

IRON

What is iron?

Iron is a naturally occurring magnet metal that attracts iron and steel. There are many forms of iron. The main inorganic iron compounds are ferrous (+2) or ferric (+3) oxides, carbonates, disulfides, sulfates, and chlorides. Iron is also a micronutrient essential to good health and is found in many multivitamins and supplements.

Where is iron found and how is it used?

Iron is one of the most common elements found in the earth's crust. It can be found in soils, sediments, water, and in most living organisms. Iron is removed from the earth in the form of ores, which are processed and refined to obtain high-grade iron.

Most iron ores are used in making iron and steel. These materials are used for building bridges, roads, ships, and buildings. Iron is also used in dyes, water treatment, pigments for rubber and paints, and integrated circuits. It is also used as vitamins and supplements.

Iron is a micronutrient, which means the body needs it for the body to function normally. Foods with high iron levels are oysters, liver, lean red meat, the dark meat of poultry, tuna, salmon, iron-fortified cereals, dried beans, whole grains, eggs, dried fruits, dark leafy green vegetables, lamb, pork, and shellfish.

How can people be exposed to iron?

You could be exposed to iron through:

- **Eating** foods containing iron. You can also eat iron in vitamins and dietary supplements.
- **Drinking** water containing iron.
- **In the workplace**, people may be exposed to high levels of iron. This occurs in iron ore mining and smelting, steel making, arc welding, and metal polishing.

How does iron work and how can it affect my health?

Iron is an essential micronutrient. Health effects can result from having too much or too little iron in the body.

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Iron deficiency means having too little iron in the body — the most common nutritional deficiency throughout the world. Not enough iron in the body can cause tiredness or lack of energy, dizziness, weight loss, and for an individual to be more vulnerable to disease.

Too much iron in the body is usually the result of poisoning and can be fatal. The most common cause of iron poisoning is when children eat iron supplements that belong to someone else. An example is a child who eats an adult's iron supplements.

There have been some cases of chronic iron excess, yet it is rare. It usually occurs from overuse of supplements. There have been some reports of excess iron in food and beverages.

Although not a health hazard, iron can be a problem in private water supplies. It can give the water a bitter, metallic taste. It also stains clothes and fixtures.

How is iron poisoning treated?

Iron poisoning usually occurs by ingestion. A physician will treat iron poisoning with induced vomiting, bicarbonate solutions, or other drugs.

What should I do if I am exposed to iron?

- If you think you were exposed to an excess of iron by ingestion, seek medical attention.
- If you had iron dust on your skin or in your eyes, wash thoroughly with water and seek medical attention.

What factors limit use or exposure to iron?

All medicines, vitamins and supplements should be kept out of the reach of children.

In the workplace, limit exposure to the metal iron by using safe work practices.

If there is too much iron in your water supply, it can be removed or reduced through different treatment processes.

Is there a medical test to show whether I've been exposed to iron?

There are blood tests to determine whether your body has excess iron.

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Technical information for iron

CAS Number: 7439-89-6

Chemical Formula: Fe

Carcinogenicity (EPA): The EPA (IRIS) has not evaluated iron for carcinogenicity.

MCL (Drinking Water): EPA has established a secondary MCL for iron of 0.3 mg/L. The effects of water with iron concentration over the secondary MCL are rusty color, sediment, metallic taste, and reddish or orange staining.

OSHA Standards: There is no OSHA standard just for iron. There are some standards for iron containing compounds such as iron oxide (10 mg/m³).

NIOSH Standards: There is no NIOSH standard.

Resources

American Conference of Governmental Industrial Hygienists (ACGIH). 2003. *Guide to Occupational Exposure Values*. Cincinnati, OH.

NIOSH Pocket Guide to Chemical Hazards. 2003. Atlanta, GA: U.S. Department of Health and Human Services.

Cornell University, Department of Animal Science, "Iron Toxicity: What you Don't Know", <http://www.ansci.cornell.edu/plants/toxicagents/iron.html>

Medline Plus, Iron Toxicity, <http://www.nlm.nih.gov/medlineplus/ency/article/002659.htm>