Anoka County
HUMAN SERVICES DIVISION
Public Health & Environmental Services

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Arsenic in Well Water

Most arsenic in Minnesota's environment is naturally occurring. Soil and rock material can naturally contain arsenic and can enter groundwater (well water) when these materials dissolve. The level of arsenic in well water can vary between wells, even within a small area such as a neighborhood. Most Anoka County residents have some measurable amount of arsenic in their well water. Arsenic in water has no taste or odor, so the only way to know if well water contains arsenic is to have it tested.

Drinking Water Standard

The U.S. Environmental Protection Agency (EPA) has established the Maximum Contaminant Level (MCL) for arsenic at 10 µg/L (micrograms per liter, which is equal to parts per billion) to protect the public from long-term exposure in drinking water. Public water suppliers must not exceed the arsenic MCL. Private (residential) wells are not required to meet this standard. Consuming water with levels of arsenic below this standard over many years can still increase the risk of cancer, and therefore, the EPA has set of goal of 0 µg/L for arsenic in drinking water.

Health Effects

The consumption of drinking water contaminated with arsenic over a long period of time is associated with diabetes and an increased risk of cancers of the bladder, lungs, liver, and other organs.

Other negative health effects of ingesting arsenic can include contributions to cardiovascular and respiratory disease, neurological effects in children, and skin problems. These health effects may take a period of many years to develop.

As long as the level of arsenic is less than 500 µg/L, this water is safe to use for other purposes such as washing dishes, laundry, showering and bathing, brushing teeth, and watering plants (including vegetables), since arsenic is not easily absorbed through the skin.

Treatment Options

Various types of water treatment are effective at removing arsenic, including:

- Adsorptive media filtration
- Anion exchange
- Continuous chlorination and filtration
- Distillation
- Oxidizing media filtration
- Ozonation and filtration
- Reverse osmosis (RO)

Specialty media, distillation, and reverse osmosis (RO) are the most commonly used water treatment options. While some treatment systems may be useful for other purposes, typical water softeners and activated carbon filters will not remove arsenic on their own. In addition, boiling the water will only concentrate the arsenic.

Periodically retesting the well water after installing a water treatment unit is important to ensure it is functioning properly.

It is important to maintain the treatment unit according to the manufacturer's guidance and it is recommended to choose a treatment system that is certified by an independent agency, such as NSF International, Underwriter's Laboratory (UL), or the Water Quality Association.

Other options for reducing arsenic exposure include constructing a new well, connecting to a public water system, or buying bottled water. Bottled water is subject to a variety of standards that may be more or less stringent than those of public water systems. The company producing the bottled water should be able to provide the results of their water testing.

Well Water Testing

It is up to residents with private wells to test their own well water to learn how much arsenic it contains. However, starting in August of 2008, well contractors are now required to test each new well they drill for arsenic and to share the results with the well owner and the Minnesota Department of Health (MDH). If arsenic *is not* detected in this first sample, the water is unlikely to have arsenic later. If arsenic *is* detected in this first sample, MDH recommends residents consider confirming this level by retesting the well water about six months after construction. This is based on new MDH research.

All wells should be tested for arsenic at least once.

Anoka County Environmental Services offers a well water testing program for private well owners. Test kits for arsenic can be picked up at the Anoka County Government Center in downtown Anoka. The current price for an arsenic test is $15.

Anoka County Environmental Services and MDH also recommend all well water be tested for:

- Coliform bacteria and nitrate (every year)
- Lead (at least once)
- Manganese (before a baby drinks the water)

All of these components, along with many others, can be tested for through the Anoka County Environmental Services well water testing program. Coliform bacteria and nitrate are testing together in a test called "Sanitary Analysis". See the Water Testing FAQs on the Anoka County water website for more information on well water testing.

Resources

Anoka County Water Website (www.anokacounty.us/water)
Know the Flow (www.knowtheflow.us)
Water Testing FAQs

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