

## Common Problems

There are many ways your drinking water may become contaminated. However, the following are the most common, naturally-occurring contaminants:

- Hardness
- Iron and Manganese
- Nitrogen
- Sulfur
- Total Dissolved Solids

Click each of the items above for further information.

Note: There are many other contaminants that may be present in your water supply. The list above reflects the most common complaints we receive. Water quality may vary widely within a small geographic area; therefore, we recommend you have your water tested individually. For a complete analysis of your water, please contact Pure Quality Water Filtration.

### Hardness

Hard water is a very common problem affecting more than 85% of the country. It is caused by a combination of dissolved minerals: calcium, magnesium, and manganese. As the concentration of these minerals increase, the following symptoms may appear:

- Soap scum in sinks and bathtubs
- Bathtub rings
- Spots on dishes or shower doors
- Reduced foaming and cleaning ability of soap and detergent
- Dingy, yellowed clothes caused by soapy residues
- Clogged pipes from buildup of minerals
- Increased energy costs to heat water, and premature water heater failure
- Possible skin infections from bacteria trapped in pores, underneath soap scum

Water is considered hard when it exceeds 3 grains per gallon (GPG). A GPG is equivalent to 17.1 PPM, so if your water is 171 PPM, then your water hardness is 10 GPG.

While the symptoms above may be unpleasant, hard water is not considered a human health hazard and can be easily treated.

If you suspect that you have hard water, you can have it tested. If you are connected to a public supply, call your water provider and ask them if your water is hard. If you are on a private well, contact Pure Quality Water Filtration to have it tested for free.

How hard is your water?

## Iron and Manganese

A "rusty" or metallic taste in water is caused by iron, and, occasionally, manganese. They not only create a bad taste, but they can also stain plumbing fixtures and clothing. Iron and manganese are not considered health hazards; rather, they are considered "aesthetically" displeasing. Higher concentrations of manganese may have a laxative affect.

Iron and manganese occur naturally, and most ground water has a small amount of dissolved iron and manganese. They can enter water through contact with minerals that contain iron, such as pyrite. Iron and manganese can also enter ground water supplies by bacteria that feed on the minerals; however, iron-reducing bacteria are usually associated with ground water.

There are several treatment methods to remove iron and manganese; but, they can be difficult processes:

- Installing a water softener may help if iron and manganese are present in low quantities, and the softener is designed to remove them.

- Aeration (the addition of oxygen to the water), chlorination, and the use of ozone or hydrogen peroxide can aid in the precipitation of iron; then iron and manganese are easier to remove from the water by filtration.

- Potassium permanganate combined with manganese greensand filters, and certain synthetic media, can also remove iron and manganese. However, greensand will only effectively remove iron if the water contains enough free alkalinity. Otherwise, consistent pass-thru will occur.

Contact Pure Quality Water Filtration for information about iron and manganese removal methods.

## Nitrogen

Most nitrogen in water comes from the atmosphere. Certain plants "attach" nitrogen from the atmosphere and place it onto their roots. Excess nitrogen— not used by the plants—is then released into the soil. Nitrogen compounds can also work their way into ground water through fertilizers, manure, and urine from farm animals, sewage, and landfills.

The most common forms of nitrogen found in water are ammonia, nitrate, and nitrite.

- Excessive concentrations of nitrates are especially toxic to children under six-months old.

- Exposure to ammonia also presents a health risk, is toxic to aquatic life, and can interfere with other types of water treatment.

There are a variety of treatment methods, including reverse osmosis systems with water softeners to remove nitrates and nitrites, or oxidation methods to remove small amounts of ammonia. However, removal of nitrogen should be a last resort. Removing the source of contamination is the first priority— especially if your water comes from a well. You should protect the wellhead and surrounding area from contamination by animals or fertilizers.

Contact Pure Quality Water Filtration for information about nitrogen removal methods

## Sulfur

Sulfur occurs in water in two forms: sulfides and sulfates. Sulfides naturally occur in many areas of the United States where one of the following exists: limestone containing organic materials; ground water affected by oil, gas, or coal deposits; or adjacent to marshes and manure pits. Sulfur may also occur as the byproduct of well-established biofilms formed by iron or sulfate-reducing bacteria. Additionally, sulfates often come from dissolving minerals like gypsum and anhydrite.

A "rotten egg" smell coming from your water indicates the presence of hydrogen sulfide gas. Along with creating an unpleasant odor and taste, sulfides are corrosive to your plumbing and can darken water.

Fortunately, there are several methods for treating sulfur. Aeration, ozone, hydrogen peroxide, and chlorine (best followed by filtration) are effective against dissolved hydrogen sulfide. A reverse osmosis system, nanofiltration system, or a negative ion-exchanger can also effectively reduce sulfates.

If your water contains sulfates, or has taste and odor problems, contact Pure Quality Water Filtration to discuss the best treatment plan to eliminate the problems.

#### Total Dissolved Solids

Total dissolved solids (TDS) are a measurement of the total concentration of all the dissolved minerals in water. TDS is not generally considered to be hazardous to human health at low concentrations; however, TDS levels above 1000 mg/L typically yield poor tasting water, while levels above 2000 mg/L are considered undrinkable due to taste.

TDS levels greater than 10,000 mg/L are defined as undrinkable.

Water softeners with a reverse osmosis system are effective in lowering the TDS to satisfactory levels.

Contact [Pure Quality Water Filtration](#) for information about lowering Total Dissolved Solids.