Do you live in Eastern Nebraska? Do you have an infant staying in or visiting your household?

Parents with infants, grandparents, and childcare providers should know if their community water supply has high manganese levels. If the infant is drinking water from a private well, it should be tested. Of particular concern, for infants, is the consumption of rice and soy formula mixed with water high in manganese. Elevated manganese levels in drinking water, combined with intakes from other sources, can lead to excess consumption. Infants and young children with developing nervous systems are especially vulnerable, potentially developing learning and behavior issues.

Manganese in drinking water is not regulated by the Safe Drinking Water Act and it is not routinely tested for.

However, when testing occurs, high levels are found in the eastern part of the state. This is commonly observed in shallow wells (less than 100 feet deep), though manganese has been found at all well depths. This issue is not limited to private wells; as public water systems may draw water from several groundwater wells at various depths to meet community needs.Many public water systems in Eastern Nebraska have been found to have high manganese levels, with many, but not all, employing treatment measures to remove manganese. Residents relying on public water should refer to the resources provided on the following pages for more information. If you use a private well, testing resources are also provided.

NEBRASKA ENVIRONMENTAL PUBLIC HEALTH TRACKING

What manganese levels are considered high in Nebraska?

Water containing 50 milligrams per liter (µg/L) of manganese may have a bad taste, smell, and discoloration. While this level does not pose a health risk, it is considered a nuisance, potentially staining laundry, sinks and showers, and causing scaling on plumbing.

The U.S. Environmental Protection Agency has set a non-regulatory level of 300 µg/L for manganese. Levels below this are not considered a health concern. However, many states have developed recommendations to minimize exposure, some lower than 300 µg/L.

Infant Formula

Water containing 300 µg/L or higher should not be used to make infant formula, particularly rice and soy formula, due to their already high manganese content. Treated or alternative water is recommended.

Older Children and Adults

While typically less sensitive to manganese, older children and adults may still want to use treated or alternative water if manganese levels **exceed 300 µg/L.**

High Levels

Water containing over 1,000 µg/L should not be consumed by anyone due to potential negative impacts on the nervous system. Treated or alternative water should be used. Certain areas in eastern Nebraska have manganese levels exceeding 1,000 µg/L.

Testing and Treating Your Water

Testing

Manganese and iron in drinking water may be dissolved, suspended, or present as larger insoluble particles. The appropriate treatment technology will depend upon the concentrations and forms of iron and manganese, overall water quality, and other factors. In addition to private laboratories, the State of Nebraska can also test your water, for approximately $19.

Treatment Units

Select a unit certified by the National Science Foundation (NSF), Underwriter's Laboratory (UL), or the Water Quality Association (WQA). Recommended treatment for manganese typically reduces iron levels as well. Consult a drinking water professional for more information.

Frequently Asked Questions

Isn't manganese an essential nutrient? If so, why is it a concern for drinking water?

Manganese is an essential nutrient found naturally in many foods, included in dietary supplements, and added to infant formula, particularly rice and soy. It plays a crucial role in metabolizing various substances in the body, from glucose to cholesterol, and aids in bone formation, blood clotting, and the immune response. However, at high levels, manganese can negatively impact the nervous system. Infants and young children, whose nervous systems are still developing, are particularly vulnerable and may experience learning and behavior issues. Older children might also be affected, with potential impacts on memory, attention, and motor skills.

Where does the manganese in drinking water come from?

Manganese is naturally present in water, soil, and the geological formations through which groundwater moves. As groundwater flows through these formations, it picks up manganese and other minerals like calcium, iron, and magnesium.

Resources

Public Water Systems - Nebraska Drinking Water Watch

https://drinkingwater.ne.gov | Enter the name of your water system to find contact information

Private Drinking Water Well Testing - Nebraska Public Health Environmental Laboratory

Sample kits: (402) 471-3935 | Private well questions: (402) 471-4982 | https://dhhs.ne.gov/Pages/Lab-Price-List.asp

University of Nebraska Extension

NebGuide for Iron and Manganese