

Post-Diwali Delhi Sees Improved Air Quality: Key Factors Explained

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What's in today's article?

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- What is AQI?
- Reasons behind low pollution level in Delhi after Diwali

Why in News?

Delhi's 24-hour average air quality before and during Diwali this year was worse than the past two years. However, the day after Diwali saw an improvement in pollution levels, marking the lowest post-Diwali AQI since 2015, except for 2022.

The **post-Diwali AQI on Friday** was **339**, an improvement from **358** the previous year. The worst post-Diwali air quality in recent years was in 2021, with an AQI of **462**.

What is Air Quality Index (AQI)?

- **Introduction to AQI**
 - The **AQI** was launched by the Indian government in 2014 as part of the Swachh Bharat campaign to provide a simplified understanding of air pollution.

- An expert group, including medical professionals and air quality experts, collaborated with IIT Kanpur to develop the AQI scheme.

- **How AQI is Calculated**

- The AQI transforms complex data on various pollutants into a single numerical value and color code.
- The pollutants measured include PM10, PM2.5, Nitrogen Dioxide, Ozone, and Carbon Monoxide.
- Each pollutant is assigned a weight based on its health impact, and the worst-weighted pollutant determines the composite air quality, yielding a single AQI value instead of multiple readings.

- **Impact of Harmful Pollutants**

- Particulate matter, especially PM2.5 (particles smaller than 2.5 micrometers), poses significant health risks.
- Due to their minuscule size, PM2.5 particles can enter the respiratory system and bloodstream, leading to serious health issues such as asthma, heart attacks, and other chronic respiratory conditions.

- **Influence of AQI on Government Policy**

- Governments utilize AQI data to implement measures aimed at improving air quality.
- In regions like Delhi, the Graded Response Action Plan (GRAP) is activated in response to deteriorating air quality.
- This plan may lead to bans on coal and firewood use, restrictions on diesel generators, and increased parking fees to reduce private vehicle usage, thereby mitigating pollution.

Reasons behind low pollution level in Delhi after Diwali

- **Warmer Temperatures**

- This year, Delhi experienced the warmest October in 73 years, with average temperatures of **35.1°C (maximum)** and **21.2°C (minimum)**.
- In contrast, Diwali last year took place in November, with cooler temperatures averaging **27.8°C** and **13°C**.
 - Cooler weather typically worsens pollution due to a lower inversion height, which traps pollutants closer to the ground.
- A temperature inversion is a layer in the atmosphere where the temperature increases with height, which is the opposite of normal behavior.
- This happens when air near the ground cools faster than the air above it.
 - The warmer October temperatures this year **helped reduce pollution dispersion**, contributing to relatively improved air quality post-Diwali despite higher pollution levels on the festival day.
- As temperature dips, the inversion height — which is the layer beyond which pollutants cannot disperse into the upper layer of the atmosphere — is lowered.
- The concentration of air pollutants increases when this happens.

- **Strong winds**

- High wind speeds significantly improved the dispersal of pollution in Delhi following Diwali.
- The India Meteorological Department (IMD) reported westerly winds starting at 3-7 kmph early Friday, increasing to 10 kmph by 9 AM and reaching 15 kmph by noon.
- This wind speed aided in reducing levels of PM2.5 and PM10, which had spiked due to firecracker use and stubble burning in nearby states.

- Despite air quality remaining 'poor' to 'very poor' throughout Diwali, these wind conditions ultimately facilitated a reduction in pollution levels the following day.
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Q.1. What factors contributed to improved air quality in Delhi after Diwali this year?

Answer: Improved air quality was due to warmer temperatures in October, reducing pollution dispersion, and strong winds that aided in dispersing pollutants, resulting in a lower post-Diwali AQI compared to previous years.

Q.2. How is the Air Quality Index (AQI) calculated?

Answer: The AQI simplifies complex air quality data into a single value, weighing pollutants like PM2.5 and PM10 based on health impacts. The worst-weighted pollutant determines the overall AQI, providing a clear indication of air quality.

News: [Warmer, windier: why post-Diwali Delhi air was cleaner this year](#) | [Indian Express](#) | [Financial Express](#)

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