



What Is Ozone?

Ozone (O₃) is an odorless, colorless gas. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad depending on where it is found.

- **Good ozone:** This is ozone that occurs naturally in the upper atmosphere, 10-30 miles above the Earth's surface. It forms a protective layer that shields us from the sun's harmful ultraviolet rays.
- **Bad ozone:** This is ozone that occurs in the lower atmosphere, near ground level. This ozone is formed when pollutants from cars, power plants, industrial boilers, refineries, chemical plants and other sources react chemically in the sunlight. This is called **ground-level ozone**. Peak ozone levels typically occur during hot, dry, stagnant summertime conditions. The ozone season in Tennessee occurs March 1 through October 31.

How does ground level ozone affect health?

Ozone can irritate the respiratory system. When this happens, you might start coughing, feel a throat irritation, and/or experience an uncomfortable sensation in your chest.

Ozone can reduce lung function. Ozone can make it more difficult for you to breathe as deeply and vigorously as you normally would. If you are exercising or working outdoors, your breathing may be more shallow and rapid.

Ozone can aggravate *asthma*. When ozone levels are high, more asthmatics have asthma attacks that require going to a doctor or using more medicine.

Ozone can inflame and damage the lining of the lungs. This could cause permanent damage that might have long-term health effects and a lower quality of life.

Ozone is suspected to have other effects on health. Ozone may aggravate chronic lung disease such as emphysema and bronchitis. It may also reduce the body's ability to fight infection.

Who is most at risk from ozone pollution?

- **Children.** Children often spend more time outdoors playing. Children also are more likely to have asthma, which can be aggravated by ground-level ozone.
- **Adults who are active outdoors.** These people have a higher exposure to ozone because physical activity (jogging or outdoor work) causes them to breathe faster and more deeply. Ozone can get into the deeper parts of the lungs that can get damaged more easily.
- **People with respiratory diseases.** There is no evidence that ozone causes asthma, but it does make the lungs more sensitive to the effects of ozone.
- **People who are just more sensitive to ozone.** Scientists don't know why, but some healthy people are simply more sensitive to ozone than other people. These people may experience more health effects from ozone exposure than the average person.

How does ozone pollution affect the environment?

- Ground-level ozone interferes with the ability of plants to produce and store food, making them more susceptible to disease, insects, other pollutants, and harsh weather
- Ozone damages the leaves of trees and other plants, ruining the appearance of cities, national parks, and recreation areas
- Ozone reduces crop and forest yields and increases plant vulnerability to disease, pests and harsh weather

For more information on ozone pollution and its health effects:

- U.S. Environmental Protection Agency:
<http://www.epa.gov/air/urbanair/ozone/index.html>
http://www.epa.gov/iaq/asthma/images/asthma_fact_sheet_en.pdf
- U.S. Department of Health and Human Services, Centers for Disease Control
<http://www.cdc.gov/asthma/faqs.htm>
- American Lung Association:
http://lungaction.org/reports/sota04_heffects3.html

www.cleanairtn.org

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