

# OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY



## Significance Of Iron And Manganese In Drinking Water

### Drinking Water Standards

The United States Environmental Protection Agency (EPA) sets primary national standards for public water supplies (PWSs) to protect public health. These standards are health-related and are legally enforceable; therefore, PWSs 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 micrograms 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 no published level at which manganese causes health problems; however, if manganese levels in drinking water are  $50 \mu\text{g/L}$  or more, drinking water systems are advised that problems with taste and color of water can occur.

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



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