

Lead and drinking water

What is lead and where does it come from?

Lead is a metal found naturally in the earth's surface. Lead can also be produced from burning fossil fuels, manufacturing and mining. Lead is used to produce many items such as batteries, pipes and metal parts for machinery. Because of health concerns, its use has been discontinued in many products such as paint, fuel and kitchenware. However, lead levels can still be present in drinking water. The most common source of lead in drinking water is from leaching household plumbing. Although rare, lead can also enter drinking water through erosion of natural deposits in the earth's crust.¹⁻³

How can lead affect my health?

Lead is a health hazard. Infants and children are particularly susceptible to the health effects of lead. Drinking water with more than 15 ppb of lead over long periods of time can cause health effects such as:

- Delay in children's physical or mental development
- Decreased IQ in children
- Kidney problems
- High blood pressure²
- Increase risk of cancer¹

When does lead in drinking water become a health concern?

Most chemicals of concern in drinking water are measured in parts per billion (ppb). The Environmental Protection Agency (EPA) has established an action value, or standard, of 15 ppb. For public drinking water systems, this means if more than 10 percent of tested taps have more than 15 ppb of lead, the public drinking water system is out of compliance and must take certain actions.

What can I still use my water for if it is contaminated with lead?

Water for drinking, beverage-making or food preparation can be obtained from a known safe source and used on a temporary basis. Other uses of water pose much less hazard, but are not entirely safe if lead levels are significantly above the drinking water limit.

Can I wash my food with lead contaminated water?

If lead levels in your water are above 15 ppb, you should use water from a safe source to wash, prepare and cook your food. If lead levels are between 0 and 15 ppb, and recent water use has occurred (for example, showering or toilet flushing), run the water for at least 30 seconds before

drinking the water from the tap. If the water has been sitting in household plumbing without use for six hours or more, let the cold tap run for two minutes or longer. It is important to use only cold water because water coming from the hot water heater may be more likely to contain lead.

Can I irrigate or water my garden with lead contaminated water?

Yes. However, you should follow advice from [Oregon State University's Extension Service](#) on how to get your garden soil tested and interpret the results.⁴

What about bathing and showering?

Very little, if any, lead is absorbed through the skin. It is safe to use water that contains lead for showering and bathing.²

What about washing dishes, utensils and food preparation areas?

Only a very small amount of water clings to smooth surfaces, such as dishes. Water with lead above 15 ppb can be safely used to wash and sanitize dishes, tables and eating utensils.

What about general cleaning and laundry?

Very little water remains on washed surfaces and in laundered fabrics. Water with lead above 15 ppb can be safely used for general cleaning and washing of clothing, bedding and linens.

What about my pets?

Animals should not drink water with lead levels above 15 ppb. If levels are between 0 and 15 ppb, use only cold water and let it run for at least 30 seconds if there was recent water use (showering or toilet flushing). If the water has been sitting for six hours or more, let the cold tap run for two minutes or longer before using it as drinking water for animals.

Learning about lead levels in your drinking water

For people on public water systems:

Public drinking water providers must monitor for lead and ensure that no more than 10 percent of taps on a system test above 15 ppb lead. Public water system monitoring results are available on the Oregon Drinking Water Services [Data Online](#) website. If your water comes from a community water system (you pay a water bill), your drinking water provider must provide a [Consumer Confidence Report](#) to its customers every year. This report contains the most recent lead test results if detected. Contact your drinking water provider to request a copy of the most recent consumer confidence report.

For consumers:

Even though public water providers are required to test for lead, it does not necessarily mean the actual water coming from your faucet is lead free. Most lead in drinking water is from household plumbing, so it is important to test for lead at the point of use. To test your water at the point of use, you will have to find an accredited laboratory that does water testing for private property

owners. These labs can provide information and instructions for getting your water tested. For a list of accredited laboratories for drinking water in Oregon refer to the following [link](#).

If your water tests above the action level of 15 ppb, it is important to find out whether your plumbing is the source. One way to determine whether lead is coming from your household plumbing is to collect one “first-draw” sample (cold water collected after water has been standing in pipes for six to 18 hours) and another sample after the water has been running for several minutes. If the longer running water sample has lower lead levels than the standing water (first-draw) sample, then the source is most likely your household plumbing. If the two results are very similar, then the source might be in your actual water supply.

For private well owners:

If your drinking water comes from a private well, you will have to find an accredited laboratory that does water testing for private property owners. These labs can provide information and instructions for getting your well water tested. For a list of accredited laboratories for drinking water in Oregon refer to the following [link](#). If your water tests above the action level of 15 ppb, it is important to find out whether or not your plumbing and/or well components are the source. You can do this by collecting one sample at the point of use, and another directly from the well. Follow the same procedure for collecting samples as described above.

Reducing lead from drinking water

Don't boil the water!

There is no evidence that boiling removes lead, and it may actually concentrate the lead.

For operators of public drinking water systems:

Since the main source of lead in drinking water is from plumbing, avoid using piping or plumbing components that may contain lead. Pipes and plumbing components should be checked regularly for corrosion. Monitor pH levels since low pH may be contributing to corrosion and leaching of lead from household pipes. Before selecting treatment equipment, contact [Oregon Drinking Water Services](#) for regulatory requirements for public water systems.

For consumers:

To reduce the amount of lead in drinking water, consumers can flush pipes by letting the water get as cold as possible. If water has undergone recent use due to showering or flushing the toilet, run the cold tap for five to 30 seconds before using. If the water has been sitting for six hours or more, let the cold tap run for two minutes or longer. Only cold water should be used for consumption as hot water may contain more lead.² If you determine your plumbing is a source of lead, you may consider replacing all or some of the old, lead-containing parts.

Private well treatment options:

Before deciding on a treatment option, it is important to determine the source of lead contamination. Water from the well and/or tap can be tested using an accredited laboratory as described in the above section, “Learning about lead levels in your drinking water.”

Once the source of lead is determined, treatment options are available for various sources. Treatment typically involves replacement of materials contributing lead to the water. If the source of lead is the well components, consider replacing some of them, or if the source of lead is from plumbing within the house, consider replacing those. If lead contamination is from well and in-house plumbing components, consider replacing parts in both sources of contamination. Any replacement parts should be approved for drinking water by the [National Sanitation Foundation](#) (NSF).

If replacing in-house plumbing and/or well components is not an option due to cost, the amount of lead in drinking water can be reduced by running the cold water tap to flush the pipes. If water still has more than 15 ppb lead after flushing, consider switching to bottled water while working on a permanent solution.

For more information

- Private well owners that have health-related questions and concerns about lead in their water can call 971-673-0440 or email general.toxicology@state.or.us.
- For questions about treatment options for your domestic well, contact the drinking water specialist at your local or county health department. Here is a [list of local and county health departments](#) in Oregon with their contact information.
- [U.S. Environmental Protection Agency](#) – Basic information about lead in drinking water

References

1. ATSDR. Toxicological profile for lead. www.atsdr.cdc.gov/toxprofiles/tp13.pdf (2007).
2. USEPA. Basic Information about Lead in Drinking Water. <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (2014).
3. CDC. Lead: Water. www.cdc.gov/nceh/lead/tips/water.htm (2013).
4. Angima SD, Sullivan DM. Evaluating and Reducing Lead Hazard in Gardens and Landscapes. EC 1616-E. Corvallis, OR: Oregon State University Extension Services; 2008 Mar. <https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/ec1616.pdf>



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