

How safe is our air?



Center for Study of Science, Technology and Policy

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With haphazard urban development and a lackadaisical approach towards pollution control, Bengaluru is a ticking time bomb, says Dr Pratima Singh, Research Scientist at CSTEP, in this interview.



Bad air quality in the national capital is public knowledge. How does Bengaluru compare?

Pollution levels in Delhi range between unhealthy and very unhealthy, touching hazardous levels between October and December. Bengaluru's Air Quality Index (AQI) levels too range between very unhealthy and unhealthy (for sensitive groups). Even though pollution levels in the city are quite low, when compared to Delhi, the air quality is far from ideal and can cause health issues. Bengaluru's air quality will touch

'hazardous' levels if the current pace of haphazard development in the city continues, without putting in place adequate regulations to reduce air pollution.

What areas are CSTEP focusing on in your current research on Air Pollution?

CSTEP established a Center for Air Pollution Studies (CAPS) in March 2019. The Centre aims to bring together practitioners in the field of air pollution to inform policy. We felt that there was a lack of 'holistic' understanding of Air Pollution that was based on actual evidence. So, at CAPS, we are working along three verticals: conducting monitoring & measurement studies; technology and policy analysis through modelling studies and finally, engaging with policymakers to inform policy decisions. At present, our researchers are focusing on generating scientific evidence to enable an informed discourse on both sources of pollution and concentration of pollutants. This information will help us recommend practical and implementable policy measures to reduce pollution.

At present, CAPS is preparing a comprehensive Clean Air Action Plan (CAAP) for three cities in Bihar (Patna, Gaya, and Muzaffarpur). We are also building an emission inventory and conducting a source apportionment study for Bengaluru.

The ambient air in Bangalore has harmful components such as particulate matter of various sizes, oxides of sulphur and nitrogen, etc. How does this affect vulnerable groups such as children, senior citizens, and expectant mothers?

In Bengaluru, although the concentration of SO₂, NO₂ and NH₃ fall below national standards, PM₁₀ and PM_{2.5} levels exceed these standards. Particulate matter (PM₁₀ and PM_{2.5}) contains microscopic particles with high risk of inhalation. These particles, when inhaled, can get lodged in the lungs, causing severe health issues. Numerous scientific studies have linked exposure to particle pollution to a wide variety of problems, including: premature death in people with heart or lung disease, non-fatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, persistent cough, and difficulty in breathing.

Exposure to pollution also has serious health linkages in children. Children and young adults with asthma are more prone to the effects of air pollution as they have a faster breathing rate and their lungs are not developed completely. Children living in areas with high pollution are more likely to have reduced lung function as adults and those

who are exposed to high concentration of air pollution for a longer period of time may develop asthma.

What are the major contributing factors concerning air pollution in Bangalore?

Currently, we are witnessing unplanned development of infrastructure services such as transport and public utilities, construction and development work across various parts of the city, brought about by a swiftly expanding population and a growing economy. These, along with unplanned urban planning, traffic congestion problems, and dust from road and construction activities, have resulted in increased emissions level.

Vehicular emissions contribute the highest amount of emissions in Bengaluru. With the expansion of city area, population, and economic activities, vehicle ownership rates — the number of vehicles registered per 1000 population — has exponentially increased. From 150 in 1990, to 300 in 2001, and 600 in 2016; vehicle growth rate in Bengaluru between 1980 and 2016 stands at 10.6% (twice that of Delhi). Vehicular emissions are only likely to be exacerbated if current trends continue: the use of private vehicles has increased (90% of vehicles registered in 2016 are private vehicles), public mode share has decreased from 42% in 2007 to 27% in 2011, and economic growth has increased the movement of freight transport.

There are some non-transport factors that are also significantly contributing to air pollution. Disposal of debris and transportation of construction material, solid waste mismanagement and burning, and indoor kerosene/biomass cooking are some contributors.

How can policy intervention help curb air pollution?

Considering that majority of emissions originate from the transport sector, the most urgent policy measures should focus on mitigating these emissions. KSPCB has proposed various measures to regulate emissions from on-road vehicles including limiting the number of new vehicle registrations, banning entry of heavy-duty vehicles (HDVs) in the city during the day time, banning vehicles more aged more than 15 years old from plying in the city, denial of fuel for vehicles without PUC certificate, integrating traffic demand management, including intelligent traffic systems (ITS), integrating all public transport modes, and converting all passenger three-wheeler auto rickshaws and taxis to CNG.

Besides these, the Karnataka government needs to take steps to improve access to the public transportation system to effectively reduce the use of private vehicles. Putting in

place strict and fool-proof solid waste management processes and effectively implementing them can also go a long way in reducing emissions from the city.

Citizens play a crucial role in implementing these measures. The first step towards this would be to make the pollution data clear and accessible to the public, to enable better understanding of the science and severity of pollution in their respective areas. The pollution control board can prepare a set of guidelines, for both preparing for and mitigating deteriorating pollution levels in the city.

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