

Bacteria in Water Wells

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Quick Facts...

- Bacterial contamination of drinking water can cause serious human illness.
- Bacterial slimes in irrigation wells may clog pumps and pipes.
- Bacterial contamination can be controlled by well chlorination, proper septic system and well maintenance, and good sanitation practices.
- Coliforms are a broad class of bacteria that live in the digestive tracts of humans and many animals.

Bacteria are microscopic organisms that are found just about everywhere. Most bacteria are harmless, but certain types can cause disease, sickness or other problems. Wells used for drinking water should be tested for the presence of coliform every one to two years, in addition to other water quality parameters. Non-disease causing iron bacteria can affect household and irrigation wells. Iron bacteria causes plumbing fittings and laundry to stain and, in severe cases, clogs well screens. Chlorination is the most common method for disinfecting contaminated wells. In some cases, replacing the well cap, casing and seal may be necessary to keep the well clean after it is disinfected. Repairing the household septic system may also be necessary.



A properly cased and sealed well protects water quality.

Bacteria in Household Wells

Public drinking water supplies are required, by law, to be free from microbial pathogens. However, private water systems, while also vulnerable to contamination from bacteria, usually have no governmental oversight. If you rely on a private well, it is your responsibility to ensure the water is safe to drink. You should inspect the condition of your well regularly and test a water sample every one to two years. More frequent testing is recommended when well condition is poor, the well has been inundated with floodwater, the septic system has malfunctioned, abandoned wells or feed yards are located nearby, or visitors have complained of stomach or intestinal distress. Bacteria in your water may indicate that your well has become contaminated with fecal matter, possibly introducing harmful viruses and protozoa such as *Cryptosporidium* or *Giardia*.

Protecting Your Water Supply

- Periodically inspect exposed parts of the well for problems such as:
 - a cracked, corroded, or damaged well casing.
 - a broken or missing well cap.
 - settling and cracking of surface seals.
- Slope the area around the well to drain surface runoff away from it.
- Keep accurate records of well maintenance and water quality analysis.
- Hire a licensed water well contractor for new well construction, modification, or abandonment and closure.
- Avoid mixing or using pesticides, fertilizers, weed killers, fuels degreasers, and other pollutants near the well.
- Do not dispose of wastes in dry wells, abandoned wells or sinkholes.
- Do not cut off the well casing below the ground's surface.
- Pump and inspect septic systems as often as recommended by your local health department.
- Never dispose of hazardous materials in a septic system.
- Have the well tested once a year for coliform bacteria, nitrate and other particles of concern.

Testing Well Water for Bacteria

Laboratories that test for coliform bacteria usually have specific times and days where they accept these water samples. It is critical that you contact the local health department, or private lab, prior to collecting the sample. Most labs give you a sterile sample bottle and instructions for collecting the sample.

If you have not sampled your well for bacteria recently, collect a water sample at a bathroom faucet with the aerator removed. If you are retesting a well that has previously tested positive for bacteria or after a disinfection treatment, sample as close to the well as possible. If you have a holding tank or in-house water treatment system, you may want to collect separate samples at the well and at the bathroom faucet. Kitchen faucets with swivel arms are not recommended locations for sampling.

Before filling the sample bottle, run cold water though the faucet at full flow for three minutes, then reduce the flow to a trickle and let run for one additional minute. Wash your hands with soap and warm water before opening the sterile sample bottle (do not touch the inside of the bottle or lid). Do not rinse the sample bottle before filling to the level indicated on the bottle. Cap the bottle tightly and label it with your name, address, date and time of sampling. Keep the sample cool and deliver it to the lab within 24 hours.



Sampling at the tap for bacteria in well water.

Interpretation of Lab Results

There are a variety of bacteria, parasites and viruses that cause health problems when humans ingest them in drinking water. Testing water for each of these germs is difficult and expensive. Instead, water quality and public health workers measure coliform levels. The presence of coliforms in drinking water suggest there may be disease-causing agents in the water.

Coliforms are a broad class of bacteria that live in the digestive tracts of humans and many animals. Labs may test for total coliforms, fecal coliforms, or *E. coli*, any of which indicate microbial contamination. Results are generally reported as no coliforms present, the actual number of organisms detected per 100 ml of water, or as too numerous to count. Some labs may simply report results as bacteriologically safe or unsafe. If your drinking water contains more than 1 total coliform org/100 ml or is reported as unsafe bacteriologically, the well should be disinfected and retested in one to two weeks. If subsequent tests indicate bacteria are still present, the source of the contamination must be identified and eliminated before the water is safe to drink.