

Manganese in Drinking WaterInformation for homeowners and other members of the public

Background Information

Manganese is a common element found in minerals, rocks, and soil. It is also a normal part of a healthy diet, but can be harmful if consumed in excess. Manganese is found naturally in groundwater, but levels can be increased by underground pollution sources. Manganese may become noticeable in water at levels greater than 50 micrograms per liter of water ($\mu\text{g/L}$). At this level, the water will have a brown color and leave black deposits on bathroom fixtures.

The US Environmental Protection Agency has recently set a drinking water health advisory for manganese of 300 $\mu\text{g/L}$. Wisconsin uses this health advisory to explain the risks of elevated manganese levels in water to the public.

If you have manganese in their drinking water, this fact sheet can help you understand the health risks and evaluate your need for a water treatment system.

How do I know if I have manganese in my water?

Manganese may be in your water if it has a rust color, causes staining of faucets, sinks, or laundry, and has an off-taste or odor. If this is the case, you should have your water tested for manganese by a state-certified water testing laboratory. You can find a certified laboratory by searching the telephone directory under “Laboratories-Testing” or by searching the lab lists on the Department of Natural Resources website:

<http://dnr.wi.gov/org/es/science/lc/LABS/Lablists.htm>

To help you understand the results, you can contact your local health department

(<http://dhfs.wisconsin.gov/localhealth>) or call the Wisconsin Department of Health and Family Services (DHFS) at (608) 266-1120.

What is the normal amount of manganese in well water?

Manganese levels in well water vary throughout Wisconsin, and are typically below 50 $\mu\text{g/L}$. However, some Wisconsin wells have levels that are above the health advisory of 300 $\mu\text{g/L}$. If your water has an off taste, color, or odor, and causes staining in sinks or on laundry, you should have your water tested.

How much manganese is too much?

Manganese levels below 300 $\mu\text{g/L}$ are generally not a health concern. As previously mentioned, infants should not drink water that is above the health advisory level of 300 $\mu\text{g/L}$. Also, people who drink more than 8 cups of water a day and have a liver disease should also avoid drinking water that is above the health advisory level. If your water tests higher than the health advisory level, find a different source of safe water to drink. For more information on approved home treatment systems for manganese removal, contact the Wisconsin Department of Commerce, at (608) 267-1401.

What health effects can manganese cause?

Many years of exposure to high levels of manganese can cause harm to the nervous system. A disorder similar to Parkinson’s disease can result. This type of effect is most likely to occur in the elderly. The federal health advisory for manganese is intended to protect against this effect.

Is manganese of concern for infants and young children?

Yes, especially for bottle-fed infants. Certain baby formulas contain manganese as a nutrient, and if prepared with water that also contains manganese, the infant may get a higher dose than the rest of the family. In addition, young children appear to absorb more but excrete less manganese than older age groups. This adds up to a greater potential for exposure in the very young. Some studies suggest that early childhood and prenatal

exposures to manganese can have effects on learning and behavior. Thus, it is very important to know what the manganese levels in drinking water are when using it to make baby formula.

How else can I be exposed to manganese?

Manganese is found in small amounts in meat and vegetables. A normal diet provides 2000 to 5000 µg manganese per day. Mineral supplements may contain as much as 5000 µg of manganese. As a comparison, drinking 8 cups of water at 300 µg/L would contribute 600 µg of manganese to one's diet.

Are there federal standards for manganese in drinking water?

Manganese levels are not regulated in public water supplies. However, the US Environmental Protection Agency has established an aesthetic water quality standard of 50 µg/L. Manganese levels below 50 µg/L should prevent the staining of bathroom fixtures and laundry. This standard is lower than the health advisory and will protect public health.

How can I decrease my family's exposure to manganese?

Manganese levels lower than 300 µg/L can affect the color and taste of the water. You should treat your water or buy bottled water if the manganese level is greater than 300 µg/L. Many times people choose to treat their water if the level is above 50 µg/L. We suggest you contact the Department of Commerce (608) 267-1401 before buying a system to treat your water. Manganese treatment devices must be installed by a licensed plumber.

Contact the Department of Commerce if you've already purchased a system but want to find out if it's approved for manganese removal. If the system was sold to you for manganese removal and was not approved for that purpose, you may be eligible for a refund.

Public locations with individual wells (non-community wells), such as taverns, schools, and restaurants, must obtain approval from the Wisconsin Department of Natural Resources' Bureau of Drinking Water and Groundwater (608)-266-0821 when installing a treatment system on a well with manganese levels higher than 300 µg/L.

Where can I get more information?

Contact the Wisconsin Division of Public Health at the address and phone number below, or your local health department, for more information regarding manganese in well water.

- Wisconsin Division of Public Health, Bureau of Environmental and Occupational Health, PO Box 2659, Madison, WI 53701 (608) 266-1120
- Visit the department's website: <http://dhfs.wisconsin.gov/eh>
- Wisconsin Local and Tribal Health Department Listing: <http://dhfs.wisconsin.gov/localhealth>

For information about sources of manganese in water and treatment options:

- Wisconsin Department of Commerce, Glenn Schlueter (608) 267-1401.



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