



Rhode Island
Department of
Environmental
Management

OFFICE OF AIR RESOURCES

Mobile Sources and Rhode Island

Basics of Mobile Source Air Pollution

What are Mobile Sources?

"Mobile Sources" is a term used to describe a variety of vehicles, engines, and equipment that generate air pollution and that move, or can be moved, from place to place. They are either classified as on-road (e.g. passenger cars, trucks, buses, motorcycles) or non-road (construction equipment, lawn & garden equipment, locomotives, and marine vessels).



*Vehicle Traffic on the I-195 Washington Bridge
Credit: RIDOT*

Vehicle Emissions Affect the Environment

Mobile Sources pollute the air through combustion and fuel evaporation. These emissions contribute greatly to air pollution and a large portion of the total air pollutants that affect human health and the environment. These include: Carbon Monoxide (CO), Carbon Dioxide (CO₂), Hydrocarbons, Nitrogen Oxides (NO_x), Sulfur Oxides (SO₂), Particulate Matter (PM), and over 1,100 other air toxics.

Vehicles also emit greenhouse gases (GHGs), such as CO₂, that contribute to climate change. Additionally, air pollutants and particulate matter can be deposited on soil and surface waters where they enter the food chain. Nitrogen oxides and sulfur oxides also contribute to acid rain, which changes the pH of water ways and soils.

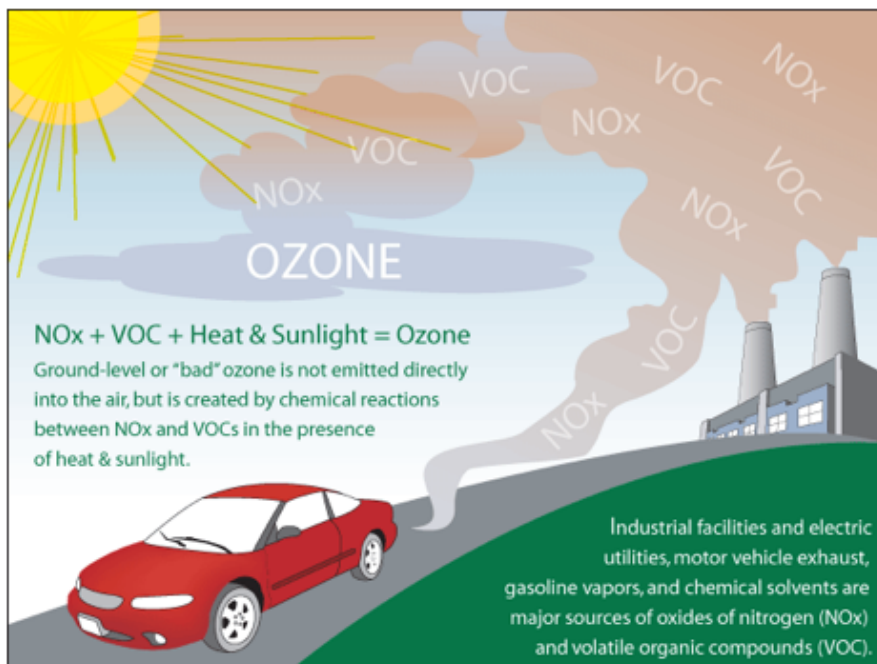


Credit: Minnesota Pollution Control Agency

Vehicle Emissions Contribute to Ozone Formation

Ozone, a gas, is a form of oxygen. In the Earth's upper atmosphere, ozone plays an important and beneficial role by providing a shield from the sun's ultraviolet rays. Ozone at ground level is a harmful pollutant from man-made emissions.

Ozone is not emitted directly from vehicles, but from vehicular tailpipe emissions. Ozone pollution is formed in the atmosphere through a complex set of chemical reactions involving hydrocarbons, oxides of nitrogen, and sunlight. The rate at which the reactions proceed is related to both temperature and sunlight intensity. Because of this, problematic ozone levels occur most frequently on hot summer afternoons.



Credit: South Carolina DHEC

Ozone and Air Quality Alert Days

The Rhode Island Department of Environmental Management (RIDEM) issues daily air quality forecasts for ozone and fine particle pollution year-round. When ozone concentrations are forecasted to be greater than 70 parts per billion, an Air Quality Alert is issued county-by-county. Unhealthy levels of ozone can cause throat irritation, coughing, chest pain, shortness of breath, increased susceptibility to respiratory infection, and aggravation of other respiratory ailments, especially in children and the elderly.

Air Quality Alert days in Rhode Island are published on the RIDEM Air Quality Forecast webpage, NWS Boston webpage, local TV news, and social media. For more information on ozone and Air Quality Alert days, visit <http://www.dem.ri.gov/programs/air/air-quality-forecast.php>

Air Monitoring in Rhode Island

In accordance with federal regulations, RIDEM monitors ambient concentrations of ozone, particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead. Rhode Island's six permanent monitors capture air pollution from mobile sources, especially at the *Near Road* monitoring site along I-95 in Cranston.