YOUR HOUSEHOLD WATER QUALITY:
ARSENIC IN YOUR WATER

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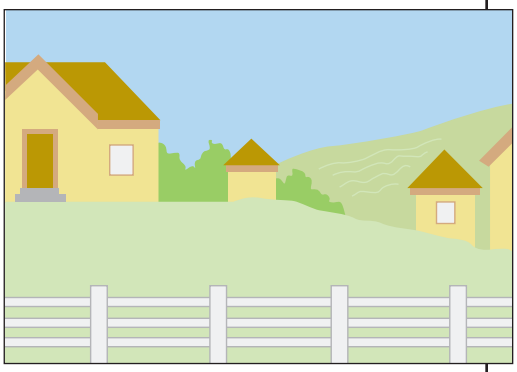
Arsenic in your drinking water poses a threat to your health. Effective January 23, 2006, the U.S. Environmental Protection Agency (EPA) instituted more stringent requirements for a safe level of arsenic in drinking water, lowering the Maximum Contaminant Level (MCL, the enforceable highest level allowed in drinking water) from 50 parts per billion (ppb) to 10 ppb. Due to its toxicity to human health, EPA's Maximum Contaminant Level Goal (MCLG, the non-enforceable level in drinking water below which there is no known or expected risk to health) for arsenic is zero. If your water comes from a public system, it is routinely tested to ensure safe arsenic levels. You may request a consumer confidence report from your water provider for verification. Unlike users of public water systems, those who use private water supplies (such as wells, springs, and cisterns) are responsible for ensuring the quality of their own drinking water. Since private systems are more susceptible to arsenic than public water systems, private well owners should take steps to guard their health. Measures include routine water supply testing and wellhead maintenance and protection.

ARSENIC OCCURRENCE AND SOURCES

Arsenic often occurs in underground rock formations. In areas with arsenic-bearing rock, groundwater can dissolve some of the arsenic, which can be transported into household water supplies. Although Georgia typically has lower levels of arsenic than some regions of the U.S., arsenic concentrations can vary greatly, even within a small area.

Agricultural and commercial sources also pose a threat of arsenic contamination. Fortunately, arsenic from these sources is tightly bound to soil particles, thereby reducing its mobility to surface and ground water. Some sources of arsenic in soil include the following:



- From the 1920s until the 1940s, a variety of arsenic-containing pesticides, such as lead arsenate, were used to control the boll weevil in former cotton-growing areas.
- Former fruit orchards may also contain traces of arsenic-containing pesticides.
- Pressure-treated lumber has often been treated with chromated copper arsenate (CCA), a preservative used to protect wood from insects and decay. The production of CCA-treated lumber has the potential to contaminate water supplies. In 2003, because of the known carcinogenic effects of CCA to humans, the EPA banned the use of CCA-treated lumber in residential settings. For more information on CCA-treated lumber, visit the pertinent EPA webpage at **http://www.epa.gov/oppad001/reregistration/cca/cca_qa.htm**. Some modern herbicides also contain arsenic. All pesticide containers should be tightly sealed and stored away from wells and other sources of drinking water.

THE HEALTH CONCERNS OF ARSENIC EXPOSURE

There are typically two forms of arsenic in water: "arsenic-III" and "arsenic-V," but arsenic-III often predominates in the groundwater. Arsenic-III is much more toxic to humans and is relatively difficult to remove compared to arsenic-V. Therefore, any water filtration should remove both forms of arsenic.

Health problems from drinking water containing arsenic depend on the type and amount of arsenic contamination, and a person's general health. The Department of Health and Human Services (DHHS), USEPA, and the International Agency for Research on Cancer (IARC) have determined that drinking water above the MCL over a long period increases the risk of skin cancer and cancer in the liver, bladder and lungs. In addition, chronic exposure to arsenic may lead to:

- abnormal heartbeat
- gastrointestinal irritation
- circulatory problems
- a decrease in red and white blood cells
- cardiovascular disease

Bathing, showering, and brushing teeth using water with arsenic above the MCL may only be considered a minor route of arsenic exposure.

Note: The safe upper limit of arsenic in drinking water for livestock and poultry is 200 ppb.

HOUSEHOLD WATER QUALITY SERIES 12

TESTING FOR ARSENIC AND TREATMENT OPTIONS

It is essential to test private water supplies regularly (at least once a year) for contamination. If you are concerned about arsenic in your water, you will need to test for arsenic. To obtain a water sample for arsenic testing, the following protocol is recommended:

- Turn on the cold water to its full capacity and let it run to waste for 2 to 3 minutes to flush the water out of the pipes. Then turn the faucet down to a pencil size stream of water and fill a 100 mL plastic sample bottle, being careful not to contaminate the sample. To prevent contamination, do not touch the inside of the bottle or lid.

The preferred water treatment is to remove arsenic from all water entering the house using granular ferric oxide, titanium or hybrid adsorption media that contains iron-impregnated resin. These systems effectively remove both "arsenic-III" and "arsenic-V." A smaller and lower-cost filtering system at the point-of-use can be an alternate choice, which would provide 2 quarts of treated water per minute, enough for drinking and cooking in an average household. For further information about arsenic removal, refer to the University of Georgia publication, *Removal of Arsenic from Household Water* available at your local Extension office and online at: **www.caes.uga.edu/publications**

Remember, no single water treatment system can remove all contaminants, including arsenic.

If you are concerned about the possibility of arsenic in your well water, contact your county Extension agent for information about testing or refer to the University of Georgia publication, *Testing for Water Quality*, available at your local Extension office and online at: **http://www.fcs.uga.edu/pubs/PDF/HACE-858-2.pdf** or **http://aesl.ces.uga.edu/publications/watercirc/TestingWaterQuality.pdf**. If an initial test does not reveal dangerous arsenic levels, yearly follow-up testing is not recommended unless you notice obvious changes in water quality or in routine testing results for minerals.

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