TEXAS STATE

EDWARDS AQUIFER
RESEARCH & DATA CENTER

Edwards Aquifer Research & Data Center
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NELAP ACCREDITED TNI LABORATORY

Sterile containers are provided.
***BACTERIOLOGICAL SAMPLES ARE NOT ACCEPTED ON FRIDAY**

Hours: 8:00AM - 5:00PM (Monday - Friday)

Private Water Well Bacteriological Guide

WHY SHOULD I TEST MY WELL, IS MY WELL WATER SAFE TO DRINK?

The EARDC lab receives various questions from private well owners concerning their drinking water wells. These questions arise when their water changes in appearance, taste, odor, and /or when staining of clothes or fixtures occurs. The question of whether to have your water evaluated is a serious one that concerns the health of you and your family. The quality of your water is important. You alone are responsible for assuring that the water is safe to drink. You should have your water tested for total coliforms if it is a new well, if the well changes in appearance or smell, if there are known problems in your area, if there is flooding or other land disturbances and if you repair or replace any part of your system. Shallow water wells and hand dug wells are more likely to have higher bacteria counts. It is recommended to test your well yearly. Even if you currently have a safe drinking water supply, regular testing can be valuable because it shows a record of water quality. This record can be useful in solving any future problems. Each well is unique in location, construction and use. Many well owners experience common problems. The water does not need to be sterile but should be free of pathogens or "disease causing" bacteria. Water can be evaluated for indicator organisms called Coliform bacteria. Well water that has been determined to have coliform bacteria is not considered potable or drinkable. The procedure that is used to analyze for the absence or presence of coliform is called "Colilert". In the Colilert procedure, the reagent is added directly to the sample, thus decreasing the chance of contamination to the sample. An advantage to the Colilert procedure is that it evaluates for both total coliform and *Escherichia Coli (E. Coli*). The Colilert procedure is sensitive enough to detect one colony of bacteria in a 100 mL sample. The basic Colilert procedure does not allow for enumeration of bacteria. This is not critical because finding as few as one colony will cause the water to fail the requirements for a safe drinking water supply. We do offer another method using a Quanti-tray, which does allow for a most probable number (MPN/100mL) count of the bacteria found in the water sample.

WHAT ARE COLIFORM BACTERIA?

Coliform bacteria are a group of microorganisms found in the intestines of both warm- and cold-blooded animals and found in plant and soil material. They are common in the environment and are usually not harmful. The presence of these bacteria can indicate contamination with bacteria that may cause disease. Bacterial contamination is colorless, odorless, and tasteless, so having a lab evaluate your water for their presence is the only way to know. Health effects include diarrhea, cramps, nausea.

Total Coliform: includes bacteria found in the soil, in water influenced by surface water, and in human and animal waste. They typically do not make you sick.

Fecal Coliform: are the group of the total coliforms that are present specifically in the gut and feces of warm-blooded animals. Because the origins of fecal coliforms are more specific than the general total coliform group of bacteria, fecal coliform is an indicator of animal or human waste than total coliform.

***E.Coli*:** Is the major species in the fecal coliform group and lives in the digestive tract of warm-blooded animals.

HOW DO I COLLECT A WATER SAMPLE TO TEST FOR BACTERIA?

1. Obtain a sterile container from the EARDC lab.
2. Sample should be taken from a water faucet that is not leaking inside or outside the home. If the weather is calm (not windy or rainy), take the sample from well or use the faucet on the wellhead.
3. Remove filter or aerator from the mouth of the faucet
4. The faucet should be disinfected with the bleach or flamed (do not flame too long as not to damage the rubber washers in the faucet).
5. Run water for two to three minutes to flush the lines.
6. The seal should be broken on the bottle, prior to testing (DO NOT touch the inside of the bottle or lid. DO NOT rinse the bottle, the white powder is there to neutralize any residual chlorine found in your water)
7. Fill the bottle past the 100 mL line but leave a little amount of air space.
8. Close bottle and deliver to lab. If sample will not be delivered to the lab within one hour, put on ice or in the refrigerator until ready to be delivered.
9. Samples must be delivered within in 24hrs of collection.

WHAT DO I DO IF COLIFORM BACTERIA IS FOUND IN MY WATER SAMPLE?

If the lab finds coliform bacteria or *E. Coli* is present in your water sample, your system needs to be disinfected. The most common source used for well disinfection is chlorine; household bleach is 5.25% and is easy to use. The following procedure is recommended for well disinfection.

Household Bleach Dosage Table for Well Disinfection - Gallons of Bleach / Well Depth

1/2 to 1 gallon Less than 100ft.
1 to 1-1/2 gallons 100 to 200ft
2 gallons 200 to 300 ft.
2 1/2 or more 300 ft. and above

***These dosages are approximate. Greater amounts are recommended for excessively cloudy and for hand dug wells.**

1. Find the wellhead and remove an access plug or bolt so that the area within the well casing is exposed
2. Pour the proper amount of bleach (see table above) into five gallons of water and pour mixture into well using a funnel.
3. Remove funnel and replace access plug or bolt. To disinfect the rest of the plumbing, go inside the house and turn on all the faucets until the bleach odor can be detected (if no bleach detected add more bleach into the well) and then turn off faucets. Allow the chlorine to remain in the plumping system overnight or for 24 hrs. During this time, the water should not be used for drinking, cooking, or bathing.
4. After disinfecting the well and plumbing system flush pipes until the chlorine odor disappears,
5. Submit another bacteriological sample to determine if the disinfection process was successful.

A single disinfection may not be sufficient because certain well systems are more vulnerable to contamination. Water from these types of systems should be checked by periodically submitting samples for bacteriological analysis.