

Molybdenum in Drinking Water

Background information

Molybdenum is a metal that occurs naturally in the earth's crust and is usually found in very small amounts. It is an important dietary nutrient in very small quantities, yet too much molybdenum may cause health problems. In nature it can be found in poorly drained highly organic soils and as part of some minerals found in soil and rock. Molybdenum is occasionally found naturally in groundwater, but Molybdenum can also be present in the environment due to human industrial activities.

The State of Wisconsin has set a health-based ground water standard for molybdenum of 40 µg/L (micrograms per liter). This is the same as the US Environmental Protection Agency's Lifetime Health Advisory Level. If you have molybdenum in your drinking water, this fact sheet can help you understand the health risks and evaluate your need to seek an alternative supply of drinking water.

How do I know if I have Molybdenum in my drinking water?

The only way to know if you have molybdenum in your water is to 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/org/es/science/lc/LABS/Lablists.htm>

How much Molybdenum is usually found in well water?

A study of over 2,700 wells in the northern half of Wisconsin found detectable levels of molybdenum in approximately 20% of the wells. The median molybdenum concentration found in the wells was 4 µg/L, with 95% of wells less than 11 µg/L, and the highest level found was 3,499 µg/L.

How much Molybdenum is recommended for good health?

The Food and Nutrition Board, Institute of Medicine has set a daily Estimated Average Requirements for children and adults based on age.

Age	Estimated Daily Requirement for Molybdenum (micrograms/day)
Infants up to 6 months	2 µg/day
Infants 7 to 12 months	3 µg/day
1 to 3 years	13 µg/day
4 to 8 years	17 µg/day
9 to 13 years	26 µg/day
Youth (14-18 yrs)	33 µg/day
Adults (18 + yrs)	45 µg/day

How much Molybdenum is in a typical diet?

Molybdenum is found in small amounts in leafy vegetables, legumes, grains, and organ meats. The typical US diet provides around 100 µg molybdenum per day from food. Mineral supplements may also contain as much as 500 µg of molybdenum. Drinking water is not usually considered to be a source of molybdenum. However, if your water

contained an amount equal to the Wisconsin's health standard of 40 µg/L, drinking 2 liters of water a day (the typical amount consumed by adults) would contribute an additional 80 µg per day of molybdenum to your diet.

What health effects can excess amounts of Molybdenum cause?

One case of a person who consumed 700,000-800,000 µg per day for two weeks from dietary supplements led to symptoms of anxiety and hallucinations. Consumption of even higher amounts has been found to be fatal in laboratory animals. Other studies indicate an association with long-term consumption of 10,000 to 15,000 µg per day with enlarged liver, disorders of the gastrointestinal tract, and kidneys and a gout-like disease (ie joint pain in the hands and feet).

Are there special concerns about children's health?

For infants under the age of one, more study is needed to understand the potential health effects of molybdenum exposure. There is concern that infants may be more sensitive and less able to handle excess amounts of molybdenum.

Do standards exist for regulating Molybdenum in drinking water?

While Wisconsin has a groundwater standard for molybdenum, it is not regulated in public drinking water supplies. However, the US Environmental Protection Agency has established a Lifetime Health Advisory Level of 40 µg/L and Wisconsin has adopted this level to be protective for private drinking water wells.

Molybdenum levels below 40 µg/L in well water are not a health concern. If your water tests higher than the health advisory level, DHS recommends that you find a different source of safe water to drink.

This fact sheet summarizes information about this element and is not a complete listing of all possible effects. It does not refer to other routes of exposure such as airborne dust exposure, work exposure or emergency situations.

For more information, contact:

- Wisconsin Department of Health Services, Division of Public Health, 1 West Wilson Street, Rm. 150, Madison, WI 53701-2659, (608) 266-1120
- Your [local public health department](#)
- Wisconsin Department of Natural Resources, Bureau of Drinking Water and Groundwater (608)-266-0821

