



## **Arsenic in Drinking Water**

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

Arsenic is a naturally occurring element that is widely distributed in the Earth's crust. It has both organic and inorganic forms, but inorganic arsenic is much more toxic. Inorganic arsenic is commonly found in soil, sediment, and groundwater, while organic arsenic can be found in plants, animals, and seafood.

### ***What are common signs and symptoms of arsenic toxicity?***

- Skin, hair and fingernail changes including patches of darkened or lightened skin, white horizontal bands across fingernails (that move as the nail grows), blackening of the bottoms of the feet, open sores on hands/feet, skin growths, or skin cancer
- Neurological problems including numbness, a tingling ("pins and needles") sensation in the hands or feet, progressive muscle weakness or pain in the limbs, and frequent headaches
- Gastrointestinal and liver problems including persistent digestive issues, diarrhea, abdominal pain, nausea/vomiting, and liver cancer
- Heart problems including high blood pressure, abnormal heart rate, poor circulation in hands/feet
- Kidney problems including bloody urine, protein in the urine, fluid retention in the limbs, cancer of the kidneys or bladder
- Other problems may include increased risk of diabetes and anemia

### ***How can I tell how much arsenic is in my body?***

If you believe that you were exposed very recently (a day or two ago) or are still being exposed, then your arsenic exposure can be measured with a urine test. It's important that you do not eat seafood for 3 days before your urine test, since some seafood contains organic arsenic which will affect your test results. A hair test can tell you if exposure to arsenic occurred within the last month.

### ***How can I decrease the amount of arsenic that is in my body?***

Your kidneys will filter the arsenic out of your blood and eventually eliminate it from your body through the urine. However, the amount in your body can only be reduced if the arsenic exposure stops, so the best thing to do is to avoid the source of exposure (which is commonly contaminated drinking water). If your well water has high levels of arsenic you should not drink it, use it to prepare baby formula, or use it to wash/prepare food. You should also find an alternative source of water for your pets.

***What is an acceptable level of arsenic in drinking water?***

The U.S. Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (DEC) both have a public drinking water standard for arsenic of 10 parts per billion (ppb). Regular exposure to drinking water with concentrations of arsenic above 10 ppb may cause serious health problems.

***How much arsenic is there in the groundwater in Alaska?***

Groundwater in some parts of Alaska can contain high concentrations of arsenic because of naturally occurring deposits in the ground. Levels of arsenic that have been measured in groundwater range from safe (< 10 ppb), to over 9,000 ppb in some areas (in the greater Fairbanks area). Concentrations in your well can change significantly over time, and it is possible for arsenic levels to be high enough that filtration systems cannot return it to safe levels. Therefore, it is important to test your drinking water annually to make sure that it does not exceed 10 ppb, even if you've had a filter installed.

***Can I still bathe/shower and brush my teeth with my tap water if it has high levels of arsenic?***

Water with concentrations of arsenic below 500 ppb are safe for these purposes. However, you should avoid swallowing the water and make sure to supervise children during these activities.

***Can I use my well water to water my vegetables?***

You should not use your well water for watering edible plants and trees if it contains more than 100 ppb of arsenic. Arsenic can gradually build up to unsafe levels in soil and plants after repeatedly watering with contaminated well water.

***Where can I find more information about arsenic?***

You can contact the Alaska Environmental Public Health Program by calling 907-269-8000 (ask to be connected to environmental public health) or you can view additional information from the Centers for Disease Control (CDC) at <https://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=19&tid=3>