



PHOTO: STAR

The dust-laden air of Dhaka

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We all know Dhaka's air is bad. Yet it is never more visible than now, in the drier months of the year. This is only compounded by the constant construction that unfolds across the city, not least the metro that is being developed to ease congestion and pollution on the roads.

Early last month, the world air quality report by the nonprofit Greenpeace and IQAir AirVisual, a website visualising real-time air quality data worldwide, ranked Dhaka as the second worst capital in terms of average annual PM2.5 concentration, at 97.1 $\mu\text{g}/\text{m}^3$. Delhi came first worldwide and Dhaka is followed by Kabul in the rankings. "At a country level, weighted by population, Bangladesh emerges as the most polluted country on average," states the report.

On March 20, Dhaka was ranked the worst city in the air quality index (AQI) with a score of 179, or "unhealthy". A score in the range 151-200 indicates that health effects are expected for all but particularly for "sensitive groups" such as children and adults with respiratory diseases. The World Health Organisation (WHO) guideline for PM2.5 is an annual mean of 10 $\mu\text{g}/\text{m}^3$.

Dhaka's air quality generally hovers around 150, rising higher in the months between November and March. According to the clean air and sustainable project (CASE) of the Department of Environment, northwestern winds in these dry months carry particulate matter from, for example, the brick kiln-heavy areas on the outskirts of the city to here, and which can remain in the atmosphere for a long time, especially when there is no rain.

PM2.5, or fine particulate matter, is a widely used indicator for air pollution as it has the most health impact of all air pollutants. These tiny airborne particles measuring only 2.5 microns in size, can penetrate into the lungs and from there into the bloodstream, possibly leading to heart disease and lung cancer, among other cardiovascular and respiratory conditions. It is described as the greatest environmental health risk worldwide—leading to seven million premature deaths every year, with almost two-thirds in the Asia-Pacific region alone, according to a 2016 WHO estimate.

It shortens lifespans by between three to four years in Bangladesh, according to a global report on the air quality life index. Worldwide, air pollution has been shown to be deadlier than smoking, alcohol and drug use, and road injuries. An analysis of data from the government's air quality monitoring centre showed that Dhaka residents suffered air pollution 197 out of 365 days last year, compared to between 120 and 160 days in previous years.

A 2019 study published in the journal *Science of The Total Environment* assessed the risk of heavy metal-contaminated street dust in Dhaka to human health. All the metals identified had toxicological

effects and some such as arsenic, chromium and cadmium are carcinogenic. It found dust in Dhaka contained 200 times the cadmium considered acceptable in soil. The presence of zinc, arsenic and nickel was also higher than expected.

If compared to data modelled by the US's environmental protection agency (EPA), "The presence of these metals in dust is potentially toxic to human health," says one of the authors of the study, Abdus Salam, professor of chemistry at the University of Dhaka (DU).

Professor Salam was involved in two further studies recently, one of which assessed the risk of air pollution to schoolchildren. "We studied 10 schools and 250 young students where we tested air pollution, PM 2.5 and PM1, in their classrooms and the fields where they played. We also tested their lung efficiency."

"We found 55-60 percent of the school children had lung function efficiency below the standard value. The impact on lung function was most where pollution was higher," states Professor Salam. The children studied showed symptoms such as coughs, shortness of breath and asthma, and migraines and headaches.

Outdoor pollutants also come inside our homes. The other study, one conducted in four residential areas of the city, found indoor air pollution was inversely linked to lung function. The density of particulate matter, indoor too, was found to be higher than WHO standards. This had the same overall finding as the previously mentioned study—where pollution was more, the researchers of DU's chemistry department found reduced lung efficiency.

All these seem to confirm that Dhaka's air quality has a measurable impact on our health.

Dust can, and has, been tackled in Bangladesh. The city of Rajshahi was lauded internationally for significantly reducing dust pollution by paving or planting trees on any available loose soil and introducing cleaner transport options to battery-powered rickshaws.

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