



MANGANESE

WHAT IS MANGANESE?

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.

HOW ARE PEOPLE EXPOSED TO MANGANESE?

Manganese is found in small amounts in meat and vegetables. A normal diet provides 2,000 to 5,000 micrograms (μg) manganese per day. Mineral supplements may contain as much as 5,000 μg of manganese. As a comparison, drinking 8 cups of water at 300 micrograms per liter ($\mu\text{g}/\text{L}$) would contribute about 600 μg of manganese to one's diet.

Manganese is found naturally in groundwater. Occasionally, manganese contamination can come from industrial activities. Manganese may become noticeable in water at levels greater than 50 $\mu\text{g}/\text{L}$. At this level, the water will have a brown color and may leave black deposits on bathroom fixtures.

DO STANDARDS EXIST FOR REGULATING MANGANESE?

Manganese levels are not regulated in public water supplies. However, the Wisconsin Department of Natural Resources does have a groundwater quality enforcement standard (ES) for manganese of 300 $\mu\text{g}/\text{L}$. The US Environmental Protection Agency (US EPA) has also established a secondary water quality standard of 50 $\mu\text{g}/\text{L}$ to protect against effects on how water looks and tastes. Keeping manganese below 50 $\mu\text{g}/\text{L}$ should prevent the staining of bathroom fixtures and laundry.

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, or has an off taste or odor. If your water is supplied through a municipal water system, contact your water utility directly, or check your most recent Consumer Confidence Report for more information.

If you draw your water from a private well and suspect high manganese in your drinking water, you should have your water tested 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/Regulations/labCert/labLists.html>

To help you understand the results, you can contact your local health department (<https://www.dhs.wisconsin.gov/lh-depts/counties/index.htm>) or call the Wisconsin Department of Health Services (DHS) at 608-266-1120.

WHAT IS A NORMAL AMOUNT OF MANGANESE IN WELL WATER?

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

HOW MUCH MANGANESE IS TOO MUCH?

Manganese levels below 300 $\mu\text{g}/\text{L}$ are generally not a health concern. People should not drink water that is above the ES of 300 $\mu\text{g}/\text{L}$. If your water tests higher than the ES, find a different source of safe water to drink. For more information on approved home treatment systems for manganese removal, you can contact the

Wisconsin Department of Safety and Professional Services (DSPS) (see contact information in “For More Information” section below).

WILL EXPOSURE TO MANGANESE RESULT IN HARMFUL HEALTH EFFECTS?

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 ES 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 and excrete less manganese than older age groups. This adds up to a greater potential for exposure in the very young. Some studies suggest that prenatal and early childhood 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.

When manganese levels are above 300 µg/L, infants under 6 months should immediately stop consuming the water and formula that was prepared with the water.

HOW CAN I DECREASE MY FAMILY’S EXPOSURE TO MANGANESE?

If you are concerned about the manganese level in your water, you may want to consider finding a different source of safe water to drink (such as bottled water) or treating your water.

The Department of Safety and Professional Services (DSPS) maintains a list of treatment devices that are certified to reduce manganese levels in water. See below for more information about this list and how to contact DSPS. Manganese treatment devices must be installed by a licensed plumber.

If you are served by a public water system, contact your local utility to learn more about the level of manganese in your drinking water.

FOR MORE INFORMATION:

- Health Questions
 - Your local health department: <https://www.dhs.wisconsin.gov/lh-depts/counties/index.htm>
 - Division of Public Health, Bureau of Environmental and Occupational Health, 608-266-1120: <https://www.dhs.wisconsin.gov/environmental/index.htm>
- Treatment Options
 - Department of Safety and Professional Services (DSPS), 608-267-1401: List of approved water treatment devices (http://dsps.wi.gov/php/sb-ppalopp/contam_alpha_list.php)
- Manganese in Public and Private Water Supplies; Well testing
 - Department of Natural Resources (DNR), 608-266-0821 <http://dnr.wi.gov/topic/drinkingwater/>

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to work exposure or emergency situations.

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