

# LEAD IN PRIVATE WATER WELLS

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Dissolved lead is tasteless and odorless. It can be present in your water and be a significant health risk. Lead poses a serious risk to human health, so learning to recognize when it may be in your drinking water and taking steps to remove it is important.

## What is lead and where does it come from?

Lead is a toxic heavy metal found in mineral deposits in the earth's crust. It does not usually occur naturally in drinking water, but can be present from the use of lead-based solder, lead pipes, or from a contaminated water source. Soft, acidic water is more corrosive and likely to dissolve lead from solder or pipes than hard water. While Arizona often has hard water, the risk is still present. Lead is also present in the air from automobile and industrial emissions, and may be present in food. In buildings built before 1978, lead may be present in paint. The U.S. Environmental Protection Agency (EPA) estimates that 20 percent of our total lead exposure comes from drinking water.

## What are health concerns from lead exposure?

Children and pregnant women are at the highest risk from exposure to lead. Lead can cause premature birth, reduced birth weight, delayed physical and mental development in infants, as well as learning disabilities in children. In adults, accumulation of lead can cause anemia, kidney damage, and damage to the central nervous system. Lifetime exposure to high levels of lead can potentially cause stroke, kidney disease, or cancer.

## What is the drinking water standard for lead?

In 1992, the EPA revised the drinking water standard for lead to 15 parts per billion (ppb, equivalent to 15 micrograms per

liter). The previous standard was 50 ppb, but the standard was revised to reflect concerns about lead accumulating in standing water in pipes and plumbing. Water from municipal suppliers must meet EPA primary drinking water standards for lead when it leaves the water treatment plant. There is no standard for private well water.

## How do I know if there is lead in my water supply?

If you are connected to a public water system, your water supply company tests for lead and other contaminants at least annually. Annually, the water supply company is required by law to publish and distribute to their water users a report which includes testing results. In addition, if lead is found in concentrations above the 15 ppb limit in a public water supply, the supplier is required to notify the public. However, if you suspect your home's plumbing to have lead pipes or lead-based solder, you may want to have your drinking water tested at a certified lab independent of the water supplier's water testing schedule.

If you are a private well owner, you should have your water tested for lead and other potential contaminants. Be sure to use a state certified lab. To obtain a list of certified labs, refer to the fact sheet *Laboratories Conducting Soil, Plant, Feed, or Water Testing* (AZ1111), or contact Arizona Department of Health Services, Bureau of State Laboratory Services at (602) 255- 3454, or <http://azdhs.gov/lab/index.html>.

## What can I do to reduce lead in my drinking water?

If your water test results indicate a high concentration of lead, there are several ways to lessen the risk of exposure to lead in your drinking water:

- Determine the source of the contamination and fix it if possible. In the 1930s, copper pipes replaced lead pipe

for most residential uses. However, lead-based solder to connect the pipes was used in plumbing until it was banned in 1986. Replacing plumbing may be expensive, but it may be the only way to permanently lower the lead levels in your tap water.

- Install a reverse osmosis or distillation unit to treat your water. Both of these methods will remove lead and some other contaminants. However, these systems can be expensive and require careful maintenance.
- Flush the water taps or faucets. Lead can enter water when it has been sitting in the pipes and plumbing fixtures due to the corrosive action of water. If you have not used your water for several hours (like the first use in the morning), run the cold water tap for several minutes before using the water in order to flush out the system.
- Do not use hot water from the tap for cooking, drinking, or making baby formula. Hot water dissolves lead more quickly, so it will be present in higher concentrations in hot water. If you need hot water, heat cold water on the stove or microwave.
- Do not boil water to remove lead. Boiling will not remove lead. It will actually concentrate it.
- Use bottled water for drinking and cooking.

### Sampling for Lead

A sample is meant to represent the entire volume of water from which it is drawn. It is important to collect, store, and transport a sample properly to avoid changing the contents in a way that alters the outcome of analysis. Before collecting a sample, be sure to contact a laboratory that is certified to analyze drinking water samples and that has experience with carrying out the analysis. It is best to obtain a sample container and instructions for how to collect the sample from the laboratory prior to collecting and submitting a sample. The laboratory can offer guidance about the best place to collect the sample in your home and should give instructions about how much water is needed and how to store the sample until it can be delivered to the laboratory. Be sure to follow instructions carefully, because a sample that is collected, stored, or delivered incorrectly could lead to misinformation about the quality of your water supply.

## Web Resources

- EPA Consumer Fact Sheet: <http://www.epa.gov/safewater/lcrr/lead.html>
- EPA Safe Drinking Water Hotline: 800-426-4791

## For Additional Information

*Arizona Well Owner's Guide to Water Supply* (AZ1485)

Arizona Cooperative Extension (ACE) bulletins contain a variety of information about water, water quality, safe drinking water, and private wells. They are available through your county Extension office or from CALSmart Distribution Center, located in Tucson, at 4101 N. Campbell Avenue; (877) 763-531; (520) 795-8508 FAX; or visit <http://cals.arizona.edu/pubs/>

## Source

Burwell, C. 1998. Lead in drinking water. Purdue University Cooperative Extension Service, Fact sheet WQ-26.



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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James A. Christenson, Director, Cooperative Extension, College of Agriculture & Life Sciences, The University of Arizona.

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