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## Nitrogen Dioxide (NO<sub>2</sub>) Pollution

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# Basic Information about NO<sub>2</sub>

On This Page:

- What is NO<sub>2</sub> and how does it get in the air?
- What are the harmful effects of NO<sub>2</sub>?
- What is being done to reduce NO<sub>2</sub> pollution?

## What is NO<sub>2</sub> and how does it get in the air?

Nitrogen Dioxide (NO<sub>2</sub>) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO<sub>x</sub>). Other nitrogen oxides include nitrous acid and nitric acid. NO<sub>2</sub> is used as the indicator for the larger group of nitrogen oxides.

NO<sub>2</sub> primarily gets in the air from the burning of fuel. NO<sub>2</sub> forms from emissions from cars, trucks and buses, power plants, and off-road equipment.

## Effects of NO<sub>2</sub>

### Health effects

Breathing air with a high concentration of NO<sub>2</sub> can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO<sub>2</sub> may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO<sub>2</sub>.

NO<sub>2</sub> along with other NO<sub>x</sub> reacts with other chemicals in the air to form both particulate matter and ozone. Both of these are also harmful when inhaled due to effects on the respiratory system.

- Learn more about Particulate Matter <<https://epa.gov/pm-pollution>> and Ozone <<https://epa.gov/ground-level-ozone-pollution>>.

### Environmental effects

NO<sub>2</sub> and other NO<sub>x</sub> interact with water, oxygen and other chemicals in the atmosphere to form acid rain. Acid rain harms sensitive ecosystems such as lakes and forests.

- Learn more about Acid Rain <<https://epa.gov/acidrain>>.

The nitrate particles that result from NO<sub>x</sub> make the air hazy and difficult to see though. This affects the many national parks that we visit for the view.

- Learn more about Visibility and Haze <<https://epa.gov/visibility>>.

NO<sub>x</sub> in the atmosphere contributes to nutrient pollution in coastal waters.



- Learn more about Nutrient Pollution <<https://epa.gov/nutrientpollution>>.

## What is being done to reduce NO<sub>2</sub> pollution?

EPA's national and regional rules to reduce emissions of NO<sub>2</sub> and NO<sub>x</sub> will help state and local governments meet the National Ambient Air Quality Standard (NAAQS).

- Learn about how air quality standards help reduce NO<sub>2</sub> <<https://epa.gov/no2-pollution/setting-and-reviewing-standards-control-no2-pollution>>

EPA identifies areas where the air quality does not meet the national NO<sub>2</sub> standards. For these areas, state, local, and tribal governments develop plans to reduce the amount of NO<sub>2</sub> in the air.

- Learn more about NO<sub>2</sub> air quality designations and state implementation plans (SIPs) <<https://epa.gov/no2-pollution/applying-or-implementing-nitrogen-dioxide-standards>>.

[Nitrogen Dioxide Home <https://epa.gov/no2-pollution>](https://epa.gov/no2-pollution)

### Nitrogen Dioxide Basics

[Setting & Reviewing NO<sub>2</sub> Standards <https://epa.gov/no2-pollution/setting-and-reviewing-standards-control-no2-pollution>](https://epa.gov/no2-pollution/setting-and-reviewing-standards-control-no2-pollution)

[Primary NO<sub>2</sub> Standard Regulatory Actions <https://epa.gov/no2-pollution/primary-national-ambient-air-quality-standards-naaqs-nitrogen-dioxide>](https://epa.gov/no2-pollution/primary-national-ambient-air-quality-standards-naaqs-nitrogen-dioxide)

[Secondary NO<sub>2</sub> and SO<sub>2</sub> Standard Regulatory Actions <https://epa.gov/so2-pollution/secondary-national-ambient-air-quality-standards-naaqs-nitrogen-dioxide-no2-and-sulfur>](https://epa.gov/so2-pollution/secondary-national-ambient-air-quality-standards-naaqs-nitrogen-dioxide-no2-and-sulfur)

[Implementing NO<sub>2</sub> Standards <https://epa.gov/no2-pollution/applying-or-implementing-nitrogen-dioxide-standards>](https://epa.gov/no2-pollution/applying-or-implementing-nitrogen-dioxide-standards)

[Primary NO<sub>2</sub> Standard Implementation Actions <https://epa.gov/no2-pollution/2010-nitrogen-dioxide-no2-national-ambient-air-quality-standards-naaqs-implementation>](https://epa.gov/no2-pollution/2010-nitrogen-dioxide-no2-national-ambient-air-quality-standards-naaqs-implementation)

[Implementation Data and Reports <https://epa.gov/no2-pollution/technical-data-and-reports-nitrogen-dioxide-measurements-and-sip-status>](https://epa.gov/no2-pollution/technical-data-and-reports-nitrogen-dioxide-measurements-and-sip-status)

[Other Criteria Air Pollutants <https://epa.gov/criteria-air-pollutants>](https://epa.gov/criteria-air-pollutants)

[Contact Us <https://epa.gov/no2-pollution/forms/contact-us-about-nitrogen-dioxide-no2-pollution>](https://epa.gov/no2-pollution/forms/contact-us-about-nitrogen-dioxide-no2-pollution) to ask a question, provide feedback, or report a problem.



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