

Carbon Monoxide



Significance

Carbon monoxide is a colorless, odorless gas that enters the bloodstream through the lungs. It reduces the amount of oxygen that reaches organs and tissues. Exposure to high levels of carbon monoxide can cause cardiovascular or respiratory problems for sensitive people such as children and the elderly. Even healthy people may experience chest pains, impaired vision, and loss of alertness.

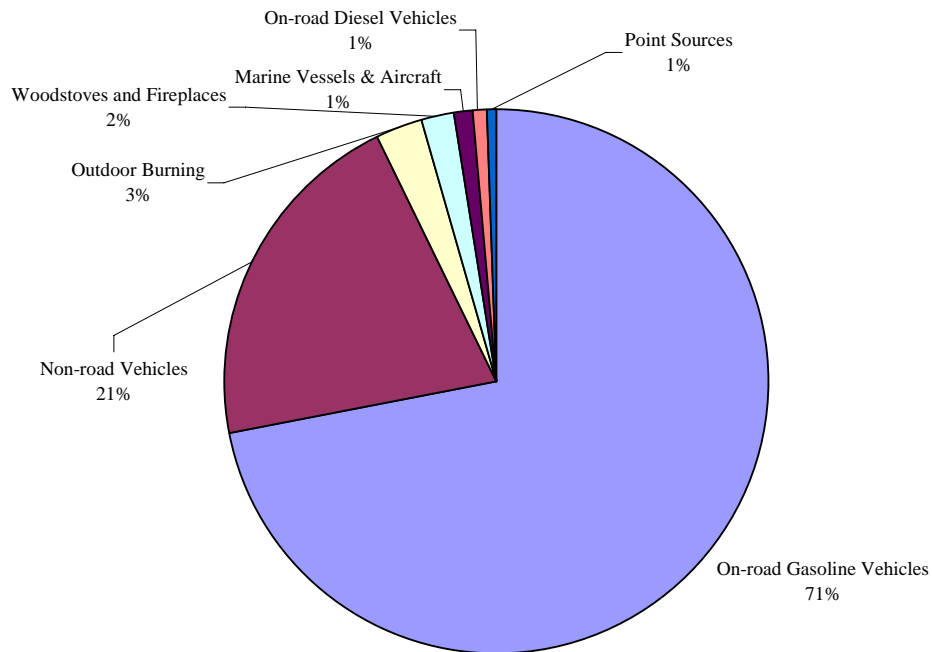
Background

The Environmental Protection Agency (EPA) set a national ambient air quality standard for carbon monoxide in 1971. The Puget Sound area has not violated the carbon monoxide standard since 1990 and was designated as “attainment” status for carbon monoxide in 1996. Carbon monoxide levels have remained well below both the 1-hour and 8-hour federal standards in the Puget Sound area.

Sources

Carbon monoxide forms during incomplete combustion of fuels. The majority of carbon monoxide comes from vehicle exhaust. The highest levels typically occur in winter at busy traffic intersections. Major contributing source categories in the Puget Sound Region for 2002 were:

2002 Carbon Monoxide Source Contributions



Federal Control Strategies

Increasingly more stringent federal car standards have continued the decrease of carbon monoxide emissions from on-road vehicles, in spite of significant increases in vehicle travel.

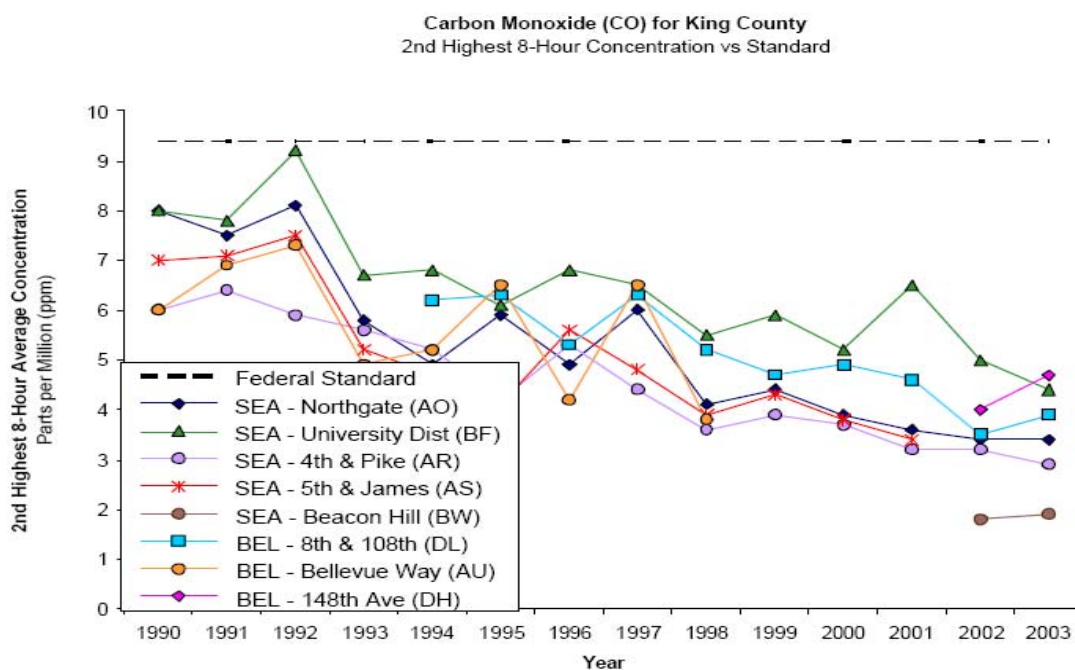
Local Control Strategies and Carbon Monoxide Emissions Projections

To supplement federal control strategies, the Agency considered additional local strategies to ensure maintaining carbon monoxide “attainment” status. Based on the baseline emissions inventory, emissions inventory projections, and monitoring information, a stakeholder group determined that carbon monoxide levels were likely to continue to decrease in the Puget Sound over the next decade.¹ The stakeholder group recommended no additional local strategies targeted specifically at carbon monoxide reduction, however they did adopt contingency strategies that would be triggered in the case of exceedances or violations of the federal air quality standards. The contingency measure would implement a regional oxygenated gasoline requirement as prescribed in the Clean Air Agency’s regulations.

¹ Final Report of the Puget Sound Clean Air Agency CO/Ozone Stakeholders Group. June 27, 2001.

Air Quality Trends

The graph below shows carbon monoxide monitoring at King County sites as a representative of the Puget Sound region. The colored lines represent the 2nd highest 8-hour concentration, the statistic that is compared to the federal standard to determine compliance. The federal standard is shown with a dotted line on the graph. The Washington State Department of Ecology conducts all carbon monoxide monitoring in the Puget Sound area. This graph reflects the large reduction in carbon monoxide concentrations that has occurred over the last decade.



Current Projected Emission Trends

The Agency prepared emissions inventories to support maintenance plans and re-designation requests. These inventories suggest that carbon monoxide emissions are decreasing, despite increasing population and vehicle use. These reductions are largely due to the more stringent federal vehicle emissions standards.

	Total Tons Per Winter Day ²		
	<u>1996</u>	<u>2007</u>	<u>2015</u>
All On-road Vehicles	1,745	1,176	762
All Non-road Vehicles	202	229	229
Area Combustion Sources	360	417	417
Point Sources	66	66	66
Total Tons Per Winter Day	2,373	1,888	1,474

² Final Report of the Puget Sound Clean Air Agency CO/Ozone Stakeholders Group. June 27, 2001. Table 1.

Carbon Monoxide in the Future

Based on monitoring data, emissions inventory projections, and continued improvements in vehicle technology, it is highly unlikely that measured carbon monoxide levels would violate the federal standard in the future. Carbon monoxide is no longer considered a pollutant of concern in the Puget Sound area. In addition, greenhouse gas reduction strategies, most notably implementation of stricter Washington vehicle standards, may serve to further reduce carbon monoxide levels.³ These reductions will create an additional “margin of safety”.

³ The Puget Sound Climate Protection Advisory Committee recommended adopting this strategy in its final climate protection report. The 2005 Legislature adopted these standards and the Washington State Department of Ecology is developing implementing regulations.