A foundation of human wellbeing is breathing fresh air. The Air Quality Vital Sign tells us about people's exposure to impaired air quality across Puget Sound. Sources of air pollution in Puget Sound include vehicle emissions, industrial emissions, wildfire smoke, and residential burning of wood and debris. Air quality status varies by location and across the urban-rural gradient due to weather patterns, topography, and pollution sources. Degraded air disproportionately affects young children and the elderly as well as those who have respiratory diseases and asthma. Vulnerable communities are often disproportionately exposed to degraded air quality. According to the Puget Sound Clean Air Agency, an estimated 1,100 people die each year in Washington State due to outdoor air pollution.

### Key Vital Sign Messages

- **Clean air is vital for everyone.** The Washington Department of Ecology works in partnership with local clean air agencies and tribes to monitor and track emissions to make sure outdoor air quality meets federal and state standards. Three local clean air agencies manage air quality in Puget Sound.

- **The burden of air pollution is not evenly shared.** People of color, especially African Americans, and people who have low incomes experience higher risks of harm from exposure to air pollution.

- The **Washington Environmental Health Disparities Map** is an online tool that shows the uneven distribution across the region of a community's vulnerability and exposure to environmental pollution, including air pollution.

- Air pollution impacts both urban and rural communities throughout the Puget Sound area from a broad range of sources, including wildfires, residential wood combustion, traffic and industrial sources.

- Fine particulate matter (PM$_{2.5}$) is generally the air pollutant that poses the **most significant health concerns** for Washington residents.

- The severity of local and regional wildfires has been the main cause of Puget Sound residents' **exposure to PM$_{2.5}$ concentrations** in recent years. In 2020, all Puget Sound residents were exposed to impaired air quality, with many areas reaching the very unhealthy and hazardous ranges of PM$_{2.5}$ for several days.
Over the past several decades, the planet has increasingly warmed due to climate change, causing more potential for wildfires. With hotter and drier conditions in the years ahead, we expect more wildfires and longer fire seasons. Puget Sound’s air quality and public health will be more at risk.

Air toxics are hazardous air pollutants known or suspected to cause a broad range of serious health effects, including cancer. In the Puget Sound area, diesel particulate matter (DPM) accounts for most of the potential cancer risk from all air toxics. This means that communities near major roadways, like the Chinatown-International District in Seattle located along I-5 and I-90, are exposed to higher concentrations of toxics associated with vehicles.

**Background Documents**

- Leadership Council Resolution 2015-02, Human Health and Quality of Life Vital Signs and Indicators
- Human Wellbeing Vital Signs and Indicators for Puget Sound Recovery (2015), technical report describing the recommended portfolio of Puget Sound Human Health and Quality of Life Vital Signs and indicators

**Other Resources**

- Washington clean air agencies
- Articles related to a healthy human population in the Encyclopedia of Puget Sound
- Near-road air toxics study in the Chinatown-International District, report from the Puget Sound Clean Air Agency (2018). Full report and community report
- Fine particulate air pollution associated with higher risk of dementia, UW News

**Contributing Partners**

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