

Study to Analyse Air Pollution in Bihar

Why in News?

Recently, the Bihar government has decided to conduct a **real-time apportionment study** in **Muzaffarpur and Gaya** to identify sources of <u>air pollution</u>.

 The decision was taken because Muzaffarpur, Gaya and the state capital Patna are among the 122 non-attainment cities in terms of air pollution trends.

Key Points

- The study will be conducted by the Indian Institute of Technology (Delhi and Patna) along with the Bihar State Pollution Control Board.
 - The study will identify the "seasonal mass concentration level of PM2.5 and PM10 in ambient air" of the extended urban areas of both cities.
 - PM 2.5 and PM 10 are **minute particles** present in the air, and exposure to these is harmful to health.
- Real-time source apportionment studies help identify factors, such as vehicles, dust, biomass burning, and emissions from industries, responsible for an increase in air pollution in an area
- The Institute of Environment and Sustainable Development, Banaras Hindu University (BHU) is already conducting the study in the Bihar capital and it is expected to be completed by September 2024.
- The Union Ministry of Environment, Forest and Climate Change launched the National Clean Air Programme (NCAP), which proposed strategies to reduce air pollution.
 - The NCAP identified 122 non-attainment cities that violate the National Ambient Air Quality Standards (NAAQS).
- Apart from conducting emission inventory, carrying capacity and source apportionment of particulate matter, experts will also collect data on the contribution of river bed material (soil) and source of road dust.
- Covering of construction materials during transportation, mandatory green shields for building construction, development of green belts, promotion of <u>e-vehicles</u> and use of <u>environment-friendly fuel</u>, stringent checking of <u>vehicle emission</u> and use of <u>smog guns</u> are some of the <u>steps that</u> are being taken by the authorities concerned in the state.
- The <u>Indo-Gangetic plain</u> faces massive <u>aerosol</u> <u>loading</u>, which is also one of the reasons for air pollution in several cities.
 - Aerosol is defined as a suspension system of solid or liquid particles in a gas.

National Ambient Air Quality Standards (NAAQS)

- NAAQs are the standards for ambient air quality with reference to various identified pollutants notified by the <u>Central Pollution Control Board (CPCB)</u> under the Air (Prevention and Control of Pollution) Act, 1981.
 - List of pollutants under NAAQS: PM10, PM2.5, SO₂, NO₂, CO, NH₃, Ozone, Lead, Benzene, Benzo-Pyrene, Arsenic and Nickel.

Air Pollutants

Sulphur Dioxide (SO₂)





It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to

Impact: Causes respiratory problems.

Ozone (O₃)





Secondary pollutant formed from other pollutants (NOx and VOC) under the action of the sun.

Impact: Irritation of the eye and respiratory mucous membranes, asthma attacks.

Nitrogen Dioxide (NO₂)









Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM

Impact: Chronic lung disease.

Carbon Monoxide (CO)







It is a product of the incomplete combustion of carbon-containing compounds.

Impact: Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.

Ammonia (NH₃)







Produced by the metabolism of amino acids and other compounds which contain nitrogen.

Impact: Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.

Lead (Pb)





Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.

Impact: Anemia, weakness, and kidney and brain damage.

Particulate Matter (PM)







PM10: Inhalable particles, with diameters that are generally 10 micrometers and smaller.

PM2.5: Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

Source: Emitted from construction sites, unpaved roads, fields, fires. Impact: Irregular heartbeat, aggravated asthma, decreased lung function.

Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.





