

Mumbai Mirror

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BREAKIN' IN THE NAKA The stretch of Mumbai from Bhayander to Virar, once infamous for crime and poor urban development, has now become the hip hop hub of the country

BKC regularly sees AQI levels go over 250. In other parts of the city, the readings frequently register 24-hour averages of between 120 and 300. An AQI of 80 is considered safe in Mumbai's climate

Wheeze of living

The city is breathing a cocktail of hazardous heavy metals like lead and cadmium, as well as noxious gases like sulphur dioxide, carbon monoxide and nitrogen dioxide

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Mumbai residents are breathing some pretty toxic air. On Saturday, the Ministry of Earth Science's System of Air Quality and Weather Forecasting And Research (SAFAR) recorded an air quality index (AQI) of 143 µg/m³ (microgrammes per cubic metre) — which is way above 80 µg/m³, which is considered safe in a climate

like Mumbai's. It's also steadily worsened since 2014-15, when the average air quality index in Mumbai was 117, according to the Maharashtra Pollution Control Board.

With every breath, the average Mumbai resident today fills her lungs with a toxic combination of particulate matter and gases, which, according to Dr Sanjeev Mehta, a pulmonologist affiliated with Lilavati Hospital, "can lead to damage to the upper airway and lower airway [in the respiratory tract], blocked nose, congestion, sore throat, asthma, pneumonia, sinusitis, permanent lung

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Every breath you take... is toxic

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damage, smokers' lung or chronic obstructive pulmonary disease... and, in the long term, cancer of the lungs."

Last week, a Central Pollution Control Board (CPCB) bulletin drew attention to the "poor air quality" in Mumbai, Navi Mumbai, Pune and Kalyan. This was attributed to wind conditions caused by a sudden spike in the temperature (the city crossed the 38°C mark this week). But in fact, with the exception of a few days during the monsoon, the air quality level in Mumbai is today almost consistently higher than the National Ambient Air Quality Standards safe limit, according to Bhagwan Kesbhat, founder of Waatavaran, an NGO that works on environment issues. "At BKC [one of the worst-affected areas in the city], we regularly see the AQI level go over 250. In other parts of the city, the readings frequently register 24-hour averages of between 120 and 300," says Kesbhat.

AQI factors in five categories of pollutants: ground-level ozone, sulphur dioxide, carbon monoxide, nitrogen dioxide and particulate matter — which refers to a mixture of particles, including dust, soot and smoke, that can be viewed by the naked eye, and smaller microscopic particles. When these pollutants — the result of construction, road works, waste burning, industrial activity, fires, vehicular emissions and so on — are smaller than 10 micrometres in diameter (PM10), they can get lodged in your lungs and enter your bloodstream. Naturally, particles that are smaller than 2.5 micrometres in diameter (PM2.5) pose the greatest risk to health.

A study released by the Centre for Science and Environment (CSE) in December 2019, stated



Lungs made of HEPA filters placed in Bandra on January 14 turned pitch black within a fortnight

that Mumbai's air has the highest concentration of PM10 out of 24 cities in peninsular India. "At BKC, we see PM10 and PM2.5 levels upwards of 120 and 130 respectively on most days," Kesbhat says. According to data from the Central Pollution Control Board, the average annual PM 10 concentration in Mumbai in 2007 was 90 µg/m3.

Waatavaran tried to highlight the danger by installing a 'human lung' made of HEPA (high-efficiency particulate air) filters outside RD National College in Bandra on January 14. Within a fortnight, the white-coloured lung had turned pitch black. But like most city residents, Savio D'Souza, 67, doesn't need an experiment to discern that the air quality in the city has deteriorated significantly. The running coach and former marathon champion, who has jogged on the Marine Drive promenade almost every morning since 1972, says,

"The city is breathing in a cocktail of hazardous heavy metals like lead and cadmium, as well as sulphur dioxide, carbon monoxide, nitrogen dioxide"

—Sunil Dahiya, Centre for Research on Energy and Clean Air



Outdoor air standards

	1-YR	24-HR	8-HR	1-HR
PM ₁₀	60 (20)	100 (50)	-	-
PM _{2.5}	40 (10)	60 (25)	-	-
SO ₂	50 (20)	80 (20)	-	-
NO ₂	40 (40)	80 (40)	-	200 (200)
CO	-	-	2000 (10000)	4000 (30000)
O ₃	-	-	100 (100)	180 (180)

■ India's standards

■ WHO guidelines

"Often the smog is so bad, you can't see Raj Bhavan or Malabar Hill [from Marine Drive] at all."

The smog even inspired singer Ankur Tewari to pen a song titled "Dhuan Dhuan". Says Tewari, "Years ago, the words 'dhuan dhuan' would be used allegorically; now it's literal. There's a line in the song that goes, 'Milne aasmaan se ate tare kabhi,' (there was a time when stars would come out to meet the night sky). You cannot see the stars any longer."

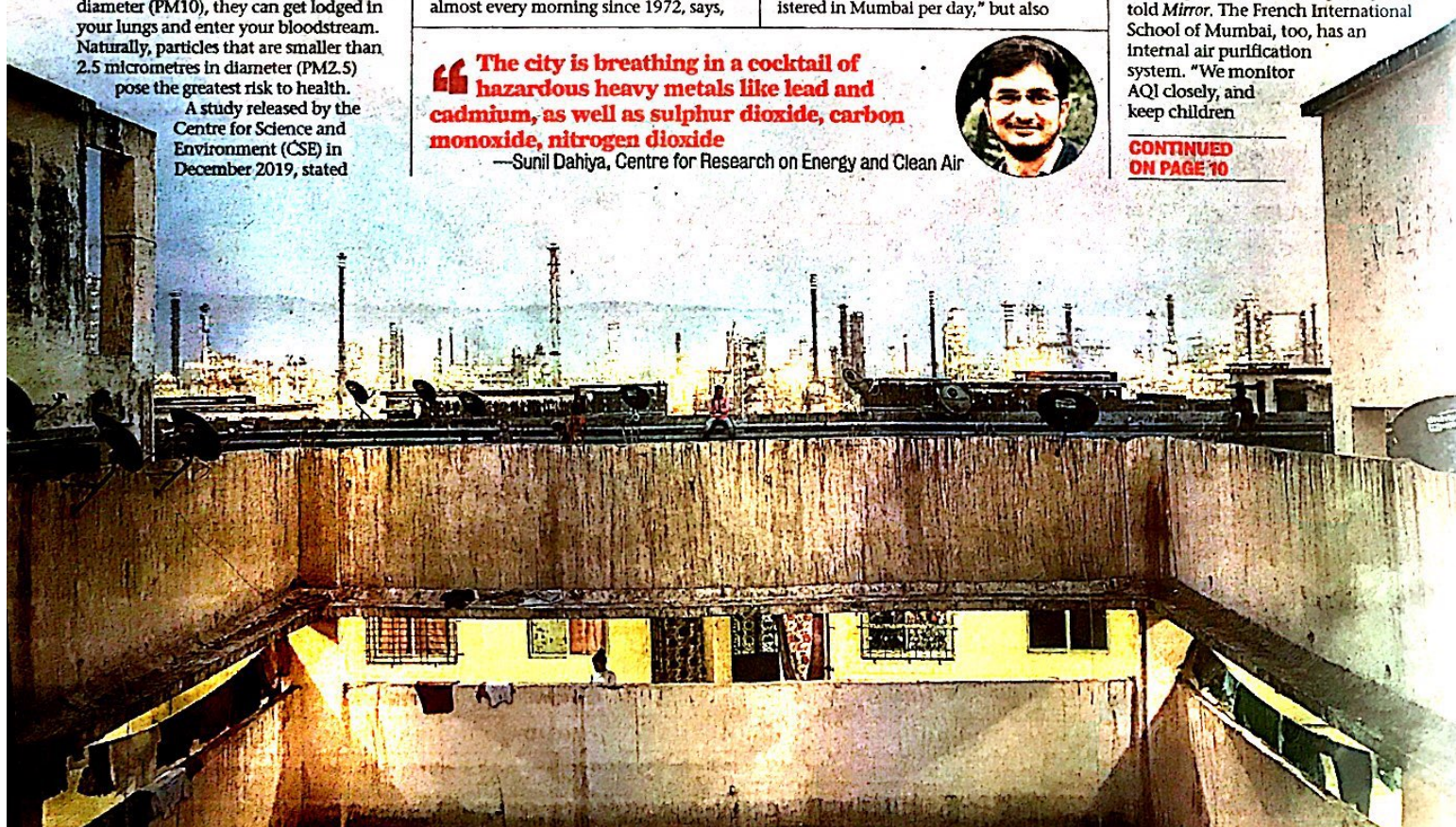
Kesbhat points to vehicular emissions as a key source of air pollution, with "some 700 vehicles being registered in Mumbai per day," but also

highlights that industry is the biggest culprit. "Industry accounts for 33 per cent of air pollution as per the Mumbai Clean Air Action Plan [prepared by the Maharashtra Pollution Control Board] — and 22.84 per cent out of this is generated by Tata Thermal Power Stations," says Kesbhat. According to Madhav Pai, executive director of the WRI Ross Centre for Sustainable Cities, around 20 per cent of the city's total pollution is from vehicles. The net effect from all sources, says Sunil Dahiya of the Centre for Research on Energy and Clean Air, "is that the city is breathing in a cocktail of hazardous heavy metals like lead and cadmium, as well as sulphur dioxide, carbon monoxide, nitrogen dioxide and such. We have PM2.5 concentrations that are four to six times above the safe limit".

According to Pierre Timmons, an ad filmmaker, this data is not to be trivialised. Timmons says both his daughters, aged seven and two, have borne the brunt of the city's rising levels of air pollution. "Though my wife and I have no history of respiratory disorders, my seven-year-old developed a patch on her lung [as a result of pneumonia] when she was five. And my two-year-old was hospitalised in October 2019 because she had crepitations in her lungs," says Timmons, 37, who had an air purifier installed in his Andheri apartment when a paediatrician told him the problems were related to air pollution.

Some schools have also installed air purifiers on their premises. The American School of Bombay (ASB) monitors indoor AQI in real-time through seven monitoring stations that use more than 40 strategically-placed sensors across all three campuses. "Some of the measures at ASB include purifying air by three-stage HEPA filtration, containing the air with vestibules and air curtains and setting up living green walls — some of these are as tall as 25 feet, and have more than 50,000 live, air-purifying indoor plants," a school spokesperson told *Mirror*. The French International School of Mumbai, too, has an internal air purification system. "We monitor AQI closely, and keep children

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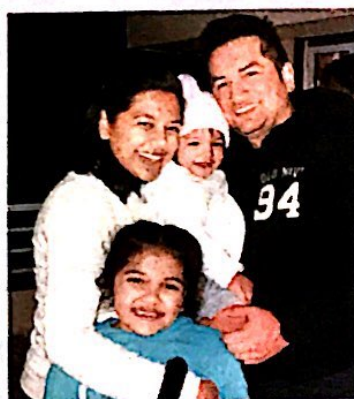
indoors if the air quality is poor," says Clio Lardenois-Imbert, president of the school's management committee.

Timmons, who tries to take his children to forested areas like Igatpuri over the weekends so they can breathe cleaner air, recognises this isn't a long-term solution. "One can't sit indoors forever. These are band-aids, not a cure," says Timmons, who feels that his apartment's proximity to the highway and the airport is far from ideal.

Roshni Udyavar Yehuda, president of the Institute of Environmental Architecture and Research, agrees. She identifies vehicular emissions and construction work as major sources of pollution and says that efficiently managed public transport and a development plan which allows for a staggering of infrastructure projects, are the need of the hour. "Here, there's no planning. Right now, for instance, all the roads are dug up. Aside from the pollution generated by the work itself, these projects cause traffic congestion and that adds to the pollution," she says.

According to BMC officials, there are over 150 roads that are currently under construction. In addition to which roads are being dug to create new stormwater drains, lay sewage lines and wires, pipes and cables, and to repair existing footpaths — not to mention six new metro rail lines covering 139 km. While work on the BMC's ambitious coastal road project resumed last month, and the State Public Works Department is widening and concretising the Sion-Panvel highway, construction is also actively underway on the Goregaon-Mulund Link Road, the Bhandup Water complex and over 1,000 commercial and residential buildings.

This is a cause for concern because as environmental expert, advocate RB



Pierre Timmons believes his daughters have borne the brunt of the city's rising levels of air pollution; both have suffered lung-related ailments



Mahabal, points out, "Ready-mix concrete plants spread a lot of fine sub-micron respirable particulate matter in the ambient air. The RSPM can escape the natural filtration of the nose and reach the lungs, causing asthma and allergy. Fine particles can even enter the bloodstream and finer veins that go right up to the human brain. RSPM serves as seed for blockages, blood clots and can even cause brain haemorrhage." Adding that dust in residential areas comes largely from these plants positioned at construction sites, Mahabal says, "Air Quality Index doesn't fully depict the seriousness of the risk from fine RSPM."

Yehuda, who has also worked internationally in the field of environmental research and implementation since 1997, says that safety measures are laid out in the national building code "but at the city level, it's for the municipality to implement the guidelines. For maintenance of footpaths and roads, guidelines are laid down by the Ministry of Urban Development. For example, the use of

certain barriers is prescribed; watering [of sites] must be done in some cases and authorities must ensure deadlines are adhered to."

The city has the capacity to do all this, but it's the will that appears to be lacking. Municipal Commissioner Parveen Pardeshi's 2020-21 budget estimate of Rs 33,441.02 crore has a provision of Rs 226.77 crore for the BMC's gardens department, but is silent on steps to be taken to improve air quality index. There is a lot of talk about how the Bharat Stage VI (BS-VI) emissions standards will cut emissions from new vehicles by about 80-90 per cent from April onwards — but what about existing vehicles? Smog towers have also been considered as an option, but these are costly, require energy to function, and in China, they have been seen to be ineffective.

Clearly, air pollution policies aren't really at the heart of governance. Siddharth Singh, author of *The Great Smog of India*, says: "Industrial policymaking is not within the domain of the envi-

“Right now, all the roads are dug up. Aside from the pollution this generates, it causes traffic congestion, which adds to air pollution”

—Roshni Udyavar Yehuda, President, Institute of Environmental Architecture and Research



ronment ministry; most air pollution regulation happens through the pollution control board. But we also need to think about where industries are being set up, what fuels they are using, and about incentive structures... If air pollution was at the core of our industrial strategy, then perhaps wiser decisions would be made." In the absence of these changes though, Singh fears that major metros may see the rise of "pollution refugees" — people who move out for health reasons. Of course, moving away is mainly an option for the affluent. Which is why, Dahiya asserts that there's an urgent need for more accurate data and stricter rules. "And authorities need to take firm action against offenders," he says.

Efforts to curb emissions are a must, says Dr Mehta, who conducted a study of Mumbai-based nurses in 2018 and found that one in every three in the age group of 20 to 30 had weak lungs. Sharing that his own Mumbai apartment as well as his property in Karjat rely on solar power, the doctor says, "In addition to pushing for better policies, we can bring down air pollution by 10 per cent if every society makes it a point to go solar and start composting — and citizens reduce their carbon footprint."

— With inputs from Ravi Galkwad and Shashank Rao