

Bacteria & Groundwater

What are Bacteria?

We are in contact with millions of bacteria every day and nearly all of them are harmless. Yet some of these small organisms are responsible for waterborne illnesses. Total coliforms are one group of mostly harmless bacteria that live in soil and water, as well as the intestines of animals. The presence of total coliforms in drinking water can indicate that more dangerous germs, particularly fecal coliforms, have contaminated the water.

The most common source of bacteria is the soil surrounding the well. Fecal bacteria in drinking water are usually the result of contamination by a nearby sewer, septic tank, feedlot or animal yard. Bacterial contaminants also may be introduced into a well during construction or repair.

Most bacterial problems happen right at the well or as water travels through the distribution system. Therefore, it is common to have contaminated and uncontaminated wells in close proximity to one another.

A sanitary survey can help determine if your well might be threatened by bacterial contamination. Vulnerable wells are located too close to potential sources of bacteria, such as a septic field, may be poorly constructed or very old, or have poor flow and distribution systems. A well professional can help you conduct a sanitary survey on your well.

What are the health effects of Bacteria?

Disease-causing bacteria, such as *E. coli*, can trigger gastrointestinal illnesses, diarrhea and vomiting. *E. coli* can be life-threatening for infants, children, the elderly and those with compromised immune systems.

How do I test for Bacteria?

As of 2006, the U.S. Environmental Protection Agency's (EPA) legal limit for total coliforms was set at 5.0%. This means that, for a public water system, total coliforms should not be present in more than 5 percent of water samples. The EPA also set the maximum contaminant health goal for coliforms at zero. Check with your state or local health department for more information.

You should test for bacteria yearly, usually in the spring, or if you notice any change in your water. You should also test if:

- Anyone in the household suffers recurring bouts of gastrointestinal illness.
- An infant is living in the house, or someone in the house is pregnant.
- Flooding has occurred in your area, or the well has been inundated by surface runoff.
- You are buying a home and wish to assess the quality of the drinking water.
- You wish to monitor the performance of home water treatment devices.
- New well equipment has been installed or maintenance has been performed on the well, such as repairs to the pump.
- You have done landscaping near your well, where the well cap may have been disturbed.

Contact your state or local health department for a list of state-certified laboratories in your area. Tests measure total coliforms in the water first. If the sample is positive, it is analyzed further for fecal coliforms, including E. coli. Such contamination requires immediate action.

What are the treatments for Bacteria in drinking water?

You must disinfect your well to eliminate bacteria. Chlorine, ultra-violet or ozone treatments will kill or inactivate E. coli and other harmful germs in drinking water. If total coliform bacteria is present, use shock chlorination to disinfect the well. It may be necessary to shock chlorinate the well several times in order to remove the bacteria completely. A licensed water treatment professional in your area can suggest and perform the appropriate treatment for your situation. Treatment systems must be properly maintained to ensure water quality. Test systems and the treated water regularly.

Boiling is one method for temporarily removing bacteria from water used for drinking, food preparation, dishwashing or toothbrushing. Water should be boiled vigorously for one full minute.

For more information about Bacteria

Contact the Lincoln-Lancaster County Health Department, Environmental Public Health Division at 441-8030 or the U.S. Environmental Protection Agency.