



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 [air pollution](#).

- 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 [e-vehicles](#) and use of **environment-friendly fuel**, stringent checking of **vehicle emission** and use of **smog guns** are some of the steps that are being taken by the authorities concerned in the state.
- The **Indo-Gangetic plain** faces massive **aerosol loading**, 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 **Central Pollution Control Board (CPCB) 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 form acid rain.

Impact: Causes respiratory problems.

Ozone (O₃)



Secondary pollutant formed from other pollutants (NO_x 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 formation.

Impact: Chronic lung disease.

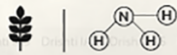
Carbon Monoxide (CO)



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.



