



IOWA DEPARTMENT OF NATURAL RESOURCES

Iowa DNR News

Environmental Services

DNR monitoring manganese in public water supplies in Iowa

BAGLEY, Iowa – Test results received by the Iowa DNR have determined that the City of Bagley’s drinking water supply contains levels of manganese higher than the United States Environmental Protection Agency (US EPA) health advisory levels (HAL) in drinking water of 0.3 mg/L (infants) and 1.0 mg/L (adults), respectively. The City of Bagley’s results showed 1.4 mg/L; and therefore, a Public Notice is being issued by the City. The DNR recommends all users of the drinking water system, use bottled water or an alternative source of water for making formula for infants, drinking, and food preparation.

The US EPA recommends that infants up to 6 months of age should not be given water with manganese concentrations greater than 0.3 mg/L for more than a total of 10 days per year, nor should water be used to make formula for more than 10 days per year. The US EPA recommends the general population should not ingest water with manganese concentrations greater than 1 mg/L for more than a total of 10 days per year. Much lower levels of manganese in drinking water can result in noticeable staining and taste complaints. It is for this reason that the US EPA has a secondary drinking water guideline of 0.05 mg/L.

Adult’s drinking water with high levels of manganese for many years may experience impacts to their nervous system, resulting in behavioral changes and other nervous system effects, including slow and clumsy movements. Some studies have shown that too much manganese during childhood may also have effects on the brain, which may affect learning and behavior.

Too much manganese can increase the risk of health problems, particularly for infants under 6 months old. Infants are more at risk than older children and adults because their brains and bodies are quickly developing. Formula-fed infants get enough manganese from formula to meet their dietary needs. However, they may get too much manganese (above the recommended amount for nutrition) in their bodies when formula is mixed with water that contains manganese.

Manganese is a naturally occurring element found in soil, water, and air. It is commonly found in the food we eat, including nuts, legumes, seeds, grains, and green leafy vegetables and in drinking water. Our bodies require small amounts of manganese to stay healthy. Adults and children get enough manganese from the foods we eat. Infants and children get enough manganese from breast-milk, food, or formula.

Manganese historically has been known throughout the drinking water community as an aesthetic issue that did not present known health concerns. Aesthetically, manganese

may cause a brown color in drinking water and may leave black deposits on sinks and bathroom fixtures. However, current research is changing the way the drinking water community responds to manganese.

The US EPA recently advised the Iowa DNR to require acute public notice to public water supplies with manganese concentrations in drinking water above the HAL. The first acute public notice was issued to the City of Bagley on March 1, 2019. The City of Bagley's public water supply system currently does not provide treatment for manganese. However, the Iowa DNR recently approved a Preliminary Engineering Report submitted by the City for construction of a new treatment plant.

If you are concerned about the levels of manganese in your drinking water, and you obtain your water from a public water supply system, you should contact representatives of your public water supply system and request the concentration of manganese. Please be aware that not all systems are required to test for manganese. If you obtain your water from a private well and suspect high manganese in your drinking water, you should contact your local county health department. If you are concerned about your health from manganese exposure, discuss your concerns with your healthcare provider.

The Iowa DNR's regulations do not specifically address the health advisory for manganese. However, the Iowa DNR does have authority to require public notice for any situation with significant potential to have serious adverse effects on human health as a result of short-term exposure.

The Iowa DNR is currently working on a monitoring plan to identify the public water supply systems in the state that may have levels of manganese in drinking water that exceed the HAL.

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