Link between Air Quality and Covid-19

Why in News

For the first time, a pan-India study has found a direct correlation between air pollution and Covid-19.

- The study found that areas with **poor air quality and higher emissions of** particulate matter (PM) **2.5 are more likely to have** Covid-19 **infections** and related deaths.

Particulate Matter (PM) 2.5

- It is **an atmospheric particulate matter of diameter of fewer than 2.5 micrometres,** which is around 3% the diameter of a human hair.
    - It is very small and can only be detected with the help of an electron microscope.
- It **causes respiratory problems** and also reduces visibility. It is **an endocrine disruptor** that can affect insulin secretion and insulin sensitivity, thus contributing to diabetes.
- These particles are formed as a **result of burning fuel and chemical reactions** that take place in the atmosphere. **Natural processes** such as forest fires also contribute to PM2.5 in the air.
- These particles are also the **primary reason for the occurrence of smog.**

Key Points

- **About:**
    - The study was conducted by scientists from various universities such as **Indian Institute of Tropical Meteorology (IITM)**, Pune, National Institute of Technology Rourkela; Indian Institute of Technology, Bhubaneswar.
    - It was **partially funded by the** Ministry of Earth Sciences**,** the Government of India.
- **Components:**
    - The study involves three kinds of data sets—
        - National Emission Inventory (NEI) **of PM2.5 for 2019,** developed by the scientists;
        - **Number of Covid-19 positive cases** and corresponding death as of 5th November, 2020.
        - **Air quality index data** (in-situ observations).
- **Important Observations:**
    - The study titled **'Establishing a link between fine particulate matter (PM2.5) zones and Covid-19 over India based on anthropogenic emission sources and air quality data'** dealt with how people living in highly **polluted areas are more vulnerable** to coronavirus infections.
    - The **regions using huge amounts of fossil fuels** such as petrol, diesel and coal by combustion in transport and industrial activities also **experience a far higher number of**

Covid-19 cases.

- For Example, the highest numbers of Covid-19 cases are found in States like **Maharashtra, Uttar Pradesh, Delhi and Gujarat,** where exposure to the prolonged high **concentration of PM2.5 is relatively high,** especially in the cities, due to overuse of fossil fuel.
- **Mumbai and Pune** are **among hotspots** where high air pollution from the transport and industrial sectors is related to a higher number of Covid-19 cases and deaths.

- There is also evidence that the **novel coronavirus sticks to fine particles** like PM2.5 allowing them to **move from one part to another** by making the airborne transmission of Covid-19 more effective.

- **Impact:**
  - When human-induced emissions are added combined with the **double impact of the Covid-19** virus, the **damage to lungs** will be much faster and worsen health conditions.
  - The study results **will help slow down the spread of the virus** by providing **more preventive steps** and resources in areas with high pollution levels for present situations as well as for future possibilities.
- **Solution:**
  - There is a need to adopt **cleaner technology, better transport emission** norms like **Bharat Stage (BS) VI** at the earliest, and ensure **better coal technology** like ultra-supercritical power plants **to reduce particulate emissions.**
- **Other Initiatives to Reduce Air Pollution:**
  - **UJALA scheme.**
  - **International Solar Alliance.**
  - **National Action Plan on Climate Change (NAPCC)**
  - **System of Air Quality and Weather Forecasting and Research (SAFAR)**

Air Quality Index (AQI)

- The AQI is an **index for reporting daily air quality.**
- It focuses on health effects one might experience within a few hours or days after breathing polluted air.
- AQI is calculated for **eight major air pollutants:**
  - Ground-level ozone,
  - PM10,
  - PM2.5,
  - Carbon monoxide,
  - Sulfur dioxide,
  - Nitrogen dioxide,
  - Ammonia,
  - Lead,
- Ground-level ozone **and airborne particles** are the two pollutants that pose the greatest threat to human health in India.

Source: TH