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# ENVIRONMENTAL Fact Sheet

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## Iron Bacteria in Drinking Water

### Introduction and Occurrence

Elevated levels of iron or manganese in water wells often give rise to the growth of iron bacteria. These organisms produce a filamentous, slimy deposit that can clog filters and plumbing components. The slime can build up on the ends of faucets, on the screens of laundry machines, on pump impellers, and on the insides of pipes and tanks. As the material builds and thickens over time, it can break off in a large mass, clogging the system or component. Iron bacteria can also cause the water to have an unpleasant taste or odor. Iron bacteria occur naturally in the environment. Although iron bacteria can be present in groundwater, they typically exist on the top of the ground in limited numbers because of a limited food supply. The most common origin for iron bacteria in wells is their entry during well drilling or pump installation operations. To prevent introducing bacteria of any kind into a well, the drilling process and the installation of the submersible pump assembly must be kept clean and the well must be disinfected at the completion of any construction, maintenance, or pump work. See NHDES fact sheets WD-DWGB-1-2 through 1-6 for information on proper well construction.

### Types of Iron Bacteria

Iron bacteria include a number of organisms that obtain carbon from the carbon dioxide (CO<sub>2</sub>) in the air and obtain energy from dissolved iron or manganese. Iron bacteria occur naturally in the soil and thrive when there is adequate food (i.e., iron and/or manganese). Iron bacteria are small, approximately 1-2 microns wide and 3-15 microns long. (A micron is one millionth of a meter.) Species of iron bacteria include: *Sphaerillus*, *Clonothrix*, *Crenothrix*, and *Leptothrix*.

### Health Risk

Although iron bacteria can make water unsightly and cause an unpleasant taste and odor; there is no health risk associated with iron bacteria. For information about health risks associated with iron and/or manganese and how to treat water for these contaminants, please see NHDES Fact Sheet WD-DWGB-3-8, "Iron and/or Manganese in Drinking Water."

### Laboratory Testing

Generally, laboratory testing for iron bacteria is not necessary. Iron bacteria's presence can be easily confirmed using the following procedure:

Fill a clear glass container with water. Let the sample sit quietly allowing any discoloration to occur and settle to the bottom of the container. Once the settling has completed, visually examine the sediment. If the sediment appears as a rusty flour-like powder, it is likely that there are few, if any,

iron bacteria in the water. If the sediment has a fluffy three-dimensional appearance (like strands of stained cotton fibers) then there is probably a substantial amount of iron bacteria present.

### **Prevent Iron Bacteria**

Drilling, repair, or service work can introduce iron bacteria into a well or water system. Here are some ways to prevent iron bacteria from entering your well:

- Only place disinfected water in a well for drilling, repair, or priming pumps. Never use water taken from a lake or pond.
- Make sure the well casing is capped, watertight, and extends at least 1 foot above ground.
- Avoid placing pumps, well pipes, and well equipment on the ground when doing repairs.
- Disinfect the well, pump, and plumbing after repairs.

### **Treatment to Kill Iron Bacteria**

Once introduced into a well, iron bacteria are difficult if not impossible to fully eradicate. Chlorination is the most practical method to kill or control iron bacteria. A well can be disinfected and iron bacteria killed by adding chlorine. For information on how to safely and properly disinfect a private well, see NHDES fact sheet WD-DWGB-4-11, “Disinfecting a Drinking Water Well.”

Licensed water well contractors and pump installers can employ additional methods to remove iron bacteria from a well. These methods may include removing pumping and cleaning the pumping equipment, physically scrubbing the well with brushes and applying chemical treatment which may include the use of chlorine, acids or surfactants that are designed for use in groundwater wells. Although not very common in New Hampshire, licensed water well contractors may utilize hot water or steam to kill iron bacteria and clean the well.

### **For More Information**

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or [dwgbinfo@des.nh.gov](mailto:dwgbinfo@des.nh.gov) or visit our website at [www.des.nh.gov](http://www.des.nh.gov).

Note: This fact sheet is accurate as of October 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.