

# Manganese

## Recommended Safety Standards

NC groundwater: 0.05 mg/L

EPA drinking water: 0.05 mg/L

### ❖ What is manganese?

Manganese is a naturally-occurring metal found in many types of rocks. It is found in many foods, such as nuts and whole grains, and small amounts are essential to the body. At high levels, it can cause damage to the brain. Manganese can cause brownish-black stains and is usually found in conjunction with iron-contaminated water.

### ❖ How does manganese get into my well water?

Manganese combines with other substances such as oxygen and is more common in deeper wells where water has contacted rock for longer periods of time. Industrially, manganese is used principally in steel production to improve hardness, stiffness, and strength. It may also be used as an additive in gasoline to improve the octane rating of the gas. Exposure to excess levels of manganese may occur from breathing air, drinking water and eating food.

### ❖ What are the health effects of manganese?

The most common health problems in people exposed to high levels of manganese involve the nervous system. These health effects are behavioral changes and other nervous system effects, which include movements that may become slow and clumsy. Nervous system and reproductive effects have been observed in animals after high oral doses of manganese. For further reading on the health effects of manganese, please visit <https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=23>.

### ❖ Who is most affected by manganese?

Studies in children have showed that extremely high levels of manganese may produce effects on brain development, including changes in behavior and decreases in the ability to learn and remember.

### ❖ How do I know if my well water is contaminated with manganese?

If your well was installed before July 2008, call your local environmental health office and ask for the well program or contact Clean Water for North Carolina if you are unsure of the appropriate point of contact for your area.

#### Still have questions or concerns?

Call Clean Water for North Carolina.

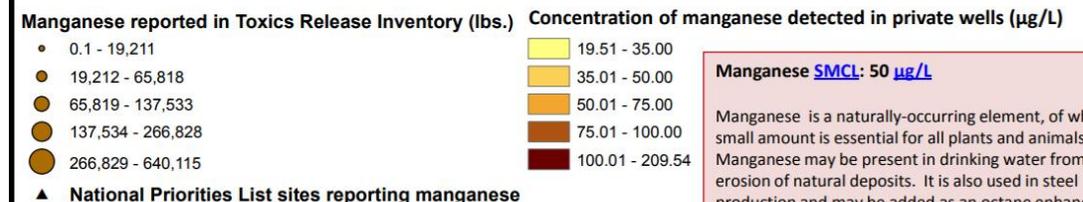
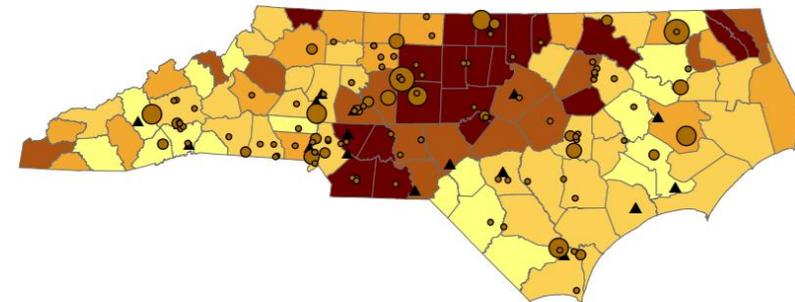
Asheville office: 800-929-4480, amanda@cwfn.org

Durham office: 919-401-9600, hope@cwfn.org

Website: <http://www.cwfn.org>



Concentration of Manganese Detected in NC Private Well Water ( $\mu\text{g/L}$ ), Average 1998-2010



#### Manganese **SMCL: 50 $\mu\text{g/L}$**

Manganese is a naturally-occurring element, of which a small amount is essential for all plants and animals. Manganese may be present in drinking water from the erosion of natural deposits. It is also used in steel production and may be added as an octane enhancer in some gasoline.<sup>11,28</sup>