

HOW SAFE IS YOUR DRINKING WATER?

Most of us don't think about the water we drink. We turn on a tap, fill a glass and drink. Is the water you're drinking safe or would bottled water be safer? What can you do if your tap water is contaminated? Many contaminants in drinking water are potentially hazardous at levels or concentrations that do not impart a noticeable taste, odor, or appearance to the water. Your best course of action is to get your water tested and compile as much information as possible about your water supply source, well construction, surrounding land-use, and local geology.

The goal of this booklet is to help educate and inform citizens on issues related to water, (1) ensuring that private water supply systems produce safe drinking water for your family, (2) protecting the long-term quality of our streams and drinking water sources, and (3) helping you to understand the potential sources of pollution to our water resources.

Water Quality: Is Tap Water Safe?

EPA and the Health Department has the authority to monitor all public water systems and set enforceable health standards regarding the contaminants in drinking water. When drinking water leaves a treatment plant (or source) on its way to your house, it must meet strict safety standards. That doesn't mean that your water is free of all contaminants, but that the level of any contaminant does not pose any serious health risk. As a private well owner it is your responsibility to regularly monitor the water you drink.

PRIVATE WELL PACKAGE: the private well package includes analysis for common water quality problems and microbiological contamination, and makes recommendations regarding the potential need for water treatment devices, such as: softeners, reverse osmosis units, distillation, neutralizers, chlorination systems, ultraviolet or UV systems.

PWP TESTS FOR: ALKALINITY (T.H), ALUMINUM, ARSENIC, CADMIUM, CHLORIDE, CHROMIUM, COPPER, FLUORIDE, HYDROXIDE, IRON, LEAD, MANGANESE, NITRATE, NITRITE, PH, PHOSPHATE, SODIUM, SULFATE, TDS, ZINC

CONTACT THE LABORATORY FOR DETAILS ON HOW TO GET CONTAINERS, HOW TO COLLECT YOUR WATER SAMPLES, TURN-AROUND-TIMES, AND FEES.

Some Health Effects of Drinking Contaminated Water as Documented in the San Luis Valley Floor:

Bacteria

Total Coliform (E.g: streptococcus), Fecal & E.Coli bacteria are pathogen bacteria that sometimes get into water supplies. Human and animal wastes are the primary source of bacteria. They can cause gastrointestinal disease, strep, infections and flu symptoms. Fecal and E.Coli bacteria are indicators of contamination to the water supply from a septic/leach fields, creeks or from animal waste. **Best time to test your water for bacteria is: (1) during spring or early summer.** It is this time of year that the water table is at its highest due to snow-melt and irrigation return flows. High water tables and outside recharge from various sources can also introduce bacteria to your well. During spring and early summer, your well is being recharged from different water supplies. **(2) During the dormant months:** It is this time of year that your well is back to the committed water vein that supplies your well. You want to reaffirm that your water quality remains potable and free of harmful bacteria. **(3) When a new well is constructed;** **(4) When an existing well is returned to service;** **(5) Any time a component of the water system is opened for repair.** Bacteria can NOT be detected through sight, smell or taste.

Nitrates

Nitrates can contaminate well water and pose an immediate threat to infants such as methemoglobinemia, or "blue baby" disease. In the intestines, nitrates are converted to nitrites which prevent blood from transporting oxygen to organs. In pregnant women, nitrates exceeding 10 mg/L correlate to increased instances of miscarriage. In studies of small animals high nitrate levels are linked to thyroid abnormalities and cancer rates increase. Populations living in agricultural areas typically have the highest exposures to drinking water contaminated with nitrate.

Lead

Lead can cause both physical and mental developmental problems in infants and children. Adults who have been drinking lead-tainted water for a number of years can experience kidney problems and blood lead poisoning.

Arsenic

Arsenic is a known carcinogen in drinking water. It is widely thought that naturally occurring arsenic dissolves out of certain rock formations as ground water levels change. Surface arsenic-related pollutants enter the ground water system by gradually moving with the flow of ground water from rains, melting snow, ect. Either way, ongoing testing for arsenic is an important strategy by private water system owners to safeguard the health and well-being of their family. Arsenic is associated with various cancers and has been reported to affect the vascular system and the development of diabetes.

Aluminium

Aluminum is the third most common element in the earth's crust. Aluminum in drinking water is controversial and is often associated with diseases such as Lou Gehrig's Disease, Alzheimers and kidney disease.

Hardness

Water is a good solvent and picks up impurities easily. Pure water is tasteless, colorless, and odorless. **As water moves through soil and rock, it dissolves very small amounts of minerals and holds them in solution.** Calcium and magnesium dissolved in water are the two most common minerals that make "hard water" The degree of hardness becomes greater as the calcium and magnesium content increases and is related to the concentration of multivalent cations dissolved in water. **Hard water interferes with almost every cleaning task** from laundering and dishwashing to bathing and personal grooming. Dealing with hard water in the home can be a nuisance. Water flow may be reduced by deposits in pipes. SDC Lab provides a Hardness Scale at the bottom of our Private Well Package so the report owner can gauge their level of hardness.

Sodium

In high levels, sodium can contribute to high blood pressure, hypertension and heart disease. High levels of sodium can also impact the effects of some prescription medications.

pH

The pH in water quality sets the standard. For example, if pH is less than 6 units, water is considered to be acidic. Low pH water is soft but corrosive and can cause corrosion of pipes. It can leach out copper, lead, nickel and aluminum into drinking water. pH above 7.9 is considered to be alkali, hard water. Salts accumulate on plumbing fixtures and water spots are visible on glassware. Low pH water can cause acid reflux, heart burn and gastroesophageal disease, while high pH water can contribute to high blood pressure. The pH of human blood is about 7.

Zinc

Zinc in its elemental form is a bluish-white metal. High natural levels of zinc in water are usually associated with higher concentrations of other metals such as cadmium. Most zinc is introduced into water by artificial pathways such as coal-fired power stations, fertilizers, galvanized metal pipes and well casings coated with zinc. Zinc can cause a chalky appearance and can cause a detectable deterioration in the taste of water. Zinc is an essential nutrient for body growth and development, however drinking water containing high levels of zinc can lead to stomach cramps, nausea, and vomiting. Other research has suggested that elevated levels of zinc interfere with learning and memory, immunity impairments and eye problems in adults.

Cadmium

Cadmium is also a well documented carcinogen in drinking water. Cadmium's organs of choice are the lungs and kidneys. Cadmium in groundwater comes from the natural deposits of ore in the geologic makeup.

Copper

In excess copper can cause diarrhea, vomiting and stomach cramping. Long-term effects can cause liver damage. Much of the copper we see in drinking water from clients who live in the San Luis Valley derives from copper plumbing.

Iron and Manganese

Iron and manganese are common metallic elements found in the earth's crust. Water percolating through soil and rock can dissolve minerals and hold them in solution. In wells, where oxygen content is low, the iron/manganese-bearing water is clear and colorless (the iron and manganese are dissolved). Water from the tap may be clear, but when exposed to air, iron and manganese are oxidized and change from colorless, dissolved forms to colored, solid forms.

Oxidation of dissolved iron particles in water changes the iron to white, then yellow and finally to red-brown solid particles that settle out of the water. Iron that does not form particles large enough to settle out and that remains suspended (colloidal iron) leaves the water with a red tint. Iron will cause reddish-brown staining of laundry, porcelain, dishes, utensils and even glassware. Manganese acts in a similar way but causes a brownish-black stain.

Iron and manganese can affect the flavor and color of food and water. They may react with tannins in coffee, tea and some alcoholic beverages to produce a black sludge, which affects both taste and appearance. Manganese is objectionable in water even when present in smaller concentrations than iron.

Iron and manganese deposits will build up in pipelines, pressure tanks, water heaters and water softeners. This reduces the available quantity and pressure of the water supply. Iron and manganese accumulations become an economic problem when water supply or water softening equipment must be replaced. There also are associated increases in energy costs from pumping water through constricted pipes or heating water with heating rods coated with iron or manganese mineral deposits.

A problem that frequently results from iron or manganese in water is iron or manganese bacteria. These nonpathogenic (not health threatening) bacteria occur in soil, shallow aquifers and some surface waters. The bacteria feed on iron and manganese in water. These bacteria form red-brown (iron) or black-brown (manganese) slime in toilet tanks and can clog water systems.

Sulfate

The rotten egg sulfur smell comes from hydrogen sulfide. H₂S is a gas created by decomposing organic matter in the ground. Hydrogen sulfide in the body prevents cellular metabolic reactions; i.e. amino acids, fatty acids and healthy oxidizing agents to transport oxygen through the body effectively. If your water smells like rotten eggs, you should consider testing this item.

Fluoride

Fluoride and those limits set are of great controversy. It is not an essential human nutrient and no biological process in either animals or humans has been shown to depend on it. Some studies show that fluoride can interfere with many important biological processes and vital cellular constituents, such as enzymes and G-proteins, damage to soft tissues like brain, kidney and endocrine system. It is a known fact that exposure above 4 mg/l can cause damage to tooth enamel and discoloration.

Water Purification Systems

Depending on what the water problems are, there are systems that can correct for most out-liers. An exception would be organic compounds that would require special consultation and are very costly. In an effort to make drinking water safer, specific activated carbon filters are used for certain applications; ion exchange is used to soften water; reverse osmosis units are used to remove heavy metals and carcinogens. Data on your water quality will help determine the system required to correct for water problems.

Periodic testing should be maintained after the treatment system is in place to ensure objectives are being met.

Actions:

1. Get your water tested and encourage your neighbors to do the same.
2. Compile information on the types and location of hazardous waste and industrial sites in your area.
3. Contact your States Environmental Protection Division.
4. Other water testing services – SDC lab can spot test or compile a custom testing Packages – or customize a package to fit your needs.

Additional information or questions?

Contact the laboratory with any questions or concerns. We would be happy to help you!

(719) 589-1024

www.sdclaboratory.com