



Earth Gauge™ Cleveland – Air Quality

Environmental Information for Broadcast Meteorologists

This fact sheet is part of a series on key weather-environment topics for the Cleveland area. The Earth Gauge™ Healthy Communities project is designed to provide basic background information on environmental impacts in major U.S. urban areas, as well as simple messages meteorologists can deliver to their viewers.

More than 51 percent of Americans live in counties with unhealthy levels of air pollution, and residents of Cleveland are no exception. Here, read about ground-level ozone and particle pollution in Cleveland, and find ways to reduce your impact on air quality.

Ground-Level Ozone and Particle Pollution in Cleveland

During Cleveland summers, heat and sunlight react with nitrogen oxides (NOx) and volatile organic compounds (VOCs) – pollutants found in exhaust from cars and gas-powered lawn equipment, power plant emissions, gasoline fumes, and other sources – to create ground-level ozone pollution. Ohio currently has 33 counties who are in “non-attainment” with EPA regulations because they don’t meet the air quality standards for ozone.

Particle pollution (particulate matter) consists of solid and liquid particles that are suspended in the air and range in size from 2.5-10 microns. These particles are created through the combustion of fossil fuels during activities like firewood burning, driving, agricultural burning, power plant emissions, and other sources.

Air Pollution Impacts People, Plants, and the Built Environment



Ground-level ozone pollution irritates airways and causes health problems for individuals with chronic lung conditions, such as asthma. The prevalence of lifetime asthma in the Ohio area is 12.2 percent for adults and 13.2 percent for children, which can ultimately lead to missed work and school days. Particle pollution, like ozone, has health implications because it can get deep into the lungs and remain for long periods of time, causing health problems for the elderly, children, and individuals with heart and lung conditions.



Ground-level ozone pollution damages plant life. High concentrations can slow photosynthesis (the process by which plants make food), stunt growth, and damage plant cells. It can also reduce agricultural crop yields and forest growth.



Some materials – rubber, textiles, some paints and fibers – can be weakened by ground-level ozone pollution, and elastic materials (such as rubber) can become more brittle or crack. Ground-level ozone can damage buildings and national monuments, and reduce visibility in cities. Particle pollution can be carried considerable distances by the wind, affecting areas miles from where it originated. It is a main ingredient in haze, and can soil and damage buildings, monuments, and other materials.

Learn More about Air Quality

The Northern Ohio Area Coordinating Agency increases awareness about the harmful effects of ground level ozone through the implementation of the Ozone Action Day Program. www.noaca.org/oad.html

AIRNow provides local air quality forecasts, fact sheets and resources on the effects of air pollution, and resources for meteorologists to include the air quality forecast in their on-air presentations. www.airnow.gov

It All Adds up to Cleaner Air, a public education campaign to raise awareness of connections between transportation and air quality, includes links local resources, tips, and relevant publications. www.italladdsup.gov

Flip this page over to find simple messages and tips about ground-level ozone pollution and particle pollution you can use during your on-air weather report.



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Making the Connection: What You Can Say On-Air

Here are some simple facts and tips you can provide to your viewers to help make the connection between weather and air quality. Help your viewers understand how air pollution forms and how they can take simple steps to reduce their own impact on Cleveland's air quality.



Alternate Transportation

Increasing vehicle traffic in the Cleveland area not only impacts the region's air quality but it can also impact your wallet. Cleveland is second in the nation in amount of money that individuals spend on transportation, with 20.5 percent of household income used on transportation costs.

Viewer Tip: Explore public transportation for your commute and support public transportation efforts in the region. Find information about Cleveland's public transportation options at www.gcrta.org. Or, if your destination is close by, consider walking or biking - you'll save money and get some exercise!

Breathe Easy by Sharing a Ride

A study of transportation patterns across the U.S. found that road congestion in urban areas cost drivers 3.7 billion hours of travel delay and 2.3 billion gallons of wasted gas in 2005. In Cleveland, the average driver wastes 10 hours per year in traffic congestion - more than an entire work day! Not only does sitting in traffic waste your time, but idling cars create particle pollution, which can be trapped in the air over the city. Particle pollution can trigger health problems for the more than 575,000 Cleveland residents suffering from heart and lung diseases.

Viewer Tip: Try sharing a ride with a coworker or friend, and you'll cut your emissions almost in half. Using mass transit to get around is equally as beneficial for air quality. With nice days in the forecast, consider going vehicle-free, and ride your bike or walk to your destination instead.



Two-Wheeling

The average passenger car emits 77 pounds of hydrocarbons (key ozone pollution ingredients); 575 pounds of carbon monoxide (reduces oxygen delivery to the body and aggravates some heart and lung conditions); and 11,450 pounds of carbon dioxide (traps heat in the atmosphere) each year. Your bike? Zero emissions, no gas required.

Viewer Tip: Dust off your two-wheeler. There is almost one adult-sized bike per household in the U.S., but few adults report taking frequent bike trips. Try using your bike for short trips - leaving your car at home for five separate one-mile trips eliminates the same amount of air pollutants as one 15-mile trip.

Preventing a Hazy Day

Haze occurs when sunlight encounters pollution particles in the air. Some sunlight is absorbed by the pollution particles, and some of it is scattered away. When sunlight is absorbed and scattered, it can make outdoor views less clear and colorful, and on windy days, haze can be blown miles away from where it originated.

Viewer Tip: One source of air pollutants that cause haze is motor vehicle exhaust. The easiest way to reduce your emissions is to keep your car well maintained! A poorly-maintained car emits up to ten times more than a properly maintained car. Have your oil and filters changed regularly, and never tamper with the exhaust equipment.

