



Air Toxics

Questions and Answers

What is going on?

Possibly unsafe levels of arsenic and cadmium have been found in the air around the Bullseye Glass Company in Southeast Portland. Cadmium has been found in the air around Uroboros Glass Studio in North Portland. Chromium VI (chromium six, also known as hexavalent chromium) is also used at these glass factories and can be dangerous to health. The week of Feb. 15, 2016, Bullseye Glass and Uroboros Glass voluntarily agreed to stop using arsenic, cadmium and chromium.

How did this happen?

In May 2015, the U.S. Forest Service did a pilot study looking at moss samples as a measure of contaminants in the air. The moss results showed areas near the two glass companies with high levels of the heavy metals cadmium, and arsenic near Bullseye Glass in Southeast Portland.

This pilot study prompted the Oregon Department of Environmental Quality (DEQ) to set up air monitoring systems near the one company in Southeast Portland to collect 24-hour air samples every few days over 30 days in October 2015.

The air monitoring information confirmed that the glass company was the likely source of the metals. Those results became available to DEQ in late January 2016. DEQ then shared its analysis of the findings with the Oregon Health Authority (OHA) and the Multnomah County Health Department.

The DEQ also identified a second area of concern near a second company, Uroboros, in North Portland.

The glass companies were operating in compliance with the current law. Bullseye Glass was operating within its permit. The other company, Uroboros, is not required to have a permit.

The Oregon Health Authority (OHA) and the Multnomah County Health Department became involved to look into what these air toxics can do to people's health. They are sharing that information with the public.

When this pollution exceeds acceptable levels, will I experience health effects?

Probably not. Environmental samples, like those from moss and air, help us to understand what people could be getting exposed to. Finding something in the environment, even at high levels, does not mean that it is harming people or that it is in our bodies. Learning about what is in our environment helps us to understand the **potential** for health risks. State and federal public health agencies use benchmarks or screening values to serve as a warning. When levels in the environment are above these benchmark, it indicates that more information is needed to determine the risks to health. The benchmarks that trigger an investigation can be 10 times lower than levels that are known to cause health problems.



Is it safe to spend time outdoors in these neighborhoods?

Yes. Both glass makers have stopped using arsenic, cadmium and chromium, so there is no ongoing risk of exposure from those pollutants through the air. Air pollution clears quickly with rain and wind. Being outdoors also encourages physical activity, which is important for improving well-being and preventing chronic diseases.

Is the soil in my yard or garden safe?

Probably. The answer to this question depends on many things. It is common for soil in city neighborhoods to have contaminants. Contaminants in soils come from past and current uses of the land. For example, contaminants can come from building materials, vehicles and roadways, pesticide use, and industrial and commercial uses. These glass companies have operated in their locations for decades, so there likely are metals in the soil of yards and properties around the facilities. A person must first come into contact with, or be exposed to, a high enough level of contamination in soil in order for it to cause harm to their health. To be exposed to contaminants in soil, a person must eat the contaminated soil. This is typically of most concern for young children who tend to play on the ground, in dirt, and frequently put their hands in their mouths. Ensuring that children wash their hands before eating and after playing outdoors can significantly lower their possible exposure to contamination in yard or garden soil.

Is it safe to eat fruits, vegetables and herbs grown in this neighborhood?

Until soil tests are studied over the next several weeks, it is difficult to say for sure whether vegetables grown in the affected neighborhoods are safe to eat. To be safe, we recommend avoiding produce grown within one-half mile of the highest mapped concentrations until further notice.

In general, vegetables should be washed well or peeled before eating, and anyone working in the soil should wash their hands well before eating or drinking.

For people who would like information about the soil on their property sooner, there are a number of laboratories serving Oregon that will test soil for heavy metals.

Generally, urban gardens are at a higher risk of soil contamination from heavy metals, petroleum products, and other pollutants. OHA's [Healthy Gardening Factsheet](#) provides some additional information.

What are the health risks of these metals?

So far, agencies have focused on three heavy metals that were found to be at higher-than-acceptable levels in the areas near the glass companies.

Arsenic: Arsenic is not currently thought to be a risk in North Portland. Arsenic was found at higher-than-acceptable levels in Southeast Portland. Long-term arsenic exposure is linked to skin color changes, nerve damage, skin cancer, and cancers of the lung, bladder, and liver.

Cadmium: Cadmium was detected at higher-than-acceptable levels in both North Portland and Southeast Portland. Long-term cadmium exposure is linked to kidney disease, fragile bones, and cancers of the lung and prostate.

Chromium: Chromium comes in different forms. Chromium III (Chromium three) is a nutrient naturally found in our bodies. Hexavalent chromium (Chromium VI or Chromium six) was used



at both glass companies and was also likely to have been released into the air. Experts are currently researching how much of the total chromium detected could be hexavalent chromium. Hexavalent chromium exposure is linked to anemia (low iron in the blood), asthma, skin allergies, and cancers of the lung and stomach/intestinal tract.

More information on these heavy metals is available at the Oregon Health Authority. (www.healthoregon.org/metalsemissions).

Should I get tested for arsenic, cadmium, or chromium?

We don't yet know the health risks from this situation. Those who live, work, attend school, or play near these glass companies will have different levels of exposure depending on their activities and how much time they spend there.

Based on the initial information from DEQ, and our understanding of air movement from these sources, the greatest exposure is expected to have been among those who spent the greatest amount of time within approximately half of a mile of the identified glass factories.

Testing is an individual decision. Talk with your healthcare provider first.

Medical testing for arsenic, cadmium, and chromium can be done as a one-time urine test. OHA and Multnomah County Health Department issued a detailed guidance for health care providers whose patients choose to get tested.

Arsenic and chromium leave the body quickly, so a urine test for these two metals can only measure very recent exposure (hours to days). The urine test for cadmium can measure long-term cadmium exposure that occurred over the past several years. Both tests can show if the recent exposure was above average. The tests cannot determine specific health effects. Test results of children under age six can be falsely high and should be interpreted carefully with an expert.

OHA is currently looking at ways to make test results available to their agency, while still protecting the person's privacy. That way, the health effects across the city can be better understood. The agency will provide updates on this on its website.

Where can I learn more about the findings and effects?

You can visit www.healthoregon.org/metalsemissions for the latest updates.

How does exposure to these metals affect children?

Children are a special group when it comes to exposures to toxins. They breathe more air relative to their body size and their bodies are still developing.

The health effects of exposure to cadmium, arsenic, and chromium depend on how much of these metals a child is exposed to and for how long. Exposure to high levels of cadmium and arsenic over a long period of time may cause developmental delay (low IQ) in children, but it's not known for sure. Any other specific effects of arsenic and cadmium on young children are not fully understood and may be the same as for adults.

Young children who play in dirt and frequently put their hands in their mouths are at risk of eating metals that have settled in the soil. Making sure that all children wash their hands before eating, and after playing outdoors, can significantly lower their risk of exposure. Avoiding eating from gardens in these areas until there is more information on metal levels in the soil will remove the possible risk for exposure through eating garden food.



To help keep kids healthy it is important that they **1)** avoid tobacco smoke - Tobacco smoke contains heavy metals including cadmium and arsenic; **2)** eat a healthy diet with calcium and iron; and **3)** wash their hands before eating or drinking.

We know from our experience with lead poisoning that children with healthy diets and a lot of social and intellectual stimulation are less likely to suffer bad health effects from exposure to heavy metals.

I'm pregnant and live in one of the affected areas. Should I be worried?

We do not know for sure what the health effects are of these metals in pregnant women who have been exposed. Arsenic, cadmium, and chromium are all known to cross the placenta (move from mother to baby).

Arsenic and cadmium may contribute to low birth weight in babies. There are no studies showing that chromium causes birth defects in humans.

If you are pregnant, and have been exposed, it's important to **1)** avoid tobacco smoke - Tobacco smoke contains heavy metals including cadmium and arsenic; **2)** continue regular prenatal care with a health care provider; and **3)** eat a healthy diet with plenty of calcium, iron, and folic acid. Those nutrients help protect the body against some of the bad effects heavy metals can have.

I'm breastfeeding and live in one of the affected areas. Should I stop?

Arsenic, cadmium, and chromium can all be found in breast milk. We are just beginning to understand the situation in Portland neighborhoods and what it means to people's health. Breastfeeding offers many health benefits to mom and baby, so nursing mothers should continue to breastfeed. We will review this advice regularly as we get more information.

I've had a cancer diagnosis. Was my cancer caused by emissions from one of these glass companies?

Many types of cancer have many different causes. Arsenic exposure is linked to skin, bladder, lung, and liver cancers. Cadmium exposure is linked to lung cancer. Chromium exposure is linked to lung and gastrointestinal cancers. These links are generally based on studies of animals and of people with heavy, direct exposures for long periods of time. It is extremely difficult to link one individual's diagnosis to an environmental exposure like this one. OHA investigates cancer clusters (groups of cancer in the same area) and tries to find out if there are more cases than we would expect for any one group of people. But, cancer clusters rarely find a clear environmental exposure responsible for that higher-than-expected number.

What can I do to stay well?

People are less likely to suffer health problems from exposure to heavy metals if they take care of themselves in other ways:

- Avoid tobacco smoke
- Eat a healthy diet with a lot of different foods
- Get plenty of exercise
- Get enough sleep
- Wash hands well before you eat or drink



Learning about an environmental exposure like this can be very stressful because of the uncertainty and the worry it causes people about their loved ones and properties.

Take care of yourself by **1)** talking to loved ones and neighbors about your concerns; **2)** staying informed; and **3)** maintaining your daily routines, especially the healthy habits listed above.

If your stress becomes too much and gets in the way of your daily activities, see your health care or mental health provider for more information and support. You can also call the Multnomah County Crisis Line 24 hours a day at 503-988-4888. There is also a helpful fact sheet on stress and potential environmental exposures at (<https://public.health.oregon.gov/newsadvisories/Documents/metals-emissions-stress-worry.pdf>).

Are my pets at risk? How can I keep them safe?

Like people, animals can be exposed through the air and environment. Talk to your veterinarian if you have questions or concerns.

What are the different agencies involved?

DEQ - Oregon Department of Environmental Quality is a state agency that makes rules to protect the quality of our air, water, and land.

OHA - Oregon Health Authority is a state agency that works to ensure the health and health care of all Oregonians.

MCHD - Multnomah County Health Department is a local county agency focused on promoting and protecting the health of everyone in Multnomah County.

USFS - The U.S. Forest Service is the agency that manages and protects national forests and grasslands. Forest Service researchers discovered that moss collected from trees around art glass companies in the Portland area had much higher concentrations of heavy metals than other areas in the city.

When will we know more?

We will have more information in the coming weeks and months. This situation is still developing. Every agency involved is working hard to gather needed information and determine what it means in terms of our health. Updates are posted on agency websites as new information becomes available.

Where can I find information in other languages?

Information is being developed in other languages and shared on the agencies' websites. You can visit (www.healthoregon.org/metalsemissions) for the latest updates.

I want my soil tested. Who will pay for it?

DEQ is testing soil in public areas and in some daycare centers of Southeast Portland and will soon develop a plan for testing soils in North Portland. There is not currently a plan to fund general testing of private properties.

For people who would like information about the soil on their property sooner, there are a number of laboratories serving Oregon that will test soil for heavy metals.



I want my family tested. Who will pay for it?

People in the affected areas may see their healthcare providers to consider testing. Guidance about testing has been given to healthcare providers across the Portland metro area. There is not currently a plan to fund widespread testing of individuals. Contact your insurance plan's member services to see if this is a covered benefit.

OHA is working to gather test results from local labs in the next several weeks and analyze those results.

My health care provider has questions. Who should they call?

State and county public health agencies have sent out guidance for health care providers about testing and advice for patients. Health care providers who need more information on test interpretation can contact experts at the Oregon Poison Center (1-800-222-1222). If necessary, the Poison Center will refer calls related to children or pregnancy to the NW Pediatric Environmental Health Specialty Unit (1-877-KID-CHEM).

Should we be worried about our water supply?

Portland's main source of water is the Bull Run Watershed, a protected area outside the city. Portland Water Bureau regularly tests for water pollutants including arsenic and chromium, which occur naturally in the environment. Water quality test results from recent years show levels that would be unlikely to have a negative effect on health.

I understand there are treatments that remove metals from the body. Should I do this?

This type of treatment is usually only for individuals with a known high-dose exposure who have symptoms. Medicines, known as chelating agents, bind to metals and put them into the bloodstream so the body can get rid of them. Chelating agents can lower calcium and iron, both of which are important for health. Even with medical supervision, this treatment has serious risks like allergic reaction, dehydration, kidney failure, and death.

State and local public health doctors are **not** recommending routine chelation treatment for people tested as a result of this exposure. Health care providers needing additional information on test interpretation can contact experts at the Oregon Poison Center (1-800-222-1222), NW Pediatric Environmental Health Specialty Unit (1-877-KID-CHEM), or a Board Certified Medical Toxicologist.

Have the affected neighborhoods had an unusually high number of people diagnosed with cancer?

OHA maintains a statewide database of cancer diagnoses called a cancer registry. OHA is studying information from the registry to help answer this question. They expect to have results to share with the public by Feb. 19, 2016.