

## *What You Need to Know*

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### **What is arsenic?**

Arsenic is a chemical element that naturally occurs in the earth's mineral deposits and dissolves in groundwater. Michigan has naturally higher arsenic levels in groundwater. Arsenic exists in two main forms:

- Organic arsenic compounds contain carbon
- Inorganic arsenic compounds do not contain carbon. Research indicates that inorganic arsenic is more toxic and its associated health effects are more severe.

All arsenic is toxic to humans and can affect people of any age or health status. Arsenic has no taste, smell, or color when dissolved in water, so laboratory testing is the only way to detect it.

### **How are people exposed to arsenic?**

Exposure to inorganic arsenic typically occurs through groundwater used for drinking and cooking. A large source of total arsenic comes from the food we eat. However, most of the arsenic in food is in an organic (carbon containing) form, which is much less harmful than the inorganic arsenic found primarily in groundwater. Other possible sources include:

- Soil or dust near mining or industrial sites.
- Inhaling smoke from burning materials containing arsenic, like wood treated with preservatives. Arsenic can also be absorbed by breathing contaminated air in industrial settings.

### **How can arsenic get into drinking water?**

Arsenic can enter groundwater through:

- Natural processes: weathering and erosion of arsenic-rich rocks and minerals
- Human activities: mining, smelting, use of certain pesticides or wood preservatives, and industrial discharges.

People who use private wells are at greater risk because private wells are not regulated after installation; their water quality is their responsibility. Wells drawing from deep bedrock aquifers or areas with naturally high arsenic levels are more likely to be affected.

### **Will arsenic in water cause health problems?**

The health risks depend on the concentration of arsenic and length of exposure. Young children, the elderly, people with long-term illnesses, and unborn babies are at greatest risk and can be more sensitive to chemical exposures.

Short-term (acute) exposure at very high levels may cause:

- Nausea, vomiting, and diarrhea
- Abdominal pain
- Numbness or tingling in hands and feet

Long-term (chronic) exposure to lower levels may lead to:

- Skin changes (darkening, lesions, or thickened patches)
- Increased risk of skin, bladder, and lung cancers
- Cardiovascular disease
- Diabetes
- Impaired child development
- Effects on the nervous and immune systems function

There are several ways you can be tested for arsenic exposure. A urine test is a simple way to tell if you are being exposed to harmful levels of arsenic. However, this test will not tell you which type of arsenic (organic or inorganic) is in your body.

## Who can test well water for arsenic?

The Oakland County Health Division Laboratory can test your water for arsenic. Please contact Environmental Health Services at 248-858-1312 for more information. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) also has laboratory services and publishes a list of private laboratories certified for analyzing arsenic in drinking water. Contact the EGLE lab at 517-335-8184 or visit [Michigan.gov/EGLE](http://Michigan.gov/EGLE) for more information.

Laboratory testing is the only way to detect arsenic. Before having your drinking water tested, verify that the laboratory you choose is certified for the testing of arsenic in drinking water.

## Treatment and alternatives for drinking water with arsenic

If your water tests above the 10 parts per billion (0.010 mg/L) drinking water standard, use an alternative source for drinking, cooking, and brushing teeth until treatment is in place. It is critical that the treatment option you choose is certified for the reduction/removal of arsenic.

Treatment options for private wells include:

- Point-of-Use (under-sink) systems. Treats water at the primary drinking water faucet
  - Reverse Osmosis (RO)
  - Adsorptive media filters such as activated alumina or iron oxide
  - Distillation units
- Point-of-Entry (whole-house) systems. Treats all water entering the home. Before installing a water treatment system, owners should carefully research the treatment system's effectiveness for arsenic reduction and its operational and maintenance requirements.

Alternative options:

- Use bottled water.
- Connect to a public water system if available.
- Drill a new well in a different location or aquifer with lower arsenic levels (after consulting with the Oakland County Health Division, Environmental Health Services).

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