

Drinking Water FAQ



CONCERNS REGARDING WELL WATER

Here is some helpful information regarding concerns you may have about whether or not your **well water** is safe to drink. Water is a big part of our daily living that we don't often think about. We hope this information will answer some of the commonly asked questions about when and what to test your water for.

When the well is drilled it is the well driller's responsibility to make sure your water is potable based on nitrate and bacteria test results. When testing for nitrates you are looking for what is in the groundwater. When testing for bacteria you are checking the integrity of the well system. Once confirmed to be potable, the safety and health of the water becomes the homeowner's responsibility. Use the information below to help you make informed decisions about the quality of your water.

Three major health concerns are nitrates, bacteria and under certain circumstances lead and other metals.

Nitrates are a priority health concern, especially for infants, pregnant women and those with compromised immune systems. The whole family may be able to drink water with elevated nitrate levels without an adverse reaction; however, a new infant may develop life-threatening methemoglobinemia, also known as "blue baby syndrome". Infants haven't developed the necessary bacteria in the gut to stop the conversion of nitrate to nitrite (both are forms of nitrogen). Nitrite attaches to red blood cells displacing oxygen, locking up hemoglobin in an infant's bloodstream. The condition may be fatal if left untreated. Boiling the water increases the nitrate level rather than decreasing

it. Concerned parents should be informed of their nitrate level before bringing a new baby into the home and using the water supply. After the infant's digestive system becomes developed, the child is no longer as susceptible to nitrate poisoning. As a precaution, children under the age of three and nursing or pregnant mothers should not consume water showing an elevated nitrate level. It is not unreasonable to check for nitrates once every five years. You may want check more often if your water shows results that are close to the MCL (maximum contaminant level) of 10 ppm (parts per million).

Where do nitrates come from? Nitrate from fertilizer and the natural break-down of organic matter are easily leached through the soil into the groundwater. They can occur naturally from decaying organic material such as pastures or on-site septic systems, yet the most common source is fertilizer.

Nitrates cannot be removed from the water by treatments such as UV lights, chlorinators, carbon filters, water softeners, iron filters or neutralizers. Nitrates can be removed by properly designed distillers, reverse osmosis (R/O) systems or anion exchange systems. Keep in mind that deionized water is only suitable for consumption if minerals are reintroduced. [See World Health Organization Publication.](#)

Coliform and E. coli bacteria analysis is probably the most common water test done on drinking water. It tests the integrity of the well system and is usually not from the ground water aquifer.

Coliforms include a wide range of bacteria that occur in every non-sterile environment. Although coliforms may not be harmful, they are used as an indicator for the possible presence or absence of other bacteria that may potentially be harmful. Coliforms are rather easy and inexpensive to test compared to Legionella or Diphtheria that are costlier and more difficult to test for. Where there is no coliform bacteria, there are no potentially harmful bacteria present. Even though coliforms are not a health risk, a drinking water source that tests present does not pass EPA Safe Drinking Water Guidelines.

E. coli bacteria is a type of fecal coliform bacteria found in the intestines of animals and humans. It is also naturally found in soil. E. Coli is short for Escherichia coli. The presence of E. coli in water can be an indication of recent sewage or animal waste contamination or a breach in the well casing. An improperly fitted well cap may allow insects to seek refuge and simply because they have contact with the soil, may introduce bacteria into the well system. Sewage may contain many types of disease-causing organisms. During periods of heavy rainfall or rapid snowmelt E. coli may be washed into surface water. When this source of water is used for drinking without being adequately treated E. coli may end up in drinking water.

Most strains of E.coli are harmless and live in the intestines of healthy humans and animals; although there are two very rare strains that may produce a powerful toxin and can cause illness. Infection often causes diarrhea and abdominal cramps. Usually the

person will experience "flu" like symptoms, although frequently no fever is present. Children under the age of five, elderly people and people whose health is weakened (i.e., people who have a long-term illness such as cancer or AIDS) are at greater risk of severe illness.

You may want to test your water for bacteria if you've had work done on your well, if power and pressure have been off, if you have installed new equipment (pressure tank, treatment, etc.), if your well cap is loose or if the well casing has been comprised by a crack or break.

Lead can also be a priority health concern. A toxic metal now known to be harmful to human health if inhaled or digested can be found in water due to corrosion of plumbing. It is estimated that lead in drinking water contributes between 10 and 20 percent of total lead exposure in young children. Young children, infants and fetuses appear to be particularly vulnerable to lead poisoning, yet adults should be vigilant as well. Stored in the bones of a mother, it may be released and passed on to an unborn child during pregnancy or in breast milk during nursing. You should have your water tested for lead if you own or live in an older home plumbed with galvanized steel or where lead may have been used in the solder or brass pipe fittings of copper plumbing. You may also see elevated lead levels if you drink softened water that runs through galvanized pipe.

The following simple steps can be taken to reduce your exposure to lead in drinking water. "Flush" the tap before using the water for consumption. Flushing the tap means running the cold-water faucet until the water gets noticeably colder, usually about 15-30 seconds. Do not drink or cook with water from the hot water tap. Hot water can dissolve lead more quickly than cold water. You must do this with each faucet you are going to use. Taking a shower will not flush your kitchen tap. Once you have flushed the tap, you may want to fill one or more bottles with water and put them in the refrigerator for later use.

Heavy Metals

Copper is an essential nutrient, required by the body in very small amounts. A metal found in natural deposits as ores containing other elements, it is widely used in household plumbing materials. Copper contamination generally occurs from corrosion of household copper pipes. Elevated levels may show up as a bluish-green tint when you fill a tub or basin or as a greenish deposit around fixtures. Copper may potentially cause stomach and intestinal distress, liver and kidney damage, and anemia when people are exposed to it at high levels. If you suspect high levels of copper, you may want to check conductivity levels in your drinking water in addition to a copper analysis. You may also want to consider that water softened to less than 25ppm may be corrosive and cause leaching of plumbing metals into drinking water.

Arsenic is an element that occurs in the earth's crust. Accordingly, there are natural sources of exposure. People may also be exposed from industrial sources, as arsenic is used in semiconductor manufacturing, petroleum refining, wood preservatives, animal feed additives and herbicides. Exposure to arsenic at high levels poses serious health effects, as it is a known human carcinogen. In addition, it has been reported to affect the vascular system in humans and has been associated with the development of diabetes.

Aesthetic Issues: Hardness and Iron

Iron is an abundant mineral frequently found as a naturally occurring element in well water. Iron in well water generally has no adverse health effects yet elevated levels may cause diarrhea. Iron in home well water may create aesthetic issues such as staining. A brownish-orange color may eventually stain your clothing, the inside of the washer, dishwasher, sinks, bathtubs along with exterior siding and concrete surfaces. There are two forms of iron. Clear water iron (ferrous iron) and red water iron (ferric iron). Clear water iron usually comes out of the tap looking clear and later, after being exposed to the atmosphere, turns rusty color. Red water iron comes out rusty colored. To verify that aesthetic issues are from iron, test your raw untreated water. Use your results to shop for a whole house iron filter that will handle the amount in your water. Not all iron filters are capable of handling any amount of iron. Find a filter that suits your particular needs based on your test results. Note: Colloidal iron is made up of very fine, suspended particles that may be difficult to filter out.

Iron Reducing Bacteria may exist in the presence of iron. It is a naturally occurring harmless bacterium that feeds on the iron. It is often recognized by black flecks and a stringy, slimy growth inside the toilet tank. Because iron bacteria release sulfide as a waste product there may also be a sulfur smell associated with it. It proliferates best when water is motionless. It is harmless, but may make the water difficult to consume due to taste and odor.

Hardness (calcium and magnesium) is also referred to as lime. Elevated hardness levels in your water have pros and cons. Hardness is what gives well water more desirable taste and health benefits (pro), yet can cause a white scale build-up on fixtures and in sinks, tubs and appliances that can be difficult to remove (con). Minerals on the inside of household plumbing may protect you from metals that would potentially leach into your water from pipes (pro), yet softened water may be corrosive (con). The decision on whether or not to treat well water is the homeowner's responsibility. One option is to soften the hot water only as calcium and magnesium remain soluble in cold water. It is only when the water is heated that it comes out of solution and leaves white scale behind. This allows you to avoid drinking softened water. For more information on health risks from drinking softened water see [World Health Organization publication](#).