

## NATURALLY-OCCURRING ARSENIC IN PRIVATE WELL WATER

Naturally-occurring arsenic does not affect the taste and appearance of your water, but it can affect your health. Test your well water routinely to ensure the safety of your drinking water.

REPORT HEALTH CONCERNS ABOUT ARSENIC IN WELL WATER TO THE DEPARTMENT OF PUBLIC HEALTH: 404-657-6534.

### ***What is arsenic?***

Arsenic is an element that occurs naturally in rocks and soil. Arsenic gets into well water through natural erosion. When underground water flows over rocks and soil that contain arsenic, the arsenic slowly dissolves into the water. As a result, some private water wells in Georgia may exceed the federal regulatory standard for arsenic in public water supplies. Arsenic occurs in bedrock and shallow wells and the amount of arsenic in well water will vary greatly from place to place. Testing is the only way to determine if water contains arsenic.

### ***What are the Health Effects of Arsenic Exposure?***

People are most often exposed to arsenic by eating food and drinking water that contain arsenic. Arsenic in your drinking water can get into your body when you drink the water or use it to cook or prepare your food. Arsenic does not easily get into your body through your skin, so showering and bathing are not a problem. You cannot breathe in the arsenic that is in your water.

Exposure to high concentrations of arsenic in drinking water has been linked to cancer, and cardiovascular and respiratory problems. Studies conducted in other countries found some people who repeatedly, and over many years, drank water containing arsenic at levels ten times above the federal drinking water standard developed several kinds of cancer (lung, liver, skin, kidney, and prostate) and had darkening skin, thickening of the skin on the palms of their hands and soles of their feet, and many small warts and other skin abnormalities.



A few studies found no harmful effects in persons in the United States who throughout their lifetimes drank water containing arsenic at levels five times above the drinking water standard. Even though harmful health effects were not found in persons who drank water containing elevated arsenic levels, reducing exposure to arsenic can reduce the risk of harmful health effects. The Georgia Department of Public Health recommends that people concerned about arsenic exposure drink bottled water, and install a point-of-use or whole house filter system. If residents are concerned about current arsenic exposure, they can consult with a health care professional for medical testing.

### ***Is Arsenic in Well Water Regulated in Georgia?***

Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency establishes maximum contaminant levels (MCLs) for contaminants in public drinking water supplies. MCLs are below levels at which health effects have been observed. Therefore, they are assumed to be protective of public health. The MCL for arsenic is 10  $\mu\text{g/l}$  (micrograms per liter) or 10 ppb (parts per billion) in drinking water.

Although private water wells are not subject to the same regulatory standards as those set for public drinking water supplies, it is recommended for health purposes that private well owners use these standards to guide their water treatment decisions.

## ***Should I Test My Well Water For Arsenic?***

Private water wells in Georgia have been tested and results show elevated levels of arsenic in some wells. The arsenic is naturally-occurring. The University of Georgia Cooperative Extension sampled approximately 800 wells in Georgia for arsenic; 50 were above the MCL and the results ranged from none detected to 122.4 ppb. The Georgia Department of Public Health is working with residents and local officials to investigate and address health concerns. However, because the arsenic is naturally occurring, residents are responsible for the water quality of their well.

Persons interested in having their well water tested should contact their local county cooperative extension office at 1-800-ASK-UGA1 or a certified private lab. Tests cost approximately \$30 plus shipping. It is essential to test all new water wells and all wells for toxic chemicals, including arsenic, every three years. In most areas, the cost of testing a sample of water for arsenic usually ranges from \$20 to \$40. Because the amount of arsenic in well water can vary throughout the year, you should test more than once, at different times of the year. If arsenic is found, a filtration or water treatment system can be installed.

## ***How do I Remove Arsenic from my Well Water?***

While exposure to elevated levels of arsenic in drinking water for a short period of time is not an immediate health concern, arsenic may pose a health risk when the water is used for drinking and cooking over many years.

Arsenic can be found in water in two forms: **inorganic** and **organic**. Granular activated carbon cartridges will only remove inorganic arsenic, and reverse osmosis membranes will remove both forms. However, arsenic removal is not as simple as removing some other common contaminants. To evaluate your options before installing an arsenic removal system, please visit NSF International's\* list of approved methods for removing arsenic:

[www.nsf.org/certified/dwtu/Listings.asp?ProductFunction=053%7CArsenic+%28P](http://www.nsf.org/certified/dwtu/Listings.asp?ProductFunction=053%7CArsenic+%28P).



Removing arsenic from water requires special adsorption media. Granular ferric oxide, titanium and hybrid media that contain iron-impregnated resin are all highly effective, but there are differences in the length of time before the filter media needs to be replaced. The following recommendations regarding filtration to remove arsenic from drinking water are from the University of Georgia Cooperative Extension:

- If you have tested your water and the arsenic level is greater than 10 parts per billion, you should re-test to confirm the result before installing a home filtration or treatment system.
- When re-testing for arsenic, also test pH, and for the levels of phosphate, silica, hardness, iron, manganese and sulfate levels. The pH, phosphate and silica levels will help your water treatment professional estimate the life of arsenic treatment media, and the hardness, iron, manganese and sulfate levels will determine whether a pre-treatment step is necessary

Sources: University of Georgia Cooperative Extension, "Arsenic and Uranium in Georgia Wells"; <http://aesl.ces.uga.edu/water/asu.html>.

\* NSF (National Sanitation Foundation) International is an independent, not-for-profit organization that provides standards development, product certification, auditing, education and risk management for public health and the environment; [www.nsf.org](http://www.nsf.org).

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### ***FOR MORE INFORMATION***

Georgia Department of Public Health  
Environmental Health Branch  
Chemical Hazards Program  
(404) 657-6534  
[www.dph.ga.gov/chemical-hazards](http://www.dph.ga.gov/chemical-hazards)

Agricultural and Environmental Services Laboratories  
University of Georgia  
Cooperative Extension  
(706) 542-5350  
<http://aesl.ces.uga.edu>