



State of Oregon Department of Environmental Quality

Location Selection for Six New Air Toxics Trends Air Monitoring Stations

Contacts: Anthony Barnack, barnack.anthony@deq.state.or.us; Ben Ayres, ayres.benjamin@deq.state.or.us
Air Quality Monitoring Section

In 2017, the Oregon Legislature approved funding for the Oregon Department of Environmental Quality to install and operate six new full air toxics, air monitoring trend sites. The new air monitoring stations will be in addition to two U.S. Environmental Protection Agency National Air Toxics Trends Stations that DEQ currently maintains, and additional annual rotating air toxic sites that DEQ manages. This memo provides rationale for choosing locations statewide for the six additional trend sites.

Background

Air toxics are Hazardous Air Pollutants associated with serious health effects such as increased risk of cancer or respiratory damage. In a Policy Option Package for the 2017 Legislature, DEQ identified cities with large populations that have elevated risks of air toxics. The goal for additional air toxics trend sites is to measure the changes in air toxics over time in representative areas of these communities. The air toxics DEQ will measure include: volatile organic compounds such as benzene, semi-volatile compounds such as naphthalene, aldehydes such as formaldehyde, heavy metals such as arsenic, and particulate matter from wood smoke and other sources.

There are four main categories of monitoring objectives in Oregon: 1) monitoring sources of air emissions, 2) monitoring receptors or where people are, 3) monitoring at background (known as “clean” sites), and 4) research monitoring for new methods or instrumentation. The new trend sites will be useful as receptor monitors and will measure changes in the various air toxics impacting neighborhoods where people work, live and play. DEQ has other assessment monitoring sites that it will move approximately every year and which can be used for source and background monitoring.

To evaluate air toxics risk across the state, DEQ used the 2015 EPA National Air Toxics Assessment (<https://www.epa.gov/national-air-toxics-assessment>). This information shows the geographic areas with the highest cancer risks. The national assessment identified most urban areas as having some risk of air toxics, including the Portland metropolitan area, Medford, Eugene, Salem, Bend, Roseburg, Coos Bay, Grants Pass, Klamath Falls and Roseburg. The assessment estimated that the Portland metropolitan area and Medford have the highest risk.

To determine where the largest populations are, DEQ used the 2016 population estimate from The Portland State University Population Center (<https://www.pdx.edu/prc/>) shows that the highest population areas are the Portland metropolitan area, Eugene, Salem, Medford and Bend.

Currently, DEQ has one National Air Toxics Trends Station site in North Portland and one in La Grande. There is a need for additional monitoring in Eugene, which has the second largest Core Based Statistical Area and is identified as “at-risk” for air toxics. The Lane Regional Air Protection Agency monitors every three to four years after it obtains funding, but additional annual monitoring is needed to provide trend information. Salem is similar in size to Eugene and is also at risk for air toxics. Bend and Medford are the next largest geographic areas and Medford is one of the higher, at-risk areas in the state. The lowest-priority monitoring on this list would be Salem and Bend because they show lower risk in the National

Air Toxics Assessment. Salem has had air toxics monitoring in the past and has been shown to be similar to other cities of its size for volatile organic compounds and semi-volatile organic compounds with low metals concentrations. DEQ has no information for Bend, and for this reason Bend was identified over Salem for an air toxics trend station.

Considering the elements above, DEQ determined that the Portland metropolitan area has the most need for additional air toxics monitoring, and the areas of interest DEQ identified in the legislative package were three monitoring stations in the Portland Metro area, along with Eugene, Medford and Bend. Another consideration is that DEQ has resources for four rotating annual air toxics monitoring stations, so other areas of interest such as Salem may have an annual air toxics assessment in the future with one of the four rotating sites. A summary of locations for the trend sites is shown in the table below with information about HAPS, followed by a more detailed explanation for each of the six new locations.

CBSA	City	Comments
1) Eugene/Springfield	Eugene	Past monitoring data showed some elevated HAPS
2) Medford/Ashland	Medford	Past monitoring data showed some elevated HAPS
3) Bend/Redmond	Bend	No past monitoring information
4) Portland/Vancouver	Hillsboro	NATTS and other past monitoring shows elevated HAPS in the Portland Metro area.
5) Portland/Vancouver	Tualatin	
6) Portland/Vancouver	TBD	
Portland/Vancouver	N. Portland	Existing EPA Funded NATTS site
La Grande	La Grande	Existing EPA Funded NATTS site

Location Selection

Eugene, Medford and Bend

Considerations of specific locations in these cities include the proximity of sources of pollution to residential areas, relative toxicity of nearby sources, topography, meteorology and environmental justice. Other practical considerations include the availability of a suitable public or private space for siting a permanent station.

- 1) **Eugene.** Much of the siting work for Eugene has been done previously. In Eugene, air toxics have been monitored at sites in Amazon Park and on Highway 99W in 2015. The Amazon Park site is located in a predominantly residential neighborhood and may have less of a mix of air toxics sources. The Highway 99W site is located on the edge of a commercial area and has a mix of light industrial, mobile and area emissions. Initially, DEQ and LRAPA will equip both the Amazon Park and Highway 99 sites for air toxics monitoring. LRAPA may move one of these stations to different locations in the Eugene/Springfield area. The other station will remain as an air toxics trend site. After approximately one year of monitoring, DEQ will work with LRAPA on selecting which of these two sites will remain as the trend site.
- 2) **Medford.** In Medford, DEQ has a monitoring station near the intersection of Welch St. and W. Jackson St. The Welch and Jackson site has been used in the past for air toxics monitoring and measures a mix of residential, commercial, mobile and industrial emissions. The site also has a representative residential demographic. Currently, DEQ monitors for particulate matter 2.5 at this location. Welch and Jackson will provide a trend site representative of both source and receptor categories discussed above. DEQ is also considering as an alternative to the Welch and Jackson location, a county park within ½ mile of the Welch and Jackson site.

- 3) **Bend.** Bend has one particulate matter (PM 2.5) monitoring site, which is in an urban residential neighborhood with some mobile sources but not many other types of emissions sources nearby. A new location will need to be found for air toxics monitoring which will have a better mix of air toxic sources. DEQ is looking into sites located in the Orchard District for a possible air toxics monitoring station in Bend.

Portland Metro

The additional Portland metropolitan trend sites can be separated into locations for specific purposes. They should be evenly distributed across the region but also measure different types of emission clusters. The four different trend sites (three new sites and one existing NATTS) should collectively measure: an urban neighborhood, a suburban neighborhood, an industrial/neighborhood mix, and heavy mobile/neighborhood mix.

An urban neighborhood National Air Toxics Trends Station already exists in North Portland at Kairos PDX (just off N. Alberta St across from Jefferson High School). It is deep in an urban neighborhood with area and mobile sources nearby. There are also some commercial and industrial sources within 3 miles from Swan Island and the Albina Railyard.

- 4) **Hillsboro.** A suburban neighborhood site has been measured in the past in Hillsboro at Hare Field. This location measures area and mobile sources nearby with some industrial and commercial sources starting about one mile away. This is an environmental justice area with lower income and minority people. Currently, DEQ measures particulate matter and ozone at this location. DEQ plans to expand the existing station at Hare Field to include air toxics trends.
- 5) **Tualatin.** The heavy mobile/neighborhood site will be along a heavily travelled road with a high average daily traffic count of gas and diesel vehicles. The site will also have to be located at the same elevation as the road and the neighborhood as sunken roads and sound walls cause emissions to move parallel to traffic. An existing site in Tualatin along Interstate 5, between I-205 and I-217 already measures the impact of the most heavily travelled section of road that meets the siting criteria. This freeway section also reports the most heavy-duty truck traffic on a road that meets the siting criteria. The site is 25 meters from the freeway and currently measures nitrogen oxides, ozone, carbon monoxide and particulate matter 2.5. DEQ plans to expand the existing station in Tualatin to include air toxics trends.
- 6) **To Be Determined.** An industrial/neighborhood mix site will measure the impact of a nearby industrial area on a neighborhood over time. There are many possible areas for this site including the Cully Neighborhood, Northwest Portland, St. Johns, near Swan Island, Southeast Portland and others. DEQ will conduct a more detailed study to determine the best location for an air toxics trend station representative of an industrial/neighborhood mix. Selection work for this site will be the most time-consuming. DEQ will begin this work after the other sites have been established so there is no delay in getting the first five sites up and running.