Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of iron typically found in drinking water wells.

Iron

What is iron?

Iron is a naturally occurring metal as well as one of the earth's most plentiful chemicals. It makes up at least five percent of the earth's crust. Rainfall seeping through the soil dissolves iron in the earth's surface. From there, rain carries the iron into almost every kind of natural water supply. This includes private drinking water wells. Although iron occurs naturally in ground water, it is rarely at concentrations greater than 10,000 micrograms per liter (ug/L).

Iron exists in a number of forms in water. Water with high iron levels can form reddish brown particles that settle to the bottom of a glass of water. When iron combines with tea, coffee, and other beverages, it can produce an inky, black appearance and a harsh, unacceptable taste. Vegetables cooked in water containing excessive iron turn dark and look unappealing.

Concentrations of iron as low as 300 ug/L can leave reddish brown stains on plumbing fixtures, tableware and laundry that can be very hard to remove. When these deposits break loose from water piping, rusty water will flow through the faucet.

Finally, excess iron may cause the growth of iron bacteria. Iron bacteria leave a reddish brown or yellow slime that can clog plumbing. The slime can also cause an offensive odor. You may notice this slime or sludge in your toilet tank.

How might exposure to iron in drinking water occur?

- Iron occurs naturally in groundwater.

What is the standard for iron in drinking water?

The Florida Department of Environmental Protection (DEP) drinking water standard for iron is 300 micrograms per liter (300 ug/L). DEP bases this secondary drinking water standard on taste and appearance rather than on any harmful health effect. In most cases, no adverse health effects exist from iron in drinking water. At higher levels, iron can cause changes in the look, smell, and color of the water. Too much iron can cause a rusty color, sediment, metallic taste, and reddish or orange staining. There is no required sampling of private drinking water wells.

How can iron affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a “no-effect level” or level that doesn’t cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the “no-effect level.” Therefore, drinking water with levels slightly above the drinking water standard for a short time does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure (eating, drinking, or breathing)?

How chemical exposures may affect someone can range widely from one person to the next. A number of personal factors also determine health effects. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are chemical exposures to effect someone, in general?

Iron is not hazardous to health, but can cause taste or appearance problems. Essential for good health, iron helps transport oxygen in the blood. Most tap water in the United States supplies approximately 5 percent of the dietary requirement for iron. At considerably higher concentrations, iron causes taste, odor, and staining problems.

The amount of iron in water is usually low. The body does not readily absorb the chemical form of the iron found in water. The iron bacteria also do not pose a health problem.

How likely is iron to cause cancer?

Iron is unknown to cause cancer in people.

Is there a medical test for exposure to iron?

There is a simple test your doctor can do to see what the levels of iron are in your blood.

Is it safe to keep drinking water with high levels of iron in it?

You can keep using your water without health concerns. Iron in drinking water is not likely to cause illness. Excess iron can, however, can give water a metallic taste. It may also stain clothes, sinks, and tubs.

Because taste and staining problems increase as the iron level increases, you should seek drinking water that meets the standard.

For additional health information: Please call the Florida Department of Health at 850-245-4240 or visit us online at www.floridahealth.gov/environmental-health/drinking-water/Chemicals-HALs.html

For more information about iron: Please see the U.S. Environmental Protection Agency's Secondary Drinking Water Regulations at http://water.epa.gov/drink/contaminants/index.cfm#List