



Ozone Levels Exceeding Permitted Levels

Why in News

Recently, a **Centre for Science and Environment (CSE) study** has found that **ozone levels are exceeding the permitted levels even during winter in Delhi-NCR**, making the **smog more “toxic”**.

- Despite the pandemic and lockdowns, more days and locations witnessed higher and longer duration of ozone spells.
- CSE is a public interest research and advocacy organisation based in New Delhi.

Ozone

- **Ozone (composed of three atoms of oxygen)** is a gas that occurs both in the Earth’s upper atmosphere and at ground level. Ozone can be “good” or “bad” for health and the environment, depending on its location in the atmosphere.
- The ‘**good**’ ozone present in the **earth’s stratosphere layer** protects human beings from **harmful Ultraviolet (UV)** radiation whereas the **ground level ozone is highly reactive** and can have **adverse impacts on human health**.
 - Ground level ozone is dangerous for those suffering from respiratory conditions and asthma.

Smog

- Smog is air pollution **that reduces visibility**.
- The term "smog" was first used in the early 1900s to describe **a mix of smoke and fog**.
- The smoke usually came **from burning coal**. Smog is common in **industrial areas, and remains a familiar sight in cities today**. Today, most of the smog we see is **Photochemical Smog**.
 - Photochemical smog is produced **when sunlight reacts with nitrogen oxides (NOx)** and at **least one volatile organic compound (VOC) in the atmosphere**.
 - Nitrogen oxides come from **car exhaust, coal power plants, and factory emissions**. VOCs are released from **gasoline, paints, and many cleaning solvents**. When sunlight hits these chemicals, they form **airborne particles and ground-level ozone - or smog**.

Key Points

- **Now a Year-round Menace:**
 - Contrary to the notion that Ozone is a summer phenomenon, it has been found that gas has emerged as an equally strong concern during winter as well.
- **Occasional Exceedance:**

- The **city-wide average largely remains within the standard with just occasional exceedance**. But the 'good' category days have fallen to 115 days in 2020, which is 24 days less than in 2019 in Delhi.
 - A location-wise analysis shows that **exceeding the eight-hour average standard is quite widely distributed** in the city.
 - **Even smaller towns of NCR**, including Bulandshahr in Uttar Pradesh and Bhiwani in Haryana, **appeared in the top 20 list of ozone-afflicted towns and cities**. South Delhi locations dominate the list with four mentions in top 10.
- **Suggestions:**
- The study shows that the **transport sector is the highest contributor to NOx and VOCs**, hence there is **a need to take strong action on these high emitters** of NOx and VOCs including vehicles and other industries.
 - Ozone levels are **found to be exceeding the mark of 100 µg/m³** even during winter and are **highly sensitive to solar radiation**. Reducing the gases **will also reduce secondary particles** formed from these gases.
 - Ozone is now a round-the-year problem that is urgent and the situation **demands refinement of a clean air action plan** to add strategies for ozone mitigation, with stronger action on vehicles, industry and waste burning.
 - It is **important to calibrate AQI (Air Quality Index)** to report the most polluted eight-hour average of the day, ideally making it an hourly alert. Also the current practice of only city averaging needs to change to include alerts based on the worst affected area as is the global good practice.
- **Government Efforts:**
- **Development of the National AQI** for public information under the aegis of the Central Pollution Control Board (CPCB). AQI has been developed for eight pollutants viz. PM2.5, PM10, Ammonia, Lead, nitrogen oxides, sulfur dioxide, ozone, and carbon monoxide.
 - The introduction of **BS-VI vehicles**, push for **electric vehicles** (EVs), **Odd-Even** as an emergency measure and construction of the Eastern and Western Peripheral Expressways to reduce vehicular pollution.
 - Implementation of the **Graded Response Action Plan (GRAP)** to tackle the rising pollution in the Capital. It includes measures like shutting down thermal power plants and a ban on construction activities.
 - Launch of the **National Clean Air Programme** (NCAP): In order to deal with the issue of air pollution in a comprehensive manner at national level, the government came up with the National Clean Air Programme (NCAP) with the goal to meet average ambient air quality standards at all locations in the country.

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