



Manganese in Drinking Water

Introduction

Manganese is a mineral that naturally occurs in rocks and soil and is a normal constituent of the human diet. It exists in well water in CT as a naturally occurring groundwater mineral, but may also be present due to underground pollution sources. Manganese may become noticeable in tap water at concentrations greater than 0.05 milligrams per liter of water (mg/l) by imparting a color, odor, or taste to the water. However, health effects from manganese are not a concern until concentrations are approximately 6 times higher.

The CT Department of Public Health (DPH) recently set a drinking water Action Level (AL) for manganese of 0.3 mg/l to ensure protection against manganese toxicity. This AL is consistent with the United States Environmental Protection Agency's (US EPA) lifetime health advisory level for manganese in drinking water. The CT AL provides guidance for prudent avoidance of manganese concentrations of potential health concern.

This fact sheet is intended to help individuals who have manganese in their water understand the health risks and the precautions that can be exercised while the water supply is being upgraded to reduce the manganese levels.

What Health Effects can Manganese Cause?

Manganese is necessary for good health; it aids digestion, increases bone strength and strengthens immune system function. As such, too little or too much intake of manganese may be harmful. Breathing high concentrations of manganese dust and fumes (e.g., welding) over the course of years has been associated with toxicity to the nervous system in workers, producing a syndrome that resembles Parkinson's Disease. It is not clear if drinking water with high concentrations of manganese can also cause harm to the nervous system.

Is Manganese of Particular Concern for Young Children?

Yes, and especially so for bottle-fed infants. Infant formulas contain manganese, and if prepared with water that also contains manganese, the infant may get a higher amount than the rest of the family. In addition, infants appear to absorb more manganese than older people but excrete less. This adds up to a greater potential for exposure in the very young. Since manganese's effects on the developing nervous system have not been adequately studied, it is especially important for pregnant women and young children to have drinking water that is below the manganese Action Level of 0.3 mg/L.

How Do I know if I have Manganese in My Water?

You may suspect that manganese is in your water if the water is discolored (brownish-red), causes staining of plumbing fixtures (faucets, sinks) or clothing, or has an off-taste or odor. If this is the case, you should contact your public water provider to have your water tested by a state-certified laboratory for manganese.

How Else Can I be exposed to Manganese?

Manganese exposure can come from air, food, and water. Manganese is a common trace element found in foods (e.g., nuts, beans, grains and teas). Manganese is also added to some dietary supplements. People usually get enough manganese through their diet alone. When infant formulas are prepared with water that contains high concentrations of manganese (above 0.3 mg/L), the infant may get more manganese than their bodies need. Bathing and showering in manganese-containing water does not increase your exposure since manganese is poorly absorbed across the skin and doesn't get into the air from water.

How Can I Decrease My Family's Exposure to Manganese?

If the water concentration is greater than 0.3 mg/l then bottled water should be used for water consumption by pregnant mothers and children under the age of one. Bottled water should also be used for making infant formula. Point of use treatment such as Reverse Osmosis (RO) can be considered while the public water provider is working on a permanent solution to the elevated manganese levels.

Are There Federal Standards for Manganese in Drinking Water?

There are no enforceable federal drinking water standards for manganese. The US Environmental Protection Agency has a secondary standard of 0.05 mg/l, which is intended to let the public know that manganese can affect water quality at this level. This secondary standard is not health-based and is not enforceable. In the absence of a federal standard, CT DPH has adopted the US EPA's lifetime advisory level of 0.3 mg/L as our Action Level.

Where Can I get More Information?

For Health Questions: CT Dept. of Public Health Environmental Health Section [Environmental & Occupational Health Assessment Program](#) (860) 509-7740

For Technical Questions: CT Dept. of Public Health – Drinking Water Section at 860-509-7333