task force has planned as part of its 12-point action agenda for abatement of air pollution in Delhi and NCR.

Pitching for coordinated action to combat stubble burning in Punjab, Haryana and UP, the task force has already asked secretaries of agriculture and rural development to implement the agreed plan for managing crop stubble.

It also asked the ministry to collaborate with the Department of Science & Technology to ensure that independent data on crop stubble burning is available in real time for timely action.

Two years after devising a 42-point action plan that failed to combat air pollution due to its poor implementation on the ground in Delhi and NCR, the high-level central task force on Tuesday came out with the 12-point action agenda asking environment ministry to take multiple measures to deal with the problem.

These measures include developing a dashboard of all the 'Red' category (high) polluting units in National Capital Region (NCR) and launching a mobile App where citizens can upload picture of violation for quick remedial action.

Besides, the ministry in coordination with states will also set up anti-pollution helpline in all NCR districts to register complaints of specific violations.

It is learnt that the central task force, headed by Nripendra Misra, principal secretary to the prime minister, will constantly monitor the implementation of all the suggested measures so that it do not meet the fate of what the 42-point action plan of the ministry had faced in the past two years.

The broad 12-point draft action agenda carries over 30 work points to be implemented in Delhi and NCR states. Majority of these work points are, however, simply taken out from the 42-point agenda which the ministry had prepared two years ago but failed to implement.

Referring to a plan to set up a dashboard for 'Red' category polluting units, an official explained that the step would help in round-the-clock centralised monitoring of such industries as each of these units would now have to install a certified pollution meter within their premises.

The 'Red' category of industries include thermal power plants, oil refinery, tanneries, automobile manufacturing, cement, pesticides, e-waste recyclers, big hotels, nuclear power plants and fertilizers among others.

The action agenda suggested strict action against brick kilns operating in the NCR region, especially in areas like Baghpat (UP) and Jhajjar (Haryana), without environmental clearance.

"The task force under the chairmanship of principal secretary to PM was, in fact, set up for better coordination and proper monitoring of all the action points considering involvement of different ministries and states in their implementation", said an official.

The Union environment secretary will be responsible for overall coordination of the action agenda. The ministry, while seeking comments of stakeholders on its 12-point action agenda in next 15 days, however, clarified that the action to combat air pollution would not be limited to the agenda enlisted by it.

It said that agencies responsible for the various determinants of air quality would take a number of other steps based on their assessment of need.

The action agenda also expected municipal corporations and urban development ministry to implement a strong "behaviour change campaign" involving resident welfare associations and market trader associations on proper management of solid waste to improve air quality.

Regarding solid waste management plan in NCR, it asked the respective divisional commissioners to assess the management of municipal solid waste in their jurisdiction and prepare a plan to ensure 100% collection and processing within 15 days.

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## **Air Pollution May Lead To Lower IQ In Children; Try These Foods To Avert Any Effects**

*Date: 29-Dec-2017 Source: NDTV*

According to a study published in the Journal of Pediatrics, women exposed to air pollution during preconception period of one month after the conception have increased risk of their children born with birth defects like cleft lips or palate or abnormal hearts. Researchers calculated the average exposures by linking the geographic coordinates of the mother's residence for each birth with the nearest monitoring station. The result came after studying the association between abnormalities at birth and the mother's exposure to increased levels of fine particulate matter in the air during pregnancy.



While you cannot control air pollution with immediate effects, you can definitely improve your diet and reduce the hazardous effects. Add these foods to your diet and make sure you and your baby are healthy.

#### 1. Vitamin C

Vitamin C is the single most potent antioxidant for our body. This water soluble vitamin is present throughout the body and inhibits the growth of

free radicals in the body. Adequate vitamin C in our daily diets is crucial for maintaining its level in the lungs. Adults need 40 mg of this vitamin per day.

#### 2. Vitamin E

The fat soluble vitamin is the first line of the defense against injury to human tissues. Add more almonds, fish, certain spices, and seeds in your daily diet.

#### 3. Beta Carotene

Beta carotene plays a crucial role in controlling inflammation because of its antioxidant activity. It is also converted into vitamin A in our body. Add more leafy greens in your daily diet.

#### 4. Magnesium rich foods

Magnesium rich foods provide immunity that is required to fight pollution. They ease lungs and remove the strain caused to them by bad air. The prominent sources of magnesium are almonds, cashews, spinach, etc.

It is advised that pregnant women consult their doctor before switching to such foods.

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## Public can now view individual facility air pollutants and toxics online

*Date: 29-Dec-2017 Source: Yuba Net*

Sacramento, Dec. 29, 2017 – Californians can now see air pollution and air toxics emissions data for industrial facilities in their neighborhoods on the California Air Resources Board (CARB) website. Emissions data for greenhouse gases (GHGs), as well as smog causing pollutants and air toxics has been updated through 2015 and can be accessed through the CARB Air Pollution Mapping Tool.

“This new tool is designed to improve transparency and accountability in California’s air pollution control program,” said CARB Chair Mary D. Nichols. “Air quality monitoring reports are public information but they are often difficult for the public to access. Now anyone with access to a computer or a smartphone can look up emissions data for any major facility in the state.”



Transportation is the largest source of both GHGs and most air pollutants, but hundreds of refineries, factories and other facilities across the state also release tens of millions of tons of air contaminants. Development of this tool is an important step by CARB staff to address the requirements of AB 197 (E. Garcia, 2016) by providing broader and more user-friendly access to climate-changing gases and air quality data.

The tool allows users to search for individual facility data by name, industrial sector, year, type of facility and pollutant. Large emitters can be isolated by air basin, air district, county, town or zip code. Users can also see a number of overlays, including the statewide CalEnviroScreen map of disadvantaged communities and state assembly and senate districts. The mapping tool uses data from the state's greenhouse gas mandatory reporting program. Local air districts provided data on criteria (i.e. smog-forming) pollution and air toxics emissions.

The mapping tool allows viewers to compare greenhouse gas emissions with toxics and criteria emissions from the same facility. Future versions of the tool will rely on mandates outlined in AB 617 (C. Garcia, 2017), which call for enhanced, publicly available criteria pollutant and toxic air contaminant reporting for large and high-risk facilities in the state. In the future, the tool will help provide a consistent approach to reporting toxics from individual facilities across local air districts.

Parts of California suffer the worst air quality in the nation. Communities in the San Joaquin Valley and the Los Angeles Basin live in the country's only two "extreme non-attainment" areas for ozone (smog). At some point during the year, more than 90 percent of Californians live within areas determined to have unhealthy air and much of the state now sees the growing impacts of climate change. Numerous state and federal regulations aim to reduce emissions, and with the Pollution Mapping Tool Californians can see for themselves the benefits of those programs in their communities. The Pollution Mapping Tool will be updated annually with 2016 data expected to be added in spring 2018.

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## **Air pollution and other woes that made it challenging for Delhi's transport department in 2017**

*Date: 30-Dec-2017 Source: Indian Express*



NEW DELHI: With the number of registered vehicles crossing the one-crore mark and air pollution taking centre-stage among the issues in the national capital, the Delhi transport department had a challenging 2017.

Amid criticism over inadequate public transport facilities, the department worked hard to fetch more buses besides taking up measures to ensure improved women safety.

A highlight of the year for the department was the

appointment of Kailash Gahlot as the new transport minister, by Chief Minister Arvind Kejriwal in May.

Gahlot, an MLA from Najafgarh, faced an uphill task of boosting the public transport infrastructure with the state transporter DTC having a depleting number of buses.

Facing flak from various quarters over non procurement of even a single bus in AAP's three-year rule, the minister rolled out the process for buying 2,000 buses.

The process for procurement of 1,000 standard floor buses each for the DTC and the Cluster scheme is on and tenders are expected to be issued soon, said a transport department official.

The department is also working on having 500 electric buses to combat air pollution and has approached the Centre for financial help under the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME) scheme.

The process for equipping 6,350 DTC and Cluster buses with CCTV cameras was also taken up by the department. It is hiring a consultant to find a suitable vendor and has approached the Centre for financial assistance from Nirbhaya Fund to finance the project.

In another move aimed at boosting safety of women commuters, the department instructed cab operators for fixing stickers to alert passengers to check that child locks were deactivated in the vehicles boarded by them.

However, the biggest challenge faced by the department was arranging comfortable public transport facilities for millions of commuters during emergency air pollution situation, invoking the road rationing measure.

The odd-even scheme that was announced last month during emergency pollution levels had a big question mark over it once the National Green Tribunal denied to exempt women drivers and bikers from it.

The government had tried to persuade the NGT to exempt the two categories citing reasons such as inadequate public transport facilities in the city.

The number of registered vehicles in the city crossed the one crore mark in May. Besides over 32 lakh cars, there are over 66 lakh two-wheelers that are termed by the experts as major air polluters due to poor emission standards.

Transport department officials say that efforts are on the increase the number of buses by roping in private operators in a big way.

"The work on a policy to increase the number of buses with involvement of private operators is being hammered out.

Such steps are necessary in view of the need of around 11,000 buses cited by various stakeholders including the court," said an official.

The department also worked on city taxi scheme and a parking policy during the year that are yet to be announced.

In the new year, the challenge before the department will be to give concrete shape to its various plans and policies besides raising the number of public transport buses which is around 5,500 at present.

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## Restricting diesel engine trucks eases Tehran's air pollution

*Date: 30-Dec-2017 Source: Tehran Times*



Diesel trucks release three major pollutants of black carbon, nitrogen oxides and pm 2.5 fine particles and recent temporary restrictions that have been set for trucks in Tehran has led to a 50 percent reduction of these emissions at nights, the director of Tehran's Air Quality Control Company said on Thursday.

Normally, trucks can ply Tehran streets during specific hours of night but recent severe air pollution led to the decision that clunker trucks would be banned from streets till the end of

[Iranian calendar month of] Dey [December 22 to January 20], Mehr reported.

After the implementation of these decisions, data derived from Tehran's three main air quality control stations show that the mean concentration of the three aforementioned pollutants has been reduced to half of the amount recorded over the previous week, Vahid Hosseini highlighted.

Hosseini went on to say that the data obtained from air quality stations demonstrate that the air quality of the Metropolitan's nights is poorer than that of the days and the main difference between traffic of nights and days is the presence of heavy diesel-engine trucks overnight which has a visible effect on air quality.

Long-term studies show that vehicles count for 80 percent of Tehran's air pollution, Hosseini added.

Recognizing the incomplete combustion of car engines as the main cause of black carbon, the Sharif University professor maintained that this pollutant is largely released by diesel vehicles. By nightfall and rush of trucks to the streets, a considerable increase is seen in the concentration of this pollutant, he added.

There are two other pollutants – namely nitrogen oxides and pm2.5 fine particles – which just have the same day-down/night-up scheme as black carbon, told the official.

The sinking of atmospheric boundary layer (ABL) at nights results in reduction of air volume to which pollutants are injected, so emissions should be strictly controlled over nights, highlighted the professor, adding that in some European cities, unlike Tehran, heavy diesel vehicles are only allowed to work at day-hours.

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## Delhi air pollution, Ganga & Yamuna rejuvenation kept NGT busy in 2017

*Date: 31-Dec-2017 Source: Business Standards*



Courting controversies with orders on regulating Hindu pilgrimage to sparing none, including Sri Sri Ravi Shankar's Art of Living for damaging the Yamuna floodplains, the National Green Tribunal (NGT) in 2017 also castigated the NDA government for failing to rejuvenate the holy Ganga.

Not only did the verdict on Ganga bring embarrassment for the Union government but the green panel's remarks that "non-cooperation" and "lack of will" of its instrumentalities were resulting in "inordinate delay" in cleaning the stretch of river

Yamuna also put it on the backfoot.

While milestone judgements like refusing to lift the ban on 10-year-old diesel vehicle brought kudos from environmental experts, a pro-active NGT drew the ire of Hindu religious groups for capping the number of pilgrims at Vaishno Devi and asking devotees to maintain silence in front of the shivalinga at Amarnath.

However, in the wake of protests, the tribunal came out with a clarification that there was no ban on chanting of mantras or performing of aarti inside the cave at Amarnath.

Taking note of sound pollution caused by the use of loud speakers at religious places, including mosques, the NGT directed strict adherence to the guidelines on noise pollution and ordered action in case of any violations.

It also took a tough stand on animal blood seeping into the Yamuna and directed the authorities concerned to ensure that no blood is allowed to flow directly into the river due to the slaughtering of animals.

With the end of the year, the NGT witnessed its Chairperson Justice Swatanter Kumar retiring from his post after completion of his five-year tenure and Justice U D Salvi taking over the reins of the tribunal as the acting chairperson.

Jantar Mantar, which for many years was the hotspot of all protests and dharnas, got rid off all such activities as the green body banned these saying that the state has totally failed to protect the right of enjoying pollution-free environment of the citizens living around the archaeological site, close to Connaught Place in the city.

Notwithstanding deliberations on such issues, one environmental aspect which kept NGT busy was the deadly air pollution in northern India, including the national capital, prompting it to come out with the graded action plan.

Worsening air quality in the national capital resulting in an 'environmental emergency' led the NGT to direct the Delhi, Haryana, Uttar Pradesh, Rajasthan and Punjab governments to submit action plans to deal with varying levels of air pollution.

The tribunal expressed its anguish at the AAP government for not taking preventive steps to deal with air pollution and rapped it for implementing the odd-even car rationing scheme at the "whims" of its officers.

Granting conditional nod to the AAP government's decision to implement the odd-even car rationing scheme, it ordered that no exemption should be allowed to "any person or officer and two-wheelers" and the scheme should be implemented automatically whenever the air pollution levels reached the emergency levels.

The NGT also voiced anguish for conducting the third Test between Sri Lanka and India despite alarming levels of pollution in the national capital. The Sri Lankan cricket team had complained of poor air quality that forced India to declare their innings.

While dealing with the high and mighty, the tribunal refused to impose an additional environment fine on the AoL and ordered the DDA to use this amount to restore the Yamuna floodplains and bill the AoL if the cost is more.

On Ganga cleaning, which is one of the most ambitious projects of the Narendra Modi government, the NGT observed that the government has spent over Rs 7,000 crore in two years to clean river Ganga which still remains a "serious" environmental issue.

The green panel, which delivered its verdict to clean Ganga, directed that 100 metres from the edge of the river would be treated as no development/construction zone between Haridwar and Unnao in Uttar Pradesh while in hilly areas it would be 50 metres.

Slamming the stakeholders for the delay in completion of the 'Maily Se Nirmal Yamuna' programme, the NGT said the project was facing inordinate delay due to non-cooperation of authorities and lack of executive will.

Expressing displeasure over the slow pace of the Yamuna rejuvenation programme, it said the ground reality shows that the project, which was to be completed by March 31, was far away from the target though some progress has been made in the first phase of its judgement.

The tribunal struck a blow to the Environment Ministry by directing it to re-examine a notification exempting real estate projects with a built-up area measuring between 20,000 and 1,50,000 square metres from obtaining prior environment clearance, saying it suffers from legal infirmity.

The MoEF, in an amendment notification published on December 9, 2016, exempted buildings and construction projects from the process of environment impact assessment (EIA) and prior environmental clearance.

Quashing the provision in the notification which relates to the exclusion of "consent to operate" and "consent to establish" under the Water Act and the Air Act, the NGT said the stipulation with regard to constitution and functioning of environmental cell, to monitor adherence to the conditions in environmental clearance, cannot be sustained and are liable to be set aside.

## Severe air pollution in Taiwan triggers emergency response

*Date: 31-Dec-2017 Source: Taiwan News*

TAIPEI (CNA) -- The Environmental Protection Administration (EPA) opened a provisional command center Sunday in response to severe air pollution that affected northern Taiwan since the early hours of the day.

The center was opened after the EPA forecast that the wave of air pollution originating from outside the country would affect 18 of Taiwan's 22 cities and counties, said Tsai Hung-teh, head of the EPA's Department of Air Quality Protection and Noise Control.

Its first directive was to ask state-run Taiwan Power Co. to cut electricity output by 4,250 MW, meaning that eight of the coal-fired generators at the Taichung Power Plant were shut down, Tsai said.

The center also asked schools to hoist pollution warning flags to remind students and teachers to take precautions and urged port authorities to instruct ships to use low-sulfur fuel oil and reduce their speed when entering Taiwanese ports to emit fewer pollutants.

Dust-prone roads were also being watered, and farmers were being asked not to burn farm waste outdoors or face penalties, Tsai said.

Environmental authorities were moved to action after air pollutants from abroad hit Taiwan Sunday morning.

At 7 a.m. Sunday, the density of PM2.5 particulates at the EPA's air quality monitoring station on Fugui Cape, the northernmost tip of the island, was found to have spiked from 18 micrograms/cubic meter ( $\mu\text{g}/\text{m}^3$ ) to 123  $\mu\text{g}/\text{m}^3$ .

As of 3 p.m. the concentration of PM2.5 at Fugui Cape remained extremely high at 88  $\mu\text{g}/\text{m}^3$ , and combined with a PM10 reading of 146  $\mu\text{g}/\text{m}^3$  triggered a "red" air quality alert, meaning the air was "unhealthy" for the general public.

Red alerts were seen throughout northern Taiwan, at six other monitoring stations in New Taipei, four stations in Taoyuan, all three stations in Hsinchu City and County, and all three stations in Miaoli County, as of 3 p.m., according to the EPA's latest Air Quality Index.

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## Street drama against air pollution

*Date: 31-Dec-2017 Source: Kathmandu Post*

Dec 31, 2017-On Saturday, a man in maroon hoodie was coughing loudly right in the middle of Koteswor chowk. Nearby the traffic island, his body was shaking more violently with each passing cough. Another person supported the man should he trip off. Yet, he fell down on this busy road stretch and yelled for help. Subsequently, two doctors, one in apron and another in black jacket, approached the person. The doctor in apron put his stethoscope on the chest and the back of the patient. "This air



pollution is affecting us all. It is killing us,” the doctor muttered. In the meantime, the patient thanked the doctor for attending him on time. “Hey, Government! Do we have to pay for every breath of fresh air now?” the patient asked loudly.

This was not a real incident but a part of a short street drama, organised by an initiative of doctors, activists, and commoners to “press the government to implement stringent policies to curb air pollution.” One of the doctors who attended the protest is Dr Arjun Karki, reputed chest physician,

currently practicing in Grande International Hospital, Tokha. “Many people are affected from lungs and heart diseases due to pollution,” Dr Karki said at the end of the show. “Until and unless the government acts on air pollution, the health of Nepalis will be in peril.”

One of the participants in the event was Samridhi Rana. “We are all affected. I am here to be part of the solution, not part of the pollution,” said Rana.

According to a report published by World Health Organisation, air pollution causes over 9,000 deaths every year, with coronary artery disease and stroke each killing more than 3,000 people in Nepal in 2012. The analysis of 103 countries found that 36 people out of every 100,000 in Nepal die from outdoor air pollution leading to heart diseases, lung cancer, chronic obstructive pulmonary disease, and stroke.

Anecdotal evidences from physicians also suggest that there is a surge of patients with issues related to lungs and heart. Deepak Sapkota, an activist, said they will run similar events for over two weeks in many parts of Kathmandu to pressurise the government to act against the increasing air pollution.

A major reason for Kathmandu’s increasing air pollution is haphazard construction and lax monitoring of emission quality from the vehicles. What is more alarming is that the concentration of suspended particulate matters such as dust, smog, fog, and smoke is significantly high during the winter and leads to higher exposure to air pollution than during the rainy season.

Dr Karki said children, elderly people, and people with lung diseases are at higher risk of air pollution. He said people should take proper precautions including use of masks when travelling outdoor and see doctors if and when symptoms exacerbate.

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## Residents Not Holding Their Breath Over Improved Air Quality

*Date: 31-Dec-2017 Source: Six Tone*

This article is part of a series looking back at some of the most noteworthy China stories of 2017.



For Beijing, 2017 started with a bout of toxic smog followed by tainted snow flurries. But nine months later, government data suggests parts of northern China, including the capital, have actually seen more blue sky than in years past.

Winters in China, particularly in the north, make headlines around the world, as thick smog — and dangerously high PM 2.5 levels — blankets the region.

A major culprit for air pollution is coal, which is used to heat homes and power factories. But in August, the central government announced it would slash industrial production and heavily restrict coal consumption to cut air pollution by 15 percent in 28 cities, and by 25 percent in the Beijing-Tianjin-Hebei region, compared with 2012 levels.

Experts say the measures are showing positive results. Lauri Myllyvirta, an energy analyst at environmental organization Greenpeace East Asia, told Sixth Tone that better air quality in northern China was due to more stringent government measures targeting industries and coal use in the 28 cities — but added that the clear next step is to institutionalize and spread such measures to the rest of the country. “Emissions monitoring and public disclosure should cover all industries’ emitters, not just hand-picked ones,” he said.

“The picture for 2017 is a bit mixed,” Myllyvirta said. “In November, pollution levels in the 28 cities fell by almost 40 percent [from the same period last year], but levels in central and southern China, in the northeast and the far west, increased.”

Data from the Ministry of Environmental Protection shows that PM 2.5 levels — the concentration of large particles in the air — have dropped significantly in the last two months. But on the other hand, Greenpeace’s analysis of years of NASA satellite data and the Chinese government’s ground monitoring data indicates that levels of nitrogen dioxide, a common air pollutant, have seen a “major increase” in the areas east and south of the 28 cities.

Myllyvirta said there are some indications of shifting industrial production from the 28 cities to their surrounding areas, such as Tangshan and Qinhuangdao in Hebei, as well as Shandong further south. But even before the current plan for the 28 cities was implemented, hundreds of heavy-polluting industries were already given the boot by cities like Beijing and forced to relocate.

Balancing environmental and economic policies has been one of China’s greatest challenges, as curtailing industry can prove costly. But this year, the central government earmarked an estimated \$7.5 billion for supporting environmental protection efforts, with over \$2 billion of this specifically reserved for combating air pollution.

“Aligning economic and energy policies with environmental goals will be key to ensuring progress on the national level,” Myllyvirta said.

Another challenge for Chinese authorities has been getting people, companies, and local governments to adhere to environmental guidelines. Smaller cities and villages, for example, often find ways to cut corners: Official inspectors have been locked up, and environmental volunteers beaten up. Meanwhile, in April it was revealed that some half-dozen companies in Hebei and Shandong provinces had ignored inspectors’ orders to shut down because of environmental violations and resumed normal operations.

On Tuesday, China's environment ministry slammed officials in Binzhou, also in Shandong, for skirting capacity cuts imposed on the city's polluting industries. Local officials had falsified data to win approval for a new aluminum plant in 2014, and a major steel company was found to still be operating despite receiving orders in 2015 to cease operations.

Despite of these slip-ups, Fu Lu, country director of environmental nonprofit Clean Air Asia, told Sixth Tone that she is optimistic about northern China's clean air gains. She said the government is determined to ensure that everyone follows national environmental policies — and has even shown that it is not afraid to publicly shame those who don't. By the end of various inspections in September, some 12,000 officials had been disciplined, and some 18,000 polluting companies punished with fines totaling more than \$132 million.

Local governments around the country, too, are making their own contributions to China's nationwide anti-pollution drive. Hundreds of cities restricted the sale and use of smoke-producing firecrackers during the winter Chinese New Year celebrations, and places like Harbin in the northeast have told residents to stop the centuries-old tradition of burning paper money to honor their ancestors and provide for them in the afterlife.

Meanwhile, back in Beijing, officials are hoping that the city will set an example by limiting its average PM 2.5 level to 60 micrograms per cubic meter by the year's end, and thereby purge the city of its reputation as ground zero of a wider "airpocalypse." However, residents who have lived through years of toxic smog and experienced the deteriorating air quality remain skeptical.

Beijing native Jiang Sei isn't ready to celebrate having more clean air days yet. Though government policies are set in place, Jiang said, she believes industries that drive the country's economy will always prioritize profits over pollution.

Nonetheless, the 35-year-old told Sixth Tone on Friday that the air quality in Beijing has been "much better" this year. "You can see more blue sky," she said, "but not every day. Just look outside now: The pollution is terrible."

Editor: Colum Murphy.

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जहाँ है हरियाली ।  
वहाँ है खुशहाली ॥

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