



**Environmental
Protection
Agency**

National Ambient Air Quality Standard (NAAQS) for Ground-Level Ozone

The federal Clean Air Act requires U.S. EPA to set national ambient air quality standards for pollutants harmful to public health and the environment.

Division of Air Pollution Control | November 2024

What is Ozone?

Ozone (O₃) is a gaseous form of oxygen that has been linked to a variety of health issues, including:

- Respiratory system irritation causing coughing and pain when we breathe
- It may make it difficult to breathe and can lead to wheezing
- Inflammation and damage to the cells lining the lungs, much like a sunburn on the skin
- Aggravation of asthma or chronic lung diseases
- Increased susceptibility to respiratory illnesses like pneumonia and bronchitis
- Permanent lung damage caused by repeated exposure

When ozone levels are elevated, certain groups of people are more at risk. This includes active adults and children who spend a lot of time outside and those who already have asthma or other respiratory illnesses. Everyone should be aware of their exposure because high concentrations can harm everyone. Ozone also can have detrimental environmental effects on ecosystems and plants.

How do I limit my exposure to ozone?

Limiting outdoor time is the most effective way to decrease exposure during warm weather. If you do go outside, try to keep your activities light - for example, walk instead of jog. It's also a good idea to plan outdoor activities when ozone levels are lower, usually in the morning or evening.

Where does ozone come from?

Ozone is not directly emitted into the air, but instead is formed as a byproduct of the reaction of nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs) in the presence of sunlight.

Ozone acts differently depending on where it is in the atmosphere. A simple way to remember this is "good up high, bad nearby." In the upper atmosphere, ozone occurs naturally and forms a protective layer around the earth, blocking out the sun's harmful rays. In the lower atmosphere, ground-level ozone poses a higher health threat.

Ground-level ozone is often called "smog." It forms when pollutants from sources like gasoline, car exhaust, cleaning products, and industrial emissions react together, especially on sunny and hot days. This is why we often see higher levels of ozone in the summer. Urban areas with higher concentrations of vehicles and industrial activity typically have more smog. It's important to note that winds can carry NO_x and other ozone pollutants hundreds of miles away, leading to ozone problems even in rural areas.



What is the National Ambient Air Quality Standard (NAAQS) for ozone?

U.S. EPA has air quality standards to ensure the air we breathe is safe and healthy. They focus on specific pollutants that can harm our health, including carbon monoxide, lead, nitrogen dioxide, particulate matter (PM10 and PM2.5), ozone, and sulfur dioxide. These standards protect everyone, especially sensitive populations such as asthmatics, children, and older adults. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Ozone is measured in parts per million (ppm), a volume measure of air. Currently, the standard for ozone – set in 1995 – is 0.070 ppm for health and environmental protection. To stay within this limit, we look at the fourth-highest daily maximum (eight-hour average) ozone concentrations measured over three years. This average, measured at each monitor within an area, must not exceed 0.070 ppm.

When an area does not meet the standard, it is classified as being in nonattainment. There are different nonattainment classifications for ozone, depending on how far above the standard the air quality monitoring data is. Ohio EPA submits data and detailed plans (called State Implementation Plans or SIPs) to U.S. EPA to demonstrate compliance and the ability to maintain compliance. Once an area has three years of data showing it meets the standard, the state petitions U.S. EPA to reclassify it as being in attainment.

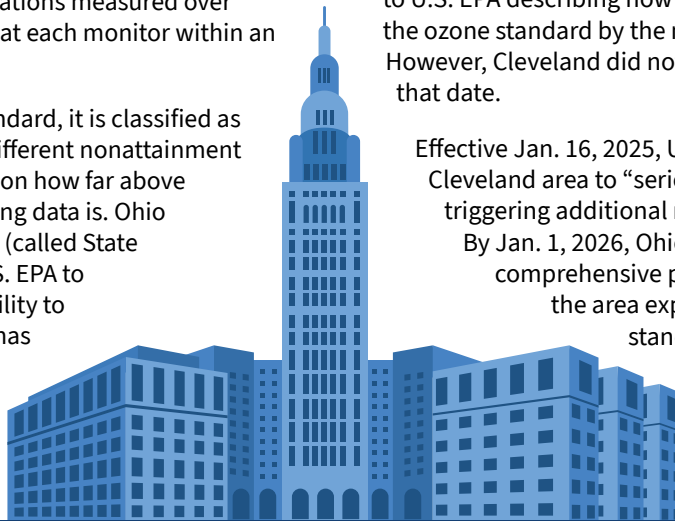
What is Ohio's current attainment status?

On Aug. 3, 2018, U.S. EPA designated three areas in Ohio as “marginal nonattainment” – the lowest classification – for the 2015 ozone NAAQS: Cincinnati, Cleveland, and Columbus. Under the Clean Air Act (CAA) Amendments, these areas have up to three years from designation to meet ozone standards (Aug. 3, 2021). Columbus met the standard and was redesignated to attainment on Aug. 21, 2019. The Ohio portion of the Cincinnati area attained the standard and was redesignated to attainment on June 9, 2022.

However, Cleveland did not meet the standard by the marginal deadline, and the U.S. EPA “bumped-up” the area to “moderate nonattainment,” effective Nov. 7, 2022. This reclassification imposed additional requirements under the CAA. On Dec. 21, 2022, Ohio EPA submitted a detailed plan to U.S. EPA describing how the region intended to achieve the ozone standard by the moderate deadline (Aug. 3, 2024). However, Cleveland did not meet the ozone standard by that date.

Effective Jan. 16, 2025, U.S. EPA “bumped-up” the Cleveland area to “serious nonattainment,” again triggering additional requirements under the CAA.

By Jan. 1, 2026, Ohio EPA will submit another comprehensive plan to U.S. EPA detailing how the area expects to attain the ozone standard by the deadline for serious nonattainment areas (Aug. 3, 2027).



Is Ohio's air quality worse regarding ozone?

No, it's actually getting better! Air quality in Ohio has significantly improved over the past 30 years, including in places like Cleveland. Ohio was able to fully attain several tighter ozone standards over the years. However, despite these improvements, the Cleveland area failed to meet the latest standard on time. As a result, it was given a higher classification by U.S. EPA for the 2015 standard. This triggers additional requirements under the CAA.

How can I help to reduce ozone concentrations?

Ozone concentrations can be reduced by limiting emissions of the pollutants that work together to create ozone. You can reduce NOx, CO, and VOC emissions by:

- Choosing a cleaner commute – carpooling, public transportation, biking, walking
- Combine errands to reduce “cold starts” and try to limit extended idling
- Conserve electricity in your home and set your air conditioner at a higher temperature
- Mulch and compost leaves and yard waste instead of burning

Additional Information

- U.S. EPA Ozone Pollution - [epa.gov/ground-level-ozone-pollution](https://www.epa.gov/ground-level-ozone-pollution)
- Ohio EPA 2015 Ozone Standard SIP - epa.ohio.gov/divisions-and-offices/air-pollution-control/state-implementation-plans/division-of-air-pollution-control-sip-2015

Contact

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