

Air Quality - Key Terms and Web links

Three types of air pollutant

1. Criteria Air Pollutants –

Criteria air pollutants include the six most common air pollutants in the U.S.: *carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide*. Congress has focused regulatory attention on these six pollutants because they endanger public health and the environment, are widespread throughout the U.S., and come from a variety of sources. Criteria air pollutants are responsible for many adverse effects on human health. They also can significantly harm ecosystems and the built environment. Criteria pollutants are the only air pollutants with national air quality standards (NAAQS) that define allowable concentrations of these substances in ambient air. Ozone is not emitted directly, it is formed when oxides of nitrogen and volatile organic compounds react with sunlight on hot days.

Criteria Pollutant	Top Local Airshed Sources
<i>Carbon monoxide</i>	Wildfires, on-road vehicles, non-road gasoline equipment, residential wood combustion, waste disposal
<i>Nitrogen oxides</i>	On-road light duty diesel, onroad diesel trucks, non-road diesel equipment, locomotives, aircraft
<i>Sulfur dioxide</i>	Wildfires, industrial boilers, internal combustion engines, industrial processes, residential fuel oil, aircraft, commercial marine vessels
<i>Ozone</i>	Biogenics, wildfires, solvent use, diesel vehicles and equipment
<i>Particulate matter</i>	Wildfires, road dust, residential wood burning, waste disposal, construction dust
<i>Lead</i>	Piston aircraft, industrial processes, industrial boilers (oil), residential oil combustion, locomotives

Source: EPA National Emissions Inventory 2014

2. Hazardous Air Pollutants aka “Air Toxics” -

Air toxics are those pollutants that are known or suspected to cause cancer or other serious health effects. EPA regulates 187 air toxics, known as “hazardous air pollutants (HAPs)”. Eight of the air toxics modeled by DEQ to present the most risk in the Portland/Vancouver airshed are:

Pollutant	Top Source	Impact Area
<i>1,3 Butadiene</i>	Cars and trucks	Region wide/local
<i>Benzene</i>	Cars and trucks	Region wide/local
<i>Diesel particulate matter</i>	Cars and trucks	Region wide/local
<i>15 PAH</i>	Residential wood combustion	Region wide
<i>Naphthalene</i>	Residential wood combustion	Region wide
<i>Cadmium</i>	Industry	Local
<i>Formaldehyde</i>	Secondary Formation	Region wide
<i>Acrolein</i>	Secondary formation	Region wide/local

Source: DEQ Portland Air Toxics Solutions

3. Greenhouse Gases -

Contribute to climate change. Three that are associated with combustion from engines are; carbon dioxide, methane, and nitrous oxide. The effect on health is primarily indirect.

National Ambient Air Quality Standards (NAAQS) –

USEPA has developed numerical concentration-based standards or National Ambient Air Quality Standards (NAAQS) for the six “criteria pollutants” under the provisions of the Clean Air Act (CAA). The fundamental mechanism by which the USEPA and DEQ track compliance with the ambient air quality standards is by monitoring and designating areas as either in attainment or non-attainment for a particular pollutant.

Information and Data Links:

EPA National Emissions Inventory (NEI)	https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei
EPA National Air Toxics Assessment (NATA)	https://www.epa.gov/national-air-toxics-assessment
Oregon Climate Change (KeepOregonCool)	http://www.keeporegoncool.org/
Oregon Air Toxics Program	http://www.oregon.gov/deq/aq/air-toxics/Pages/default.aspx

Reference:

KB Environmental Sciences, 2015, Port of Portland 2015 Hillsboro and Troutdale Airports Air Emissions Inventory.