

# Air Quality Guide for Nitrogen Dioxide

Air Quality Index	Protect Your Health Near Roadways
Good (0-50)	No health impacts are expected when air quality is in this range.
Moderate (51-100)	Individuals who are unusually sensitive to nitrogen dioxide should <u>consider limiting prolonged</u> outdoor exertion.
Unhealthy for Sensitive Groups (101-150)	The following groups should <u>limit prolonged</u> outdoor exertion: <ul style="list-style-type: none"> <li>• People with lung disease, such as asthma</li> <li>• Children and older adults</li> </ul>
Unhealthy (151-200)	The following groups should <u>avoid prolonged</u> outdoor exertion: <ul style="list-style-type: none"> <li>• People with lung disease, such as asthma</li> <li>• Children and older adults</li> </ul> Everyone else should <u>limit prolonged</u> outdoor exertion.
Very Unhealthy (201-300)	The following groups should <u>avoid all</u> outdoor exertion: <ul style="list-style-type: none"> <li>• People with lung disease, such as asthma</li> <li>• Children and older adults</li> </ul> Everyone else should <u>limit</u> outdoor exertion.

## What You Should Know About Nitrogen Dioxide and Your Health

- Nitrogen dioxide comes from vehicles, power plants, industrial emissions and off-road sources such as construction, lawn and gardening equipment. All of these sources burn fossil fuels.
- People who live or work near busy roadways can experience high exposures.
- Find out more about air quality through TV, radio, newspapers, AIRNow ([www.airnow.gov](http://www.airnow.gov)) and EnviroFlash ([www.enviroflash.info](http://www.enviroflash.info)), so you can take steps to protect your health.

## Revisions to the National Ambient Air Quality Standards for Nitrogen Dioxide

On January 22, 2010, EPA strengthened the health-based National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO<sub>2</sub>). EPA set a 1-hour NO<sub>2</sub> standard at the level of 100 parts per billion (ppb). EPA also retained the annual average NO<sub>2</sub> standard of 53 ppb.

The 1-hour standard will protect public health by limiting people's exposures to short-term peak concentrations of NO<sub>2</sub> – which primarily occur near major roads. Community-wide NO<sub>2</sub> concentrations will be limited to levels below those that have been linked to respiratory-related emergency room visits and hospital admissions.

Additionally, EPA established ambient air monitoring and reporting requirements for NO<sub>2</sub>. In urban areas, monitors are required near major roads and in other locations where maximum concentrations are expected. EPA has placed a number of monitors in locations to help protect communities that are susceptible to NO<sub>2</sub>-related health effects.

### What is nitrogen dioxide and where does it come from?

EPA's NAAQS for NO<sub>2</sub> is designed to protect against exposure to the entire group of nitrogen oxides (NO<sub>x</sub>). NO<sub>2</sub> is the component of greatest concern and is used as the indicator for the larger group of NO<sub>x</sub>. The sum of nitric oxide (NO) and NO<sub>2</sub> is commonly called NO<sub>x</sub>. Other nitrogen oxides include nitrous acid and nitric acid. NO<sub>x</sub> reacts with volatile organic compounds to form ozone.

NO<sub>2</sub> forms from ground-level emissions related to the burning of fossil fuels from vehicles, power plants, industrial sources, and off-road equipment, such as construction vehicles and lawn and garden equipment. In addition to contributing to ground-level ozone formation, NO<sub>2</sub> is linked with a number of adverse

effects on the respiratory system. NO<sub>x</sub> reacts with ammonia, moisture, and other compounds to form small particles. These small particles can penetrate deeply into sensitive parts of the lungs.

### How does nitrogen dioxide affect health?

Scientific evidence links short-term NO<sub>2</sub> exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in people with asthma.

Studies also show a connection between short-term exposure and increased emergency room visits and hospital admissions for respiratory illnesses.

### Who is sensitive to nitrogen dioxide?

Individuals who spend time on or near major roads can experience NO<sub>2</sub> exposures considerably higher than occur away from roads. These exposures are of particular concern for sensitive groups, such as people with lung disease including asthma, children and older adults.

### Does my community have unhealthy NO<sub>2</sub> levels?

Unlike ozone and particle pollution, which can be of concern over large regions, NO<sub>2</sub> levels are appreciably higher in close proximity to pollution sources (e.g., vehicles on major freeways, factories). Health effects associated with NO<sub>2</sub> are much less likely farther away from these pollution sources.

NO<sub>2</sub> in heavy traffic or on freeways can be two times as high as levels measured in residential areas or on lesser traveled roads. Monitoring studies have shown that within approximately 50 meters of heavy traffic/freeways, NO<sub>2</sub> concentrations may be 30 to 100 percent higher.

### What You Can Do To Reduce NO<sub>2</sub> Emissions

- Carpool or use public transportation.
- When air quality is healthy, bike or walk instead of driving.
- Combine errands to reduce vehicle trips.
- Limit engine idling.
- When refueling, avoid spilling fuel. Tighten gas cap securely.
- Keep your car, boat, and other engines tuned up.
- Inflate car tires to the recommended pressure.
- Conserve energy at home and at work.



Office of Air and Radiation (6301A)  
EPA-456/F-11-003  
[www.airnow.gov](http://www.airnow.gov)  
February 2011