

Ozone Media Kit

U.S. Environmental Protection Agency



OZONE AT A GLANCE

National Ozone Air Pollution Season: May 1- October 31

What is ozone?

Ozone is a gas created when NO_x (nitrogen oxides) and VOCs (volatile organic compounds) chemically react with the sun. Ozone is the primary ingredient of summertime smog.

Good ozone vs. bad ozone

Ozone occurs in two layers of the Earth's atmosphere.

- In the stratosphere: 10 to 30 miles above the surface of the Earth, the stratospheric ozone layer protects life from harmful ultraviolet rays
- On the ground: up to 10 miles above the Earth's surface, in the troposphere, ground-level ozone can damage human health, crops and buildings

Ozone formation

Ozone is not emitted directly into the atmosphere. It forms when the chemicals that create ozone (NO_x and VOCs) are emitted into the atmosphere and cook in the sun. These chemical emissions come from mobile and stationary sources.

Mobile and stationary sources

Mobile sources include cars, buses and trucks, as well as on-and off-road sources such as bulldozers, trains, planes, agricultural equipment and gas-powered lawn and garden equipment. Stationary sources include chemical production plants, refineries, electric utilities and other factories.

Major sources of NO_x (nitrogen oxide) emissions

Utilities, industrial fuel combustion and motor vehicles.

Major sources of VOC (volatile organic compound) emissions

Industrial and commercial processes, motor vehicles and consumer solvents such as oil-based paints, lighter fluid, aerosol sprays and evaporation of gasoline from refueling and spillage.

Human health problems — especially in children

When people breathe ground-level ozone air pollution, the lining of their lungs can become irritated and inflamed. Children are especially susceptible to problems caused by ground-level ozone for several reasons: 1) they are frequently active outdoors and more likely to be exposed; 2) they are more likely to have asthma, which can be aggravated by ozone; and 3) their lungs are still developing. Other groups that are particularly vulnerable are people with asthma and other respiratory conditions, and people who are active outdoors.

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Crop damage

Ground-level ozone interferes with a plant's ability to produce and store food. Crops become more susceptible to damage from insects, harsh weather and other pollutants. Annual crop damage from ozone is estimated at \$500 million in the U.S. alone.

Other environmental effects

Ozone damages the foliage of trees and plants, hurting the appearance of many cities, national parks, forests and outdoor recreation areas.

Transported emissions

Nitrogen oxide emissions can be transported by winds and can form ozone pollution hundreds of miles away from the original sources. Atmospheric transport can cause ozone levels to be high in rural areas — even in pristine areas. Some national parks, including the Great Smoky Mountains and Shenandoah, have higher ozone levels than some cities.

[BACK TO MAIN PAGE](#)