



Ground-Level Ozone

What Is Ground-Level Ozone?

Ozone is a colorless gas that is a variety of oxygen. Oxygen consists of two oxygen atoms; while ozone consists of three. Ground-level ozone is one of the main components of smog, which is formed by the interaction of hydrocarbons (unburned or evaporated gasoline) and nitrogen oxides in the presence of sunlight.

Where Is It Found?

Stratospheric ozone (in the upper atmosphere) is known as the ozone layer and protects our health by shielding us from the sun's damaging ultraviolet rays. However, ground-level, ozone (tropospheric ozone) is a pollutant with highly toxic effects. It is a health hazard causing damage to human health, the environment, crops, and a wide range of natural and artificial materials.

What Are the Health Effects of Ground-Level Ozone?

Ozone that is close to the ground can cause eye irritation; headaches; coughing; impaired lung function; and eye, nose, and throat irritation. Asthmatics and children are most at risk. The chance of experiencing adverse health effects from elevated ozone levels increases during heavy exercise or outdoor activity. Ground-level ozone can also damage trees, plants, and reduce visibility.

What Causes Ground-Level Ozone?

Ground-level ozone comes from the breakdown (oxidation) of volatile organic compounds found in solvents. It is also a product of reactions between chemicals that are produced by burning coal, gasoline, other fuels, and the chemicals found in paints and hair sprays. Oxidation occurs readily in the presence of sunlight. Motor vehicles and industries are major sources of pollutants that cause ground-level ozone.

What Are Ozone Action Days?

Certain cities with high levels of ground-level ozone have started a program called Ozone Action Days. The voluntary initiative was put in effect by cooperative efforts among government, environmental, and business organizations in order to reduce ground-level ozone. Ozone Action Days are most often on hot days, above 90 degrees Fahrenheit, with little or no wind blowing. Predictions that a day may be an Ozone Action Day are announced on television and radio news prior to the day to warn the general public that their actions are especially important in preventing air pollution on those days. The warnings also inform the general public to be careful on those days because the air quality is so poor it could affect asthmatics and cause other respiratory problems.

How Can I Reduce My Contribution to Ground-Level Ozone?

- Avoid idling your motor vehicle excessively.
- Conserve energy and recycle.

- Do not refuel your vehicle or lawn mower on Ozone Action Days. If you must refuel, do so after dark—remember that sunlight assists ozone-forming reactions.
- Keep your vehicle well tuned.
- Limit driving; carpool, walk, ride a bicycle, and combine trips.
- Start charcoal with an electric lighter or a newspaper-fueled "chimney" instead of lighter fluid.
- Use public transportation.