

Drinking Water Facts.....

UtahStateUniversity
WATER QUALITY EXTENSION

Arsenic

By: Barbara Daniels and Nancy Mesner

Revised December 2010



What is arsenic, and where does it come from?

Arsenic is a metal that occurs naturally in the earth's crust. It enters natural waters through erosion and the dissolving of rocks and minerals. Human activities have also introduced arsenic to water from urban runoff, pesticides, fossil fuel combustion, treated wood and smelting and mining wastes. Additional arsenic may enter water supplies from municipal and industrial waste sites.

What are health concerns from arsenic exposure?

Long-term exposure to arsenic is associated with high risks of lung and bladder cancer, and increased risks of skin, liver, and kidney cancer. In addition to cancer, chronic exposure to arsenic may cause developmental defects, stillbirth, spontaneous abortion, heart attack, stroke, diabetes, and high blood pressure. Following long-term exposure to arsenic, the first changes usually observed are skin abnormalities like discoloration and abnormal growths. Cancer usually takes more than 10 years to develop. There are no known beneficial health effects from exposure to arsenic.



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What is the drinking water standard for arsenic?

For many years, the maximum contaminant level (MCL) set by the U.S. Environmental Protection Agency (USEPA) for arsenic in drinking water was 50 parts per billion (ppb, equivalent to 50 micrograms per liter). However, in the 1990s, the USEPA and the National Academy of Science determined that this level was too high, based on studies of long-term exposure to high levels of arsenic in drinking water.

In 2001, a new standard of 10 ppb was set. Since January 23, 2006, all public water systems have been required to meet the new standard. Some water suppliers in Utah may have installed or upgraded treatment processes to meet the new standard. There is no standard for private wells, nor is any testing required, which means the owners of private wells must test their own water.



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

If you are on a public water system, your public system is tested annually for arsenic and other contaminants. Water must be tested every year. Your supplier is required to send an annual report to all water users on the amount of arsenic and other contaminants found in these water tests. If the testing reveals arsenic concentrations above the drinking water standard, the supplier is required to notify the public within 30 days. To obtain a copy of the report for your water supply, call your water supplier or the Utah Department of Environmental Quality, Division of Drinking Water at 801-536-4200.

If your water comes from a private well, you should have the water tested for arsenic. Contact a testing lab before you collect a water sample; they will have specific instructions for how to collect, store and transport the sample. An arsenic test will cost approximately \$12-\$20. A list of certified labs in Utah is at <https://extension.usu.edu/waterquality/hm/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/hm/wqtool>.

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Several areas in Utah (and the western USA in general) have naturally-occurring high levels of arsenic in their water supplies. In the past (samples taken from 1980 to 1998), some water samples from Beaver, Box Elder, Daggett, Millard, Sanpete, Sevier, Summit and Wayne counties exceeded 10 ppb. If you live in one of these areas and get your water from a private well, you should definitely have it tested for arsenic.

What can I do to reduce arsenic in my drinking water?

Several systems that can be installed in your home exist for reducing arsenic in drinking water. Distillation, reverse osmosis, and ion exchange columns can all be used to reduce arsenic levels; however, these methods are expensive and must be carefully maintained to be effective. For more information on these systems, see the Drinking Water Fact Sheet *Drinking Water Treatment Systems*.

The best alternative may be to use bottled water for cooking and drinking. Commercial bottled water must follow FDA guidelines and is safe to drink.

Although ingesting arsenic in drinking water is a health threat, absorption of arsenic through the skin is minimal. Hand-washing, bathing, laundry, etc., with water containing arsenic do not pose a health risk. Do not wash dishes or cook with water containing high levels of arsenic.



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

EPA Consumer Fact Sheet: <http://water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm>

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

University of Minnesota Arsenic Fact Sheet: http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_115531.pdf

World Health Organization Information: http://www.who.int/water_sanitation_health/dwq/arsenic/en/

Natural Resources Defense Council: <http://www.nrdc.org/water/drinking/qarsenic.asp>

Utah State University, Water Quality Extension Web site provides information on drinking water at <http://extension.usu.edu/waterquality/>

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

Sources

List of Public Water Systems in Which Arsenic was found in the 25 States Reporting Data. Appendix A in: *Arsenic and Old Laws*. 2000. Natural Resources Defense Council.

Arsenic Fact Sheet: Proposed Public Health Goal for Arsenic. 2003. California Office of Environmental Health Hazard Assessment.

Arsenic in Drinking Water. Fact Sheet by the State of Minnesota Environmental Health Division. Retrieved from the World Wide Web on November 17, 2004. <http://www.health.state.mn.us/divs/eh/water/factsheet/com/arsenic.html>

Arsenic in Drinking Water. 2001. Fact Sheet 210, World Health Organization.

Drinking Water Standard for Arsenic. 2001. EPA 815-F-00-015. U.S. Environmental Protection Agency, Office of Water

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

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