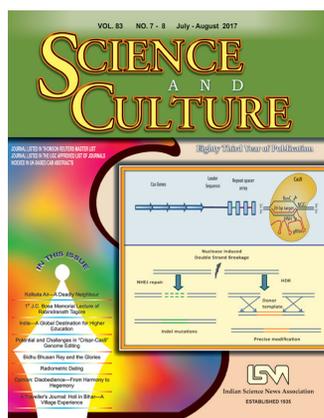


KOLKATA AIR: A DEADLY NEIGHBOUR



Human civilisation is at stake – it is facing threats from the pollution of land, water and air. Of the three, air pollution has assumed an alarming proportion in India. According to WHO, 13 of the cities with the greatest level of airborne particulate matter (detrimental to health) in the world are from India. Approximately 1 Lakh people in India die prematurely because of air pollution. Delhi has the most polluted air in the world. Air in Delhi is estimated to surpass the accepted limit of pollution by four times and is twice more toxic than the air in Beijing, crowned until recently as the ‘most polluted city in the world’. We, the human beings, are primarily responsible for this pollution, although natural phenomena like volcanic eruptions, forest fires and radioactive decay also contribute to it. Air pollution is undeniably a global concern.

What is air pollution? It is the introduction of particulates, biological molecules or other toxic substances into earth’s atmosphere, causing diseases, death or damage to the living beings, food crops and the environment. Environmental toxics of whatever texture - solids, liquids or gases - are either inorganic or organic compounds. Studies on pollutants mainly focus on formaldehyde (CH_2O), Particulate Matter (PM), Nitrogen oxides (NO_x)

and sulphur oxides (SO_x). A recent addition to the list is dichloromethane (CH_2Cl_2) which, like chlorofluorocarbons (CFCs), has been found to deplete ozone (O_3) layer.

Airbourne particulate matter with diameter less than $2.5 \mu\text{m}$ and $10 \mu\text{m}$ are called $\text{PM}_{2.5}$ and PM_{10} , respectively. Ultrafine particulate ($\text{PM}_{2.5}$) causes most health damage by entering into the deepest crevices of lungs. Ambient air quality refers to the quality of outdoor air in our surrounding environment. Background exposure to ambient air pollution increases morbidity and mortality. Analysing data over a 25 year period (1990-2015) at global, regional, and country levels, ambient $\text{PM}_{2.5}$ was found to be the fifth-ranking mortality risk factor in 2015. Exposure to $\text{PM}_{2.5}$ caused *ca.* 8% of total global deaths, *ca.* 60% of which are in east and south Asian countries.

As per a US report, pollution in South Asia, including India, had gone up by 8% in the past two years. According

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to a WHO report (2014) in developing nations, 98% of cities with more than 1 Lakh people do not have access to safe air. Delhi was estimated to be the world’s most polluted city. We, the inhabitants of Kolkata, the ‘City of Joy’,

were feeling relieved. But the picture has changed in 2016. Global Urban Ambient Air Pollution Database (WHO, update 2016) clearly shows that “among Indian metros, air toxicity, including that of $\text{PM}_{2.5}$, is increasing most rapidly in Kolkata.” According to an article published in Nature India (2014), “India’s air pollution is deadlier than AIDS and malaria.”

Besides, Delhi-based Centre for Science and Environment (CSE) carried out ambient air pollution studies in Kolkata and found that air pollution (PM_{2.5}) spiked on December 25 and 31, 2016 and the air was hardly breathable. During this week (Dec. 23-31, 2016), the Air Quality Index (AQI), based on PM_{2.5} levels on a 3-12 hour period and a global standard for measuring pollution level, of Kolkata was 346 (vs 374 in Delhi) against a 'good air benchmark' of 50 and a 'safety benchmark' of 100. Even the data released by the Central Pollution Control Board (CPCB) supported this view. CSE has found that the city's PM_{2.5} level is 2.7 times and NO₂ level is close to twice the standard or safe limit. Even the respirable particulate (PM₁₀) level of Kolkata was found (2016) to be 125 µg/m³, just above twice the safe national limit (60 µg/m³).

Then there is winter trauma. Every year pollution levels rise very rapidly in winter due to low wind speed, low temperature and inversion trap pollution - particulate levels become as high as 4 times the standards. This winter, Kolkata seems to be aiming hard for the crown of the 'most polluted Indian metro city',

a dubious position currently held by New Delhi. Ironically, one of the highest levels of pollution was noted during early morning at Rabindra Sarobar Lake, South Kolkata where people throng for morning exercise.

Scientists of the University of California, Berkeley have found that in Kolkata, 'gms of vehicle pollution inhaled / gm of vehicle pollution emitted' is 4 times higher than the world average – highest among all the key Indian metro cities studied. Within the city, the greater the traffic, the higher is the pollution level. No wonder, CPCB has classified, inter alia, Dunlop Bridge, B.T Road, Moulali, Dalhousie Sq., Lal Bazaar Police HQ, Kasba, Minto Park and Behala Chowrasta as 'Pollution Hotspots'. The air pollution monitoring sites of WBPCB cover important busy areas of the city and measure only raw PM_{2.5} level.

According to a BBC News, Kolkata of May, 2017, 70% of the inhabitants of Kolkata suffer from respiratory troubles, mainly asthma and lung cancer, which is caused by air pollution, as revealed by a 6 year-long study undertaken by the Chittaranjan National Cancer Institute

(CNCI), Kolkata. Kolkata tops all Indian cities in lung cancer incidences. CNCI has found a direct link between air pollution and the high incidence of lung cancer in Kolkata. However, WBPCB and NEERI (National Environmental Engineering Research Institute) opine that burning of coal, garbage and dry leaves as well as dust particles generated at construction sites also contribute to air pollution in Kolkata.

The CSE report has clearly stated that the diesel-driven cars are mainly responsible for the increasing air pollution in Kolkata. In Kolkata, nearly 65% of the new cars and 99% of the commercial vehicles are diesel-driven and pollute the air. Over the past year, only 20% of the city's 1.5 million registered vehicles reported for auto

emission tests, and the rest continue to release deadly smoke, said a car emission expert. Bumper-to-bumper driving of vehicles in highly congested roads with frequent gear, clutch and brake in operation, driving in slow speed and keeping the vehicles on idle starting conditions also contribute to the air pollution.

In May 2005, the W.B. Government had set a deadline for all vehicles (manufactured before 1990) in Kolkata either to be off the roads or convert to LPG, a green fuel. Nearly 80% of the city's buses and trucks and nearly 50% of its taxis and auto-rickshaws would have gone off the roads if the government enforced its directive. Unfortunately, only 10% of Kolkata's vehicles are driven by LPG. Perhaps the worst offenders are around 50,000 auto-rickshaws, half of which are unregistered and use "kantatel" – a fuel made out of a deadly concoction of kerosene and petrol. Green activists complain that almost unmonitored (for pollution) movement of thousands of trucks and other commercial vehicles within the city adds to the rise in pollution at nights.

The people of Kolkata had the tradition of resorting to public transport or walking. But with influx of cheap vehicles, increase in peoples' purchasing power and a deteriorating public transport system, this habit has practically disappeared, which further aggravates the air pollution situation.

The Head of the CSE's pollution control campaign

Alas, unless the Government takes urgent and appropriate measures, this 'Diesel Capital of India' will continue to be viewed as the 'Lung Cancer Capital of India' as well. It remains to be seen as to how long we have to put up with our deadly neighbour, Kolkata Air

suggested that “it needs a technology leapfrog, scaling up of public transport, integrated multi-modal transport options, car restraints and walking for clean air” to arrest this deterioration. Unfortunately, the W.B. Government is doing practically nothing to control the worsening situation, as alleged by an Environmental activist from Kolkata who filed a public interest litigation in the Calcutta High Court

in March this year. Alas, unless the Government takes urgent and appropriate measures, this ‘Diesel Capital of India’ will continue to be viewed as the ‘Lung Cancer Capital of India’ as well. It remains to be seen as to how long we have to put up with our deadly neighbour, Kolkata Air. □

Manas Chakrabarty