

Safe Well Water RI

Trusted, expert information

Tip Sheet 7



“Tip sheets helped us learn about our well water.”

Get Tip Sheets at www.riwelltesting.org:

- 14 Tip Sheets about harmful substances
- 10 Tip Sheets about treatment choices
- 3 Tip Sheets about other topics of concern

Well water is groundwater, meaning that it comes from the water stored in the earth and rocks below ground. Even though groundwater is *under* the surface, substances *on* the surface, such as gas from a lawnmower or animal waste, can seep down and pollute it. Some natural substances stored in rocks and soil can also affect the smell, taste, color, and safety of well water.

Iron and Manganese in Drinking Water Wells

Iron and manganese: Two natural elements that can cause problems

Iron and manganese are common elements often found together in Rhode Island groundwater and wells. They can stain laundry and plumbing, and affect the color and taste of food. Several health studies of children drinking water with high levels of manganese showed lower IQ scores and behavior problems possibly linked to the water.

What are the problems caused by iron and manganese in well water?

These elements can:

- Affect the color and taste of food
- Cause stains on laundry, dishes, and utensils that cannot be removed with soaps, detergents, or bleach
- Cause mineral deposits that build up in pipes and water heaters, reducing how well they work
- Lead to iron or manganese bacteria — germs that feed on these elements and may then form slime in toilet tanks and clog pipes
- Create possible health problems for children when present in high levels over time

How do iron and manganese get into well water?

These elements are present in Rhode Island soils and rocks. As *surface* water seeps down through the soil, it can dissolve minerals holding manganese and iron and release them into the *groundwater*. Iron occurs most often. Sometimes, iron in water comes from corroded pipes rather than nature.



How will I know if I have too much iron and manganese in my well?

Pay attention to the color and taste of your water.

- **Red-brown or ‘rusty’ color means iron.**
You may see ‘rusty’ water coming from your faucet. Or, it may look clear when it comes from the faucet. But, once exposed to air, turns a red-brown color.
- **Black color means manganese.** You may see a black tint or particles in the water. Or it may look clear when it comes from the faucet. But, once exposed to air, turns a black color.
- **Red-brown (iron) or black (manganese) slime appears in toilet tanks or clogs pipes.**

Test before you treat. Use a State-certified lab. Find a list here: www.health.ri.gov/find/labs/privatewelltesting.

Compare the numbers and letters on your lab test results with the standards (limits) set by the United States Environmental Protection Agency (EPA).

The EPA standard for iron and manganese is a Secondary Maximum Contaminant Level (SMCL). SMCL is a water quality standard for *nuisance* substances, not a *health* concern.

- **EPA limit (SMCL) for iron:**
0.3 mg/L (milligrams per liter)
0.3 ppm (parts per million)
- **EPA limit (SMCL) for manganese:**
0.05 mg/L (milligrams per liter)
0.05 ppm (parts per million)

What can I do about iron and manganese in my well water?

Effective water treatment depends on:

- How much and what form of iron and manganese are in the water. The iron or manganese can be dissolved in the water or occur as floating particles.
- Whether iron and manganese bacteria are present
- How much water needs treatment

Treating the water may be as simple as raising the pH. Sometimes this is just the first step and must be followed using other treatment methods. Treatments include:

- ▶ Aeration (with filtration)—Tip Sheet 18
- ▶ Ion exchange—Tip Sheet 21
- ▶ Microfiltration—Tip Sheet 22
- ▶ Oxidizing chemicals—Call us
- ▶ Phosphate compounds—Call us

Treating corroded pipes (plumbing) may require raising the water’s pH and using a sediment filter.

Treating iron and manganese bacteria is most often done using household chlorine bleach. Sometimes this is called “shocking” or “shock treating” the well. Find information about how to do this in the Bleaching Your Well Tip Sheet 19 at www.riwelltesting.org.

The bacteria will grow back, so you’ll need to shock treat from time to time.

Important: Before you install a treatment system, call us for expert advice. *Before* you buy a system, ask how it will be installed and whether this costs extra. Get at least 3 price quotes. Learn the questions to ask.

See Tip Sheet 16. *After* you buy a system, be sure to:

1. Keep all the paperwork and directions.
2. Learn what you must do to maintain the system and do it.

Learn more

Get Tip Sheets about choosing and buying water treatment systems at www.riwelltesting.org.