

Lead



By: Barbara Daniels and Nancy Mesner
Revised December 2010

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 or 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. Lead is also present in the air from automobile and industrial emissions, and may be found in food. In buildings and homes built before 1978, lead may be present in paint. The U.S. Environmental Protection Agency (USEPA) estimates that 20 percent of our total lead exposure comes from drinking water.

What are health concerns from lead exposure?

Children are at the highest risk from exposure to lead. Lead can cause premature birth, reduce birth weight, delay physical and mental development in babies and young children, and cause learning disabilities in children in general. In adults, accumulation of lead can cause anemia, kidney damage, and damage to the nervous system. Lifetime exposure to high levels of lead can potentially cause stroke, kidney disease, or cancer. There are no known beneficial health effects from exposure to lead.



Drinking Water Facts.....

What is the drinking water standard for lead?

In 1992, the USEPA 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 the USEPA primary drinking water standards for lead when it leaves the water treatment plant. There is no standard for private well water, which means the owners of private wells must test their own water.



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

If you are on a public water system, your public system is tested annually for lead and other contaminants, and a report which includes testing results is sent annually to water users. To obtain a copy of the report for your water supply, contact your water supplier or call the Utah Department of Environmental Quality, Division of Drinking Water at 801-536-4200. If lead is found in concentrations above 15 ppb in a public water supply, the supplier is required to notify the public.



Even if your water comes from a public water supply, lead contamination can occur after the water has left the water treatment plant, as it sits in pipes and plumbing fixtures – especially if the water is soft. Also, if your water comes from a private well, you are responsible for testing your water for any contaminants. If you are on a private well or you suspect your home's plumbing could contain lead pipes or lead-based solder, you can get your water tested for lead. Contact a testing lab before you collect a water sample; they will have specific instructions for how to collect, store and transport the sample. A lead test will cost approximately \$12-\$20. A list of certified labs in Utah is available at <https://extension.usu.edu/waterquality/htm/homeownerswater/labs>. Free testing may also be available from the Utah Department of Agriculture and Food. Call them at 801-538-9905 or go to <http://ag.utah.gov/divisions/conservation/welltesting.html> to learn about their well water testing program.

For more information on how to test your well water, see the brochure *Testing Your Well Water*, and the Fact Sheet *How to Protect Your Well Water*. For help interpreting the results of your water test, use the USU Water Quality Extension Water Testing Toolkit at <https://extension.usu.edu/waterquality/htm/wqtool>.

Drinking Water Facts.....

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 pipe replaced lead pipe for most residential uses. However, lead-based solder 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.

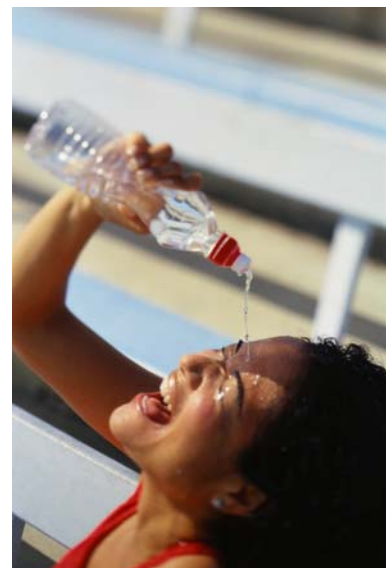
Install a reverse osmosis or distillation unit to treat your water. Both of these methods will remove lead and some other contaminants. However, these systems can be expensive and require careful maintenance. For more information on these systems, see the Drinking Water Fact Sheet *Drinking Water Treatment Systems*. In the long run, it may be most cost-effective to replace plumbing, rather than continually treat the water.

Flush the water taps or faucets. Lead can enter water when it has been sitting in pipes and plumbing fixtures, due to the corrosive action of water. First thing in the morning, or if you have not used the water for several hours, run the cold water tap for several minutes before using to flush 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 in the microwave.

Do not boil water to remove lead. Boiling will not remove the lead; in fact it will concentrate it.

Use **bottled water** for drinking and cooking.



Drinking Water Facts.....

Where can I get more information on lead in drinking water?

The Utah Department of Environmental Quality provides information on drinking water at http://drinkingwater.utah.gov/consumer_information.htm.

EPA Consumer Fact Sheet: http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/fs_consumer.cfm

EPA Safe Drinking Water Hotline: 800-426-4791

Cornell Cooperative Extension Water Treatment Notes Fact Sheet on Lead in Drinking Water: <http://waterquality.cce.cornell.edu/publications/CCEWQ-02-LeadInDrinkingWater.pdf>

University of Minnesota Water Resources Center: <http://wrc.umn.edu/>

Sources

Burwell, Cathy. 1998. *Lead in Drinking Water*. Purdue University Cooperative Extension Service, WQ-26.

Consumer Fact Sheet on: Lead. 2004. U.S. Environmental Protection Agency, Ground Water and Drinking Water. Retrieved from the World Wide Web on November 12, 2004. <http://www.epa.gov/safewater/lcrmr/lead.html>

Liukkonen, Barbara, and Marla Reicks. 2002. *Lead in Drinking Water*. University of Minnesota Extension Service, Water Quality Program.

Wagenet, Linda, and Ann Lemley. 1987. *Lead in Drinking Water*. Water Treatment Notes Fact Sheet 2. Cornell Cooperative Extension, New York State College of Human Ecology.

For more information, contact USU Water Quality Extension at 435-797-2580 or visit our website at <http://extension.usu.edu/waterquality>

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University. NR/WQ/2005-22