



State of Oregon
Department of
Environmental
Quality

DEQ's role in addressing air toxics in the Portland region

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What is DEQ doing to address air toxics in Portland right now and in the future?

Based on what DEQ has learned over the past year about the levels of two air toxics, cadmium and arsenic, here are the short term steps DEQ is taking to gather more information to inform longer term solutions.

Short term

- DEQ is working with US EPA to investigate emissions from art and architectural glass manufacturing nationally.
- DEQ is compiling the list of facilities in Oregon permitted to emit chromium compounds.
- DEQ is researching other facilities that may be using chromium compounds that are not otherwise regulated for its use.
- DEQ is assessing where the public health impacts are most serious to ensure monitoring and sampling provide information necessary for DEQ's outreach to businesses that may be the source of the air toxics and residents.

Long term

DEQ will take action to establish health or risk based standards for air toxics from industrial facilities that will address a gap in current state and federal regulations. This will include securing resources for additional monitoring. This effort will also include input from the community and other stakeholders.

Background

Overall, air pollution in the Portland area has decreased dramatically over the last 30 years. Important success stories include reducing lead, carbon monoxide, particulate matter and ozone (smog) to meet federal clean air standards. DEQ has several long-standing programs that reduce air pollutants:

- Vehicle inspection program
- Regulating emissions from industry and small businesses
- Assistance to small businesses to reduce the use of toxic chemicals
- Year-round air pollution advisories
- Assistance with diesel engine retrofits and replacement
- Anti-idling initiatives for passenger cars and trucks
- Stricter wood stove requirements and change-out program

Despite this progress, DEQ is concerned about levels of other pollutants called air toxics, which are known or suspected to cause serious health problems including cancer, nerve damage and respiratory irritation. Air toxics include diesel soot, benzene, polycyclic aromatic hydrocarbons (tar-like by-products from auto exhaust and other sources commonly called PAHs), and metals including cadmium, arsenic, manganese, nickel, and lead. Air toxics come from a variety of sources including cars and trucks, all types of burning including burning wood in fireplaces and woodstoves, businesses and industries of all sizes, and consumer products such as solvents and pesticides. There are no federal air concentration standards for air toxics.

The U.S. Congress amended the Clean Air Act In 1990 to allow EPA to oversee the control of 188 hazardous air pollutants (HAPs) in order to protect human health. The EPA works with local and state governments to implement technologies that control the emission of these chemicals. For glass manufacturing, the industry standards focus on emissions for large facilities, such a those that make beer bottles.

DEQ established **air toxics benchmarks** in 2006 which set guidelines for 52 pollutants. In 2005, with EPA funding, DEQ measured concentrations of air toxics, including metals, at six locations in the Portland area, finding levels of many pollutants above clean air benchmarks. Benchmarks are Oregon's protective "clean air" goals that DEQ developed to address toxic air pollutants. There are no direct regulatory requirements associated with benchmarks. Air quality standards are set at the federal level by the US Environmental Protection Agency (EPA) nationwide for a different category of pollutants called criteria pollutants, which include: Particulate Matter, Ozone, Carbon Monoxide, Lead, and other pollutants.

However, **there's a specific gap in DEQ's authority to address air pollution**, and levels of some toxic air pollutants are still above Oregon's air toxics benchmarks. This is a serious problem because toxic air pollutants are connected with health effects like cancer, respiratory problems and organ damage. DEQ's air toxics benchmarks are very protective air concentrations that people could breathe for a lifetime without increasing their cancer risk beyond a chance of one in a million.

Air toxics emissions from certain types of industrial businesses like art glass manufacturers are not regulated under federal requirements. New information in Oregon is prompting DEQ to develop regulations to address this.

When did DEQ first know there was a problem with air toxics in Portland?

In 2009, DEQ convened the Portland Air Toxics Solutions Project (PATS) and worked with local communities to develop air toxics reduction strategies for the Portland region. During the PATS process, DEQ performed computer modeling which predicted air pollution concentrations, based on assumptions about the amount of emissions from potential sources and the ways pollutants might move through the environment.

Since 2012, DEQ has been implementing several of the Portland Air Toxics Solutions Project (PATS) high priority recommendations, such as voluntary diesel retrofits, and working with local governments to implement woodstove curtailment programs.

Why did DEQ first focus on Cadmium and Arsenic?

Computer modeling estimates for cadmium and arsenic levels didn't match up with monitoring results for these pollutants. DEQ spent several years trying to locate the unknown sources of both pollutants in the area, but there weren't good methods to pinpoint exact sources until recently.

Starting in 2013, DEQ teamed up with researchers from the United States Forest Service to see if its moss sampling could help find cadmium sources in Portland. Because the highest concentrations of cadmium in moss were located in southeast Portland near Bullseye Glass, DEQ placed a monitor there for a month in October 2015. In January, 2016, DEQ received the directly measured air sampling data indicating the concentrations of cadmium and arsenic in the air near Powell Park in SE Portland were about 50 and 150 times above DEQ air toxics benchmarks respectively.

The Forest Service information also showed higher moss cadmium in an area beneath the Fremont Bridge in north Portland. DEQ has placed an air monitor in that area as well.

How can DEQ address this now when it did not act before?

The Portland Air Toxics Solutions modeling study showed DEQ localized impacts of industrial metals, but did not identify specific sources. Historically DEQ air toxics monitors showed levels of metals up to five times above benchmarks, with recent levels meeting or below benchmarks. The level of pollution recently measured near Bullseye was 50 to 150 times above benchmarks. The drastic difference in pollutant concentrations warranted an immediate response.

Newly developing science using moss as a screening tool gave DEQ new information about where metals are accumulating. This information underscored the need to develop a regulatory solution to reduce air toxics from industrial sources.

What will DEQ do to regulate air emissions from glass manufacturers?

DEQ is currently compiling a list of glass manufacturers and other facilities with air quality permits in Oregon that are emitting hexavalent chromium and other metals to understand what additional actions the agency may take based on the collected data. DEQ also is researching facilities without an air quality permit that use hexavalent chromium.

DEQ is informing and supporting EPA in a national investigation into potential emissions from art and architectural glass manufacturing. DEQ does not know the risk of trivalent chromium turning to hexavalent chromium, and that's why DEQ asked the art glass companies to stop using it. DEQ is working with EPA and others to research this topic more.

What would a health or risk based approach to reducing air toxics from industrial facilities look like?

DEQ will develop a program that takes into consideration potential impacts to the nearby area when issuing a permit to a facility. In other states this means that a facility is required to reach certain levels of clean air at its fence line. The levels are set by looking at what impacts emissions would have in the nearby area. There would be different levels of acceptable risk, depending on what's nearby.

DEQ will move quickly, using its current statutory authority, to develop an Oregon-specific program through rule making that ensures industrial hot spots are sufficiently controlled. Like all rule making, it will be data and science driven and ensure input from communities, health agencies and regulated parties to help define the specifics of this program. Geographic area, levels of protectiveness and timeline for implementation will be considerations of this robust program. The program will also provide a platform for discussion with local governments about their potential roles and levels of involvement.

Will DEQ look to permitting programs in California and Washington?

Yes. California and Washington have addressed metals emissions from industrial facilities directly by establishing health or risk based standards for air toxics impacts from facilities. Such action in Oregon will address a gap in current state and federal regulations.

Will DEQ be able to protect people from health risks from living near industrial facilities?

There are risks for people living near industrial facilities, just as there are risks to living near a highway or a busy street. In developing strategies to reduce air pollution, DEQ seeks feasible solutions. For example, we don't ban cars and trucks, but we work to reduce the risk of pollution coming from them. Changes to the way we permit facilities will help reduce the risks.

Where does DEQ get its authority?

The Oregon Legislature gives DEQ authority to implement state law. DEQ then establishes rules and regulations under that authority to specifically address concerns about air pollution in Oregon.

What about other pollution "hot spots"?

The monitoring plan DEQ put in place focuses on southeast Portland and north Portland, where two glass manufacturing facilities are located. DEQ will monitor the air and soils in this area for a suite of metals, including arsenic, cadmium and chromium. Other potential hotspots were identified based on data from the US Forest Service moss study. Using moss to identify pollution concentrations is a new approach. DEQ expects to gain information from further monitoring at the two glass manufacturers that will inform how moss data can be the basis for a sound plan to monitor other potential hotspots.