HOUSING & ENVIRONMENT

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION SERVICE
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YOUR HOUSEHOLD WATER QUALITY: IRON AND MANGANESE

ARE IRON AND MANGANESE A PROBLEM IN GEORGIA'S GROUNDWATER?

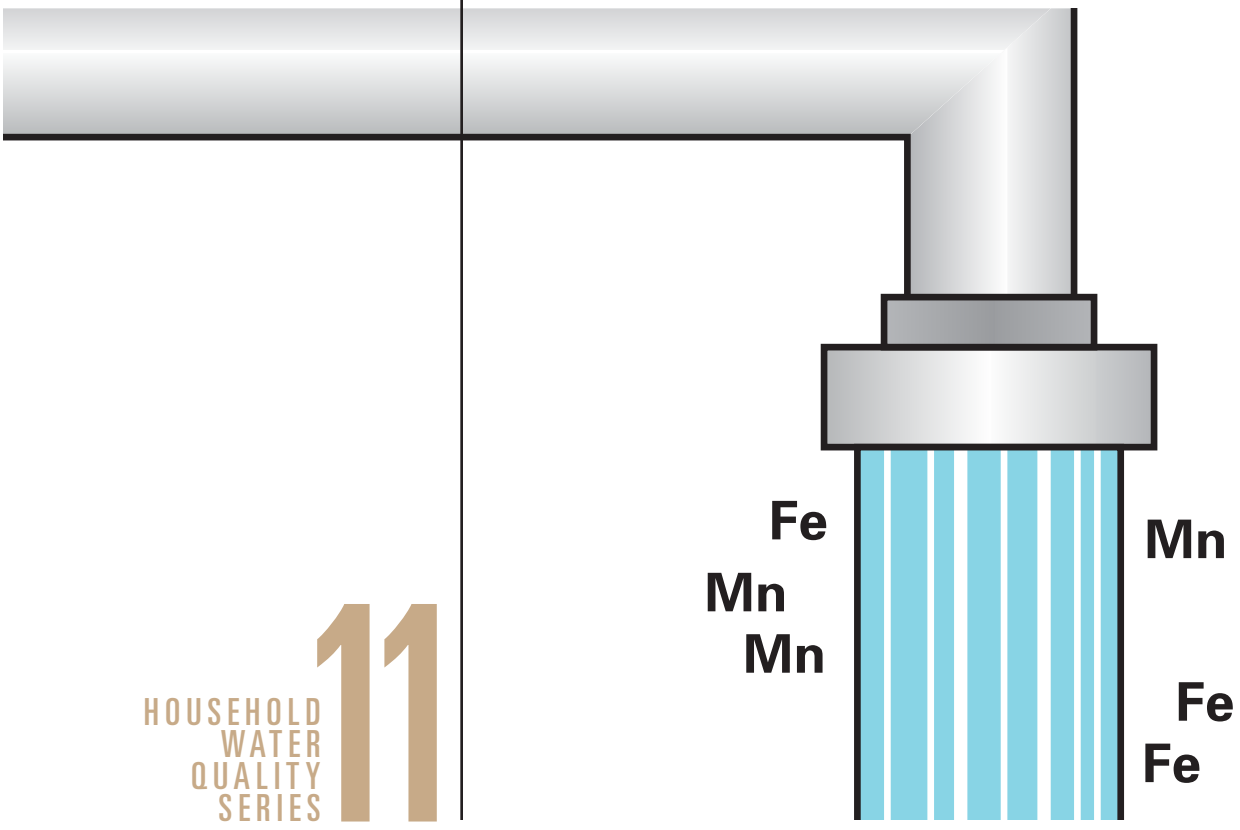
Elevated levels of iron (Fe) and manganese (Mn) are two of the most common water quality problems in Georgia's groundwater. These problems occur statewide and in both shallow and deep groundwater. They do not create a health concern but cause the water to be unsightly, taste bad, and stain plumbing fixtures and laundry. Both iron and manganese can be removed through treatment.

WHY ARE IRON AND/OR MANGANESE IN MY WELL WATER?

When the minerals in soil, rocks, and sediments underground contain iron and manganese, a natural process can occur whereby iron and manganese dissolve more readily. This process, a result of the lack of oxygen underground, is not considered contamination but is the inherent nature of some groundwater. As this water is pumped to the surface and exposed to oxygen, the process will reverse and the dissolved iron and manganese will precipitate or come out of the water forming colored sediment. Iron sediment is reddish brown or orange; manganese sediment is black or dark gray.

WHAT ARE SOME INDICATORS THAT MY WELL WATER HAS HIGH IRON OR MANGANESE?

Before you have your water tested by a laboratory, you may see signs that the water contains iron or manganese. Plumbing fixtures will become stained reddish brown or black to dark gray. These stains will be difficult to remove with common household cleaners. Using chlorine bleach in combination with high iron levels in water will permanently stain laundry.



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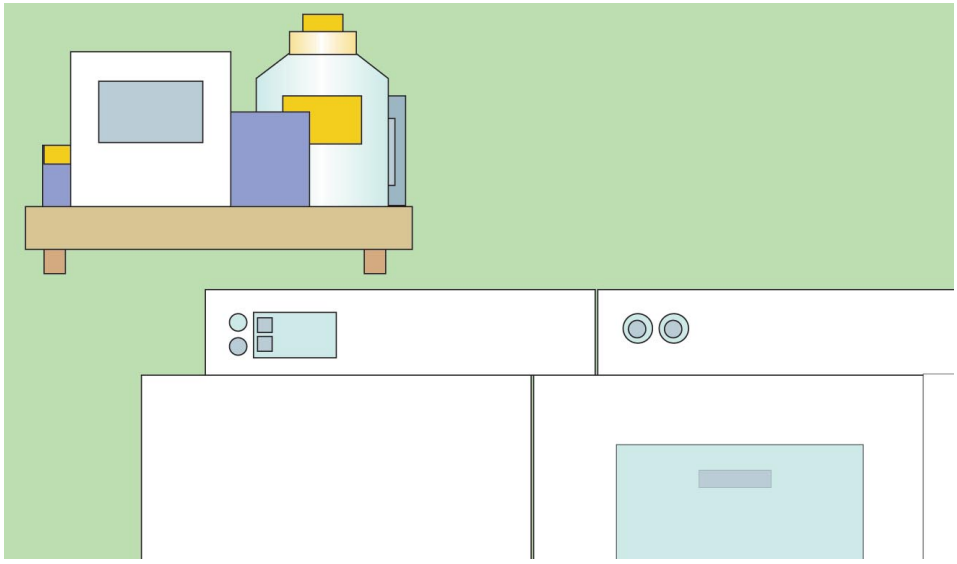
AT WHAT LEVEL OF IRON OR MANGANESE WILL STAINING OCCUR?

ELEMENT	STAINING LEVEL (ppm)
Iron (Fe)	0.30
Manganese (Mn)	0.05

WHAT OTHER PROBLEMS ARE ASSOCIATED WITH HIGH IRON AND MANGANESE LEVELS?

There are types of bacteria that can grow in water containing high levels of iron and manganese. These are commonly known as "iron-bacteria." When iron bacteria invade your well or plumbing they can become a serious problem, plugging filters and pump screens or causing an unsightly mess. The colonies of iron-bacteria can form a gelatinous or slimy mass that may look like oil suspended in the water.



WHAT CAN BE DONE TO REMOVE IRON AND MANGANESE FROM WELL WATER?

The same process that causes the iron and manganese to come out of the water and stain your plumbing and laundry can be used to remove these elements from the water. This process, oxidation, can be done either by using chlorine bleach, other oxidizing minerals like permanganate (green sand), or aeration using an air pump. Oxidation causes the iron or manganese to come out of the solution and form sediment, which is then removed by filtration. An alternative to oxidation is to use a water softener (ion exchange). The level of iron or manganese in your water will determine the type of treatment that is best for your situation. Treatment systems need to be properly sized, installed, and maintained. We recommend that you contact a certified water treatment professional to discuss these treatment options. Chlorination is the preferred treatment when iron-bacteria are present. Chlorination works because it both kills iron-bacteria and removes the iron.

When choosing a home water treatment system, remember to ask questions and compare products.

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