

Program Fact Sheet

Iron & Iron Bacteria in Water

Have you ever noticed an orange slimy substance or an oily sheen on the water? Iron and iron bacteria are the causes. Read this fact sheet to learn more!

Kitsap County Public Works
614 Division Street (MS-26)
Port Orchard, WA 98366

**Questions?
Call The Open Line**
Our Customer Support Number
360•337•5777
www.kitsapgov.com
openline@co.kitsap.wa.us

What are iron bacteria?

Iron bacteria are bacteria that “feed” on iron. They are a natural part of the environment in most parts of the world. There are several non-disease causing bacteria which grow and multiply in stringy clumps in water, and use iron dissolved in water as part of their metabolism. In the presence of the bacteria, the dissolved iron reacts with the oxygen from the air forming rust colored iron oxides. These oxides do not dissolve in water and either settle to the bottom or are stored in the slimy jelly like material that surrounds the iron bacteria’s cells.

Where does it come from?

Iron is a common element in Washington State soils. In fact, iron is one of the most common elements found in nature accounting for at least 5% of the earth’s crust. Consequently, iron-fixing bacteria have probably existed in our natural waters for over a million years. When groundwater flows through iron-bearing soil or rock it picks up iron along the way. It is understandable that just about all water supplies contain some measurable amount of iron. In general, wherever there is oxygen, water, and iron there is potential for iron bacteria to develop.

Are the bacteria harmful?

Iron bacteria usually pose no threat to human health. They are found naturally in soils and water. The orange slime in the water or leaching from the shore is often considered an aesthetic problem. In very large amounts iron precipitate may be detrimental to fish, to bottom-dwelling invertebrates, and to plants or fish eggs. Iron bacteria in wells and water supply systems do not usually cause health problems. However, they may result in side effects that can be a nuisance to water system owners and users.

How can we identify iron bacteria?

Orange or brown slime (precipitate) and oily sheens are often the first indication that iron bacteria are present. Unlike sheens caused by petroleum products, the iron bacteria sheens break apart when they are disturbed. To make sure the sheen is not petroleum, do the “stick or rock test.” Touch the slick with a stick or throw something in the water. If you observe a smooth ripple effect, it is probably oil. If the slick breaks into pieces, then it is very likely to have been created by the decomposing bacteria cells.

What can we do about iron bacteria?

The best treatment for an iron bacteria problem is prevention. Analyzing soils for iron content before exposing it or using it as fill can reduce the development of iron bacteria. Unfortunately, once established, iron bacteria problems are difficult, if not

impossible to correct. Sometimes iron-rich fill can be replaced by fill with a lower iron content. However, this approach tends to be costly and may have other environmental impacts. Since iron bacteria are not harmful, sometimes the only feasible thing that people can do is simply to accept it for the natural occurrence it is.

What can happen if iron bacteria builds up in well systems?

Usually iron bacteria in water supply systems do not cause health problems, but they can have some unpleasant effects if they become over abundant. These problems can include:

- forming a slimy coating on the inside surfaces of plumbing systems
- adding a reddish-brown color to the water
- leaving reddish-brown stains on laundry
- poor tasting drinking water (metallic taste)
- unpleasant odor and taste due to the death of the bacteria
- plugging of piping and water softeners with rusty sludge
- increasing organic content in water favoring the multiplication of other bacteria (i.e. sulfur bacteria)

What can you do if you notice stains that appear to be caused by iron bacteria?

Contact SSWM’s water quality representatives, the local health department or your local water purveyor. If you get your drinking water from wells, the Bremerton-Kitsap County Health District (360) 337-5285 can direct you to laboratories in the area for testing and suggesting methods of eliminating and/or cleaning up an iron bacteria problem.



Sources of information for this publication: IRAC Interagency Regulatory Analysis Committee, New Hampshire Department of Environmental Services, U.S. Geological Survey (<http://pubs.usgs.gov/publications/text/Norrieintro.html>).

For more information or assistance interpreting the technical information provided in this bulletin, call the Kitsap County Department of Public Works Surface and Stormwater Management Division at 360•337•5777.