

Significance Of Iron And Manganese In Drinking Water

Drinking Water Standards

The U.S. Environmental Protection Agency (EPA) sets national standards for public drinking water supplies (PWS). These standards are health-related and are legally enforceable – therefore, PWS must meet them.

Secondary drinking water standards are non-enforceable guidelines for contaminants that, in concentrations above the standard, may cause objectionable cosmetic effects to the water, such as taste, color or odor, but will not cause adverse health effects. Iron and manganese are two elements with a secondary standard.

Elemental metals are measured in microgram per liter ($\mu\text{g/L}$) of water. One $\mu\text{g/L}$ is equivalent to one part per billion. Test results below the lowest reportable concentration are indicated by a less than symbol (<).

Iron

Iron is a naturally occurring element. EPA's secondary drinking water standard for iron is 300 $\mu\text{g/L}$. Above 300 $\mu\text{g/L}$, water will become a reddish-orange color. As the amount of iron in the water increases, the color deepens. A public drinking water supply cannot be required to supply water with iron below any particular level; however, systems are advised that iron over 300 $\mu\text{g/L}$ will cause their water to be discolored.

Manganese

Manganese is another naturally occurring element that is often detected in drinking water supplies. EPA's secondary drinking water standard for manganese is 50 $\mu\text{g/L}$. At this concentration water may be cloudy, milky colored, and form black precipitates. Manganese at this concentration may also contribute to mineral deposit in pipes, cause difficulty with lathering, and darken or stain clothing during washing. Detergents do not remove these stains. Chlorine bleach and alkaline builders (such as sodium and carbonate) may even intensify the stains.

There is not a published level at which manganese causes health problems. At 50 $\mu\text{g/L}$ of manganese, drinking water systems are advised that problems with taste and color of water can occur.

You can have the well water at your home tested for these contaminants. For more information, contact DEQ's State Environmental Laboratory at (405) 702-1000 or (866) 412-3057.

