



Improving AIR Quality

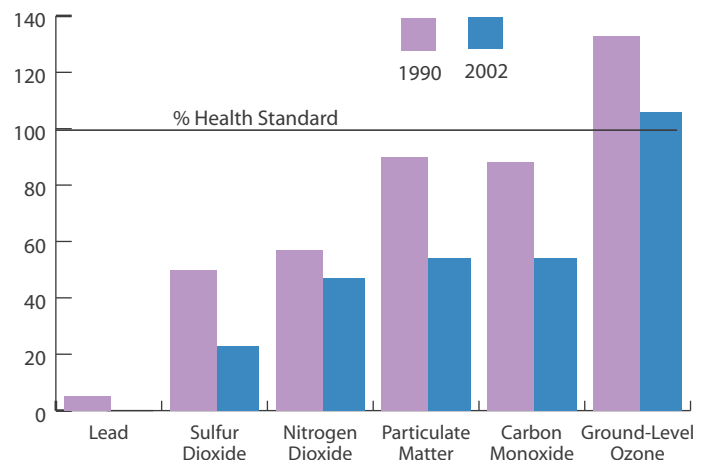
in the Metropolitan Washington Region

The Clean Air Act, first passed in 1970 and amended in 1990, established a framework that forms the basis for improving air quality and for air quality planning throughout most of the United States.

Federal Clean Air Standards The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national air quality standards to limit exposure to pollutants that can harm public health and our environment. These national standards limit the quantities of six pollutants that are often found in the air we breathe: carbon monoxide, lead, nitrogen dioxide, ground-level ozone, particulate matter and sulfur dioxide.

The air in the metropolitan Washington region meets the federal air quality standards for five of the six regulated pollutants. However, on some days in the summer, the average quantity of ground-level ozone in our region's air during a given hour is greater than EPA allows. As a result, we violate the *one-hour ozone standard* and our region is classified as an *ozone nonattainment area*.

Air quality in the Washington region continues to improve, as is shown by the reduced quantity of regulated pollutants present in the air. However, ozone levels are still above the national standard.

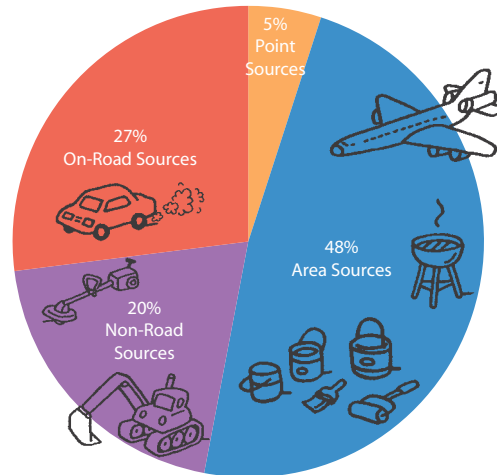


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Ozone is formed when volatile organic compounds (VOC), and nitrogen oxides (NOx), undergo chemical reactions in the presence of heat and sunlight. Reducing the amount of VOC and NOx in the air reduces ozone formation. These graphics show predicted sources of VOC and NOx emissions in the Washington region for the year 2005.



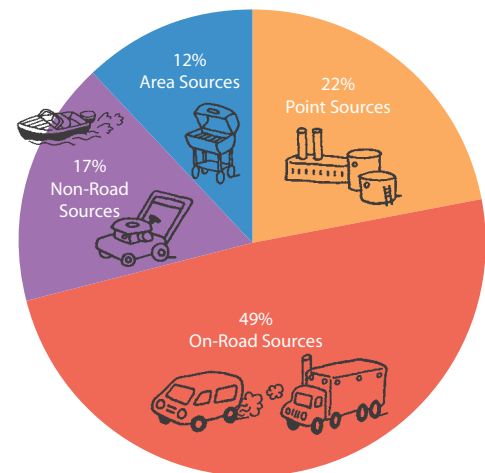
Sources of Regional Volatile Organic Compound (VOC) Emissions

How Ozone Is Formed

Ozone is formed on hot summer days when two types of compounds, nitrogen oxides (NOx) and volatile organic compounds (VOC), undergo chemical reactions in strong sunlight. These precursors, the compounds that form ozone, are released in our region daily through hundreds of activities that are part of everyday life. Sources producing ozone precursors fall into one of four categories:

1. **Point sources** stationary sources such as power plants and factories.
2. **On-Road sources** or mobile sources, such as cars and trucks,
3. **Non-Road sources** or off-road sources such as construction machinery, lawn and garden equipment and recreational marine watercraft.
4. **Area sources**, including locomotives, aircraft, bakeries, dry cleaners, open-air combustion and alcohol or petroleum-based consumer products.

Other regions can transport ozone precursors into the Washington area. Winds coming from the west can carry NOx into our air from hundreds of miles away.



Sources of Regional Nitrogen Oxide (NOx) Emissions

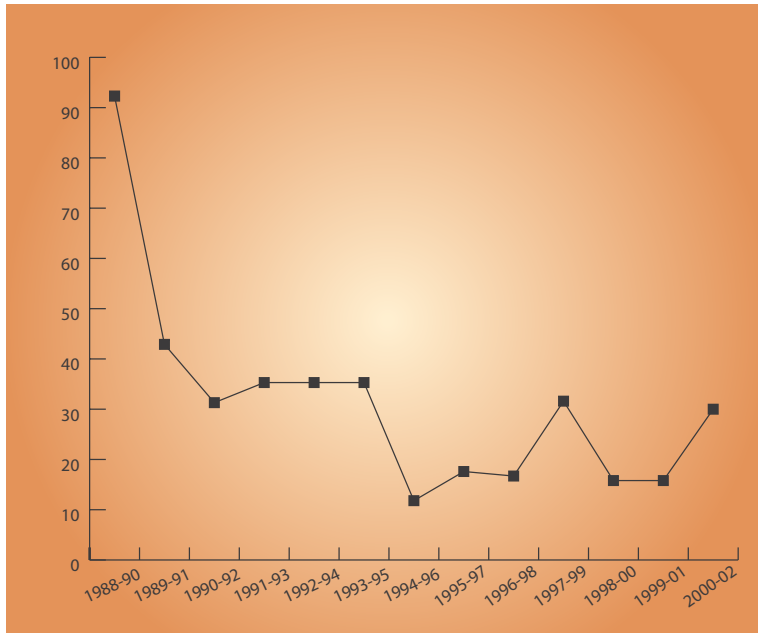


In addition to being generated locally, NOx and VOC emissions can be transported into Washington from the Midwest or the South. Winds from the south and west frequently blow ozone precursors into the region.



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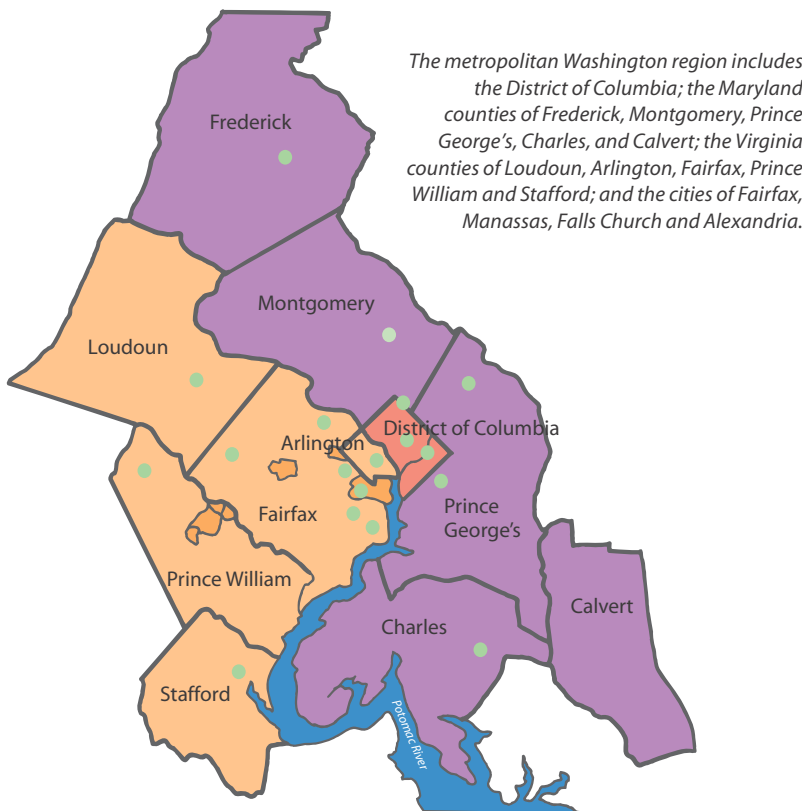


Percentage of Washington region air quality monitors violating the one-hour ground-level ozone standard

The percentage of Washington region air quality monitors showing a violation of the ozone standard indicates what portion of the region experiences unhealthy ozone levels on days the health standard is violated. The percentage of monitors registering unhealthy air decreased through the mid-1990s.

Monitoring Air Quality

To determine whether the region's air attains the federal standard for ground-level ozone, ozone concentrations are monitored hundreds of times of day using air monitors located throughout the Washington region. Local air quality has improved dramatically since the Washington region began monitoring air quality 40-50 years ago. Levels of all six regulated pollutants, including ozone, have dropped significantly. Through the mid-1990s, the region continued to make good progress in reducing ozone levels. Though the region expects to see large drops in ozone within the next few years as a result of new federal and state controls on power plant and vehicle emissions, additional effort is required to ensure that the Washington region will attain the one-hour ozone standard.



The metropolitan Washington region includes the District of Columbia; the Maryland counties of Frederick, Montgomery, Prince George's, Charles, and Calvert; the Virginia counties of Loudoun, Arlington, Fairfax, Prince William and Stafford; and the cities of Fairfax, Manassas, Falls Church and Alexandria.

Ambient Air Quality Monitors ●

Ozone concentrations are monitored hundreds of times of day using air monitors located throughout the Washington region. The locations of regional air quality monitors are indicated by green circles.



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The EPA-designated nonattainment area in the Metropolitan Washington Region is composed of the District of Columbia and certain Maryland and Virginia jurisdictions. State and local officials from these jurisdictions are working together through MWAQC to develop new air quality plans for the region.

The Effects Of Ozone On Our Health

The air quality standard for ground level ozone is designed to protect the health of the public, including people such as asthmatics, children and the elderly, who are especially sensitive to air pollution. Though ozone high in the atmosphere benefits living organisms by protecting them from harmful ultraviolet radiation, ground-level ozone can damage lung tissue in people and animals. Ozone can cause breathing problems in healthy people and animals, including chest pains, coughing, nausea, throat irritation, and congestion. In people already experiencing health problems, ozone can worsen bronchitis, heart disease, emphysema and asthma and reduce lung capacity.

The ozone standard also protects public welfare and the environment by ensuring that pollution does not reduce visibility or damage wildlife. Ozone causes the same breathing problems and lung damage in animals as it causes in people. High levels of ozone prevent plants from making and storing food, making them more susceptible to damage from disease, insects and bad weather. This results in millions of dollars of annual damage to agricultural crops and national parks. Ozone also causes deterioration of buildings, monuments and other man-made structures. Compounds that form ozone also contribute significantly to Chesapeake Bay pollution.

For further information about air quality and air quality planning in the Washington region, please visit: www.mwcog.org/environment/air where you can access current air quality conditions and daily air quality forecasts and read our region's air quality plan. To learn about actions citizens can take to clear the air, please visit: www.cleanairpartners.net/ and www.commuterconnections.com/

METROPOLITAN WASHINGTON
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Key Acronyms and Terms

EPA
Environmental Protection Agency

MWAQC
Metropolitan Washington Air Quality Committee

NO_x
Nitrogen oxides

VOC
Volatile organic compounds

SIP
State Implementation Plan

One-hour ozone standard
Maximum allowable quantity of ground-level ozone during a given hour, determined by EPA

Nonattainment Area
a region violating a national air quality standard



Air Quality Planning in the Metropolitan Washington Region

Because people generate NO_x and VOC as part of everyday life, the emissions that cause ozone formation will probably never go away. In fact, without efforts to reduce them, emissions in the Washington region can continue to increase as the number of people in the region grows. In order to reduce emissions and improve air quality in metropolitan Washington, the governors of Maryland and Virginia and the mayor of the District of Columbia certified the Metropolitan Washington Air Quality Committee (MWAQC) to develop a regional strategy to control ground-level ozone. MWAQC includes as its members elected officials from 20 cities and counties in the Washington nonattainment area, plus representatives from the three states' legislatures, air agencies and transportation agencies.

State Implementation Plan (SIP)

Under the Clean Air Act, a State Implementation Plan (SIP) is the primary tool for determining how and when a region will attain an air quality standard. During the SIP process, a region identifies emission sources that contribute to nonattainment, then determines the amount of emissions that must be reduced in order for the area to reach attainment and selects emission reduction measures most appropriate for the area. MWAQC has primary responsibility for developing SIPs that contain pollution control measures necessary to achieve the air quality standard for ground-level ozone. MWAQC is staffed by the Metropolitan Washington Council of Governments (MWCOG).