



# Iron in Drinking Water

*Iron is an essential mineral nutrient required for maintenance of energy metabolism and the prevention of iron deficiency anemia and is widely used in metallurgy, cookware, and food supplements.*

## ENVIRONMENTAL SOURCES

Iron is common in many rocks and is found in nearly all soils and surface and ground waters. Refining of iron ores, corrosion of iron containing metals, release of industrial wastes, and the leaching of soluble iron salts from soil and rocks, are sources.

## HEALTH IMPACTS

Iron is a major component of hemoglobin, which is used to transport oxygen and carbon dioxide in the blood. Iron also plays a vital role in oxygen utilization and energy requirements in cells.

Because of the inefficient absorption of iron, adults are generally protected from an oral overdose. However, infants and young children who ingest adult iron supplements, may suffer from iron toxicity. Iron supplements should be kept out of the reach of children. Ingestion of toxic levels can damage blood vessels, damage the liver/kidneys, and result in death.

Iron deficiency can enhance lead absorption and toxicity. Children with increased blood lead levels should be tested for iron deficiency.

Long-term inhalation of iron fumes can cause siderosis – a lung condition exhibiting altered respiratory rates and pneumoconiosis.

## IRON IN WATER

Metallic iron and its alloys are corroded by water in the presence of oxygen. Natural waters may be polluted by industrial wastes and leaching from soil and rocks. The soluble reduced iron (ferrous) is easily converted to the insoluble oxidized iron (ferric) in natural surface waters. This insoluble iron tends to settle out or be absorbed onto surfaces. As a result of this condition soluble iron is not generally found at high concentrations in well aerated waters.

There is no health based maximum contaminant level (MCL) in drinking water. The current recommendation of 0.3 parts per million is a secondary MCL, based on

aesthetic effects such as taste. Using water containing high levels of iron can cause an “off” taste and/or color to the water, staining of plumbing fixtures, and discoloration of laundered clothes.

## IRON BACTERIA

These bacteria flourish best under dark conditions and in waters containing dissolved iron and carbon dioxide. Some species oxidize iron and utilize it as a source of energy while others incorporate iron into their cell structure. Precipitates of oxidized iron and gelatinous masses of iron bacteria can clog pipes and screens. Iron bacteria can give a brownish color and a disagreeable taste or odor to the water.

## IRON IN SOIL AND SEDIMENTS

Iron is one of the most abundant metals in the earth’s crust and is commonly found in soil and sediments.

## Contacting Us

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Updated 2016|CS