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Fact Sheet

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Ozone and Your Health

Ozone, the main ingredient of smog, presents a serious air quality problem in many parts of the United States. Even at low levels, ozone can cause a number of respiratory effects. You can take simple steps to protect your health from ozone.



What is ozone?

Ozone is a gas that 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. Ozone occurs naturally in the Earth's upper atmosphere-10 to 30 miles above the Earth's surface-where it shields us from the sun's harmful ultraviolet rays.

Bad Ozone. In the Earth's lower atmosphere, near ground level, ozone is formed when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, fires and other sources react chemically in the presence of sunlight. Ozone pollution is usually a concern during the summer months when the weather conditions needed to form ground-level ozone-lots of sun, hot temperatures-normally occur.

Ground-level ozone is created when certain pollutants, known as “ozone precursors,” react in heat and sunlight to form ozone.

In Kansas

In the Wichita and Kansas City metropolitan areas, we have seen high ozone emissions recorded on monitors in April since 2003. These high readings coincide with emissions from agricultural burning in the Flint Hills. There are a number of air pollutants in smoke that blow downwind from grassland fires including several pollutants that form ground-level ozone.

With EPA assistance, Kansas stakeholders are working cooperatively with the Kansas Department of Health Environment to develop a regional smoke management program that supports the planning and execution of prescribed fires while minimizing air quality and public health impacts. The program will be designed to support public health, ecosystems and the Kansas agricultural communities

Are you at risk from ground-level ozone?

Several groups of people are particularly sensitive to ozone-especially when they are active outdoors-because physical activity causes people to breathe faster and more deeply.

Active children are the group at highest risk from ozone exposure because they often spend a large part of the summer playing outdoors. Children are also more likely to have asthma, which may be aggravated by ozone exposure.

Active adults of all ages who exercise or work vigorously outdoors have a higher level of exposure to ozone than people who are less active.

People with asthma or other respiratory diseases that make the lungs more vulnerable to the effects of ozone will generally experience health effects earlier and at lower ozone levels than less sensitive individuals.

People with unusual susceptibility to ozone. Scientists don't yet know why, but some healthy people may experience health effects at more moderate levels of outdoor exertion or at lower ozone levels than the average person.

In general, as concentrations of ground-level ozone increase, more and more people experience health effects, the effects become more serious, and more people are admitted to the hospital for respiratory problems. When ozone levels are very high, everyone should be concerned about ozone exposure.

How can ground-level ozone affect your health?

Ozone can irritate your respiratory system, causing you to start coughing, feel an irritation in your throat and/or experience an uncomfortable sensation in your chest.

Ozone can reduce lung function and make it more difficult for you to breathe as deeply and vigorously as you normally would. When this happens, you may notice that breathing starts to feel uncomfortable. If you are exercising or working outdoors, you may notice that you are taking more rapid and shallow breaths than normal.

Ozone can aggravate asthma. When ozone levels are high, more people with asthma have attacks that require a doctor's attention or the use of additional medication. One reason this happens is that ozone makes people more sensitive to allergens, which are the most common triggers for asthma attacks. Also, asthmatics are more severely affected by the reduced lung function and irritation that ozone causes in the respiratory system.

Ozone can inflame and damage cells that line your lungs. Within a few days, the damaged cells are replaced and the old cells are shed-much in the way your skin peels after a sunburn.

Ozone may aggravate chronic lung diseases such as emphysema and bronchitis and reduce the immune system's ability to fight off bacterial infections in the respiratory system.

Ozone may cause permanent lung damage. Repeated short-term ozone damage to children's developing lungs may lead to reduced lung function in adulthood. In adults, ozone exposure may accelerate the natural decline in lung function that occurs as part of the normal aging process.

Are there always symptoms?

Ozone damage also can occur without any noticeable signs. People who live in areas where ozone levels are frequently high may find that their initial symptoms go away over time-particularly when exposure to high ozone levels continues for several days. Ozone continues to cause lung damage even when the symptoms have disappeared. The best way to protect your health is to find out when ozone levels are elevated in your area and take simple precautions to minimize exposure even when you don't feel obvious

symptoms.