air Quality & your Health

What is ozone pollution?

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, and other sources react chemically in the presence of sunlight. Ozone pollution is a concern during the summer when the weather conditions needed to form ground-level ozone-lots of sun, hot temperatures-normally occur.

Ozone Pollution

Who is at risk from ground-level ozone pollution?

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 can sometimes have **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.

How does 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.

How can you avoid unhealthy exposure to ozone?

Your chances of being affected by ozone increase the longer you are active outdoors and the more strenuous the activity you engage in. If you're involved in an activity that requires heavy exertion, you can reduce the time you spend on this activity or substitute another activity that requires more moderate exertion (e.g., go for a walk rather than a jog). In addition, you can plan outdoor activities when ozone levels are lower, usually in the morning or evening. Examples of activities that involve moderate exertion include climbing stairs, playing tennis or baseball, simple garden or construction work, and light jogging, cycling, or hiking. Activities that involve heavy exertion include playing basketball or soccer, chopping wood, heavy manual labor, and vigorous running, cycling, or hiking. Because fitness levels vary widely among individuals, what is moderate exertion for one person may be heavy exertion for another. No matter how fit you are, decreasing the level or duration of exertion when ozone levels are high will help protect you from ozone's harmful effects.

To view the current Air Quality Index (AQI) in central Ohio, go to MORPC's website at http://airquality.morpc.org/.

Columbus Public Health
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