

# **Ground Level Ozone Pollution in Delhi: CSE**

For Prelims: CSE, CPCB, Ozone Pollution, AQI, NCAP.

For Mains: Ground Level Ozone Pollution in Delhi.

## Why in News?

According to a new analysis by the <u>Centre for Science and Environment (CSE)</u>, parts of the Delhi-NCR region witnessed ground-level ozone exceeding the national standards on **87 out of 92 days** between March and May in 2023.

■ The analysis, based on **data from the** <u>Central Pollution Control Board (CPCB)</u>, highlights the duration and geographical spread of <u>Ozone Pollution</u>, its impact during different seasons, and the underlying causes.

Note: CSE is a public interest research and advocacy organisation based in New Delhi.

It researches into, lobbies for and communicates the urgency of development that is both sustainable and equitable.

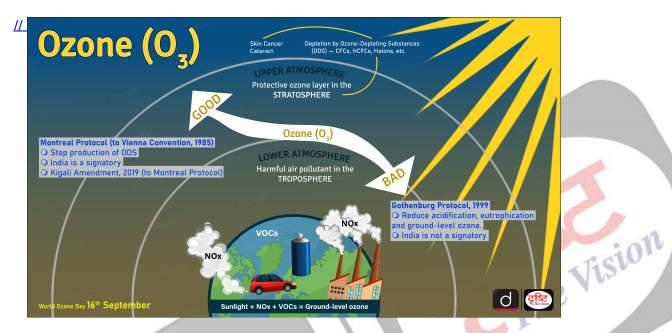
## What are the Findings?

- Duration of Exceedance:
  - While ground-level ozone pollution in Delhi-NCR was lower in 2023 compared to the past five years, the duration of its exceedance has increased.
  - This phenomenon is of concern as elevated ozone levels persist even hours after sunset, contrary to expectations.
  - This summer, at the stations which reported exceedance the rolling 8-hr average stayed above standard for 4.9 hours on average, which is up from 4.6 hours observed last summer.
    - The WHO Air Quality Guidelines for ambient (outdoor) ozone is 100 μg/m³ (~50 ppb) measured as 8-hr maximum moving average within a day.
- Not Specific to Seasons:
  - Ozone pollution is not limited to specific seasons. Even during winter months, when cold and foggy conditions inhibit ground level ozone formation, Delhi-NCR experienced excess ozone levels on multiple days in January 2023.
    - Ozone levels exceeded the standard at multiple stations on 26 days in January 2023.
- Impact on Specific Areas:
  - New Delhi and South Delhi areas were the most affected by ground-level ozone pollution.

### What is Ground-Level Ozone?

#### About:

- Ground-level ozone, also known as Tropospheric ozone, is a colorless and highly
  irritating gas that forms near the Earth's surface, typically within two miles above the
  ground.
- Ground-level ozone is not directly emitted from any specific source. It is formed through complex interactions between Nitrogen Oxides (NOx), Volatile Organic Compounds (VOCs), and carbon monoxide emitted from vehicles, power plants, factories, and other combustion sources. These compounds undergo cyclic reactions in the presence of sunlight to generate ground-level ozone.



#### Impact:

 When NOx and VOCs interact in the presence of sunlight, they undergo complex chemical reactions that lead to the **formation of ground-level ozone**. Ground-level ozone is a significant air pollutant and can have harmful effects on human health, vegetation, and ecosystems.

### Initiatives:

- The Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas.
- Bharat Stage (BS) VI norms.
- Dashboard for Monitoring Air Quality.
- National Clean Air Programme.
- National Air Quality Index (AQI).
- Air (Prevention and Control of Pollution) Act, 1981.

## **UPSC Civil Services Examination Previous Year Question (PYQ)**

## Q. Consider the following: (2019)

- 1. Carbon monoxide
- 2. Methane
- 3. Ozone
- 4. Sulphur dioxide

Which of the above are released into atmosphere due to the burning of crop/biomass residue?

- (a) 1 and 2 only
- (b) 2, 3 and 4 only

(c) 1 and 4 only (d) 1, 2, 3 and 4

Ans: (d)

**Source: DTE** 

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