
PRIVATE WELL DISINFECTION & WATER SAMPLING

Response to Hurricane Rita

GI-005 - (9/2005)

You do not want the water you drink, cook with, and wash dishes in to be contaminated with microorganisms that cause disease. Unsafe water can spread a number of diseases known as “waterborne” infections—typhoid, cholera and dysentery, to name a few. All of these illnesses are caused by microorganisms in the intestines of infected people and animals, who may not always appear to be sick. Water supplies can be contaminated when the feces (bodily wastes) from infected individuals are not properly disposed of, and instead seep into underground water or run off into surface water supplies. Unfortunately, disease-producing microorganisms are difficult to detect in water samples—fortunately, coliform bacteria are not hard to detect.

When coliform organisms are found in a water sample, they may indicate that feces may have contaminated the water and that immediate action should be taken to stop the contamination. When well water contains coliforms, disinfection procedures should be used. If a doctor suggests that gastric cramps or chronic diarrhea may have been caused by contaminated water, well disinfection should be performed immediately and water samples should be submitted for analysis. In addition, recently constructed or recently repaired wells must be disinfected to prevent bacterial growth in the well and in the plumbing system. Well disinfection procedures are described later in this document.

For some water sources, continuous disinfection equipment should be installed:

- any water source with repeated samples testing positive for coliforms
- shallow wells
- hand-dug wells
- cisterns
- surface water sources

Information about continuous disinfection equipment may be obtained from local well drillers and plumbing suppliers.

To have your well water analyzed for coliform organisms, follow these steps:

Collecting Water Samples

1 You must use a sample container provided by an [approved laboratory](#).

2 You should find a proper location to take a sample, preferably an outside faucet that does not leak (avoid rubber hoses, fire hydrants, vacuum breakers, dirty areas, and areas with vegetation near the sample point).

- Do not take samples from kitchen or bathroom sinks.
- Avoid sampling on extremely windy days or when it is raining.
- Open the sample-area faucet to full flow for three minutes to clear the line.
- Disinfect the sample collection point using a propane torch or a 50% bleach/water solution. If using bleach, allow the solution to remain for several minutes to be effective.
- Then, reduce the flow to a slow, steady, sprayless stream about the size of a pencil.

3 Exercise care in handling samples! Samples are extremely easy to contaminate.

- Do not touch the inside of the container and do not rinse it.
- Do not touch the lip of the sample bottle or the inside of the cap. Hold the cap with the top up and do not place it on the ground or in a pocket.
- Fill the container without splashing, then seal it.

4 Complete the sample submission form, which may be obtained along with a test container from a laboratory. Using the instructions below, private well owners will complete only the following items:

- For the "Name of Water System" item, write "private."
- Fill in the county name and your name and mailing address in the area designated as "Send Results To."
- Provide the date and time.
- For the "Type of System" item, indicate "individual."
- Then, complete as much information as possible under the "Water Source" item.

Delivering the Sample

5 Samples should be prepared properly for shipment. Leaking samples cannot be accepted for analysis.

- A sample must arrive at a laboratory **within 30 hours from the time the sample was collected**.
- Samples may be mailed or delivered. Public health laboratories in Texas are listed on page

6 Results will be forwarded to you after completion of the tests. The most important part of the results will be the indication of "coliform organisms found" or "coliform organisms not found."

- A "not found" report indicates coliform organisms are absent, and means the water is considered bacteriologically safe to drink at the time of sampling.
- A positive or "coliform found" report indicates that coliform organisms are present and the water may be unsafe. If repeated bacteriological testing reveals the possibility of contamination via a "coliform found" result, then well disinfection is recommended.
- If the laboratory finds fecal coliform or E. coli (*Escherichia coli*) bacteria present, do not touch the water and do not use it for drinking, bathing, cooking, preparing food, making ice or cleaning. Either boil the water or find water from another source. If you choose to boil, bring the water to the boiling point and let it boil for two minutes. Boiling will be essential until you disinfect the well and obtain a "not found" report from the laboratory indicating that E.coli or fecal coliform are no longer present.
- When a laboratory analysis report indicates "unsuitable for analysis," it means the laboratory was unable to conduct a valid test to draw a conclusion. In this case, the well owner should consider well disinfection before resubmitting a sample.

Well Disinfection

7 When a laboratory analysis report shows the presence of coliform organisms, use the following procedure for well disinfection:

First - Locate the wellhead and remove an access plug or bolt so that the area within the well casing is exposed. (See diagram)

Second - Using a funnel, pour in an appropriate amount of liquid chlorine bleach. Avoid using bleaches with scents or other additives. See chlorine bleach dosage below.

Chlorine Bleach Dosage Table
for Well Disinfection:

| Well Depth | Amount of Bleach |
|-------------------|------------------|
| Less than 100 ft. | 1 quart |
| 100 to 200 ft. | 1/2 gallon |
| 200 to 300 ft. | 3 quarts |
| 300 and greater | 1 gallon or more |

Third - Using the nearest faucet and a garden hose, allow water to run through the funnel into the well for one hour. This will circulate the chlorinated well water and improve the germ-killing action by allowing all fittings and equipment in the well to be exposed to the chlorine solution.

Fourth - After the well water has circulated for an hour, the garden hose and funnel may be removed and the access plug replaced. The disinfection process should be extended throughout the entire plumbing system.

Fifth - To disinfect the remainder of the plumbing system, turn on the next available faucet and allow it to run until the bleach odor can be detected, then turn it off. Repeat this step throughout the plumbing system at each faucet. Then, allow the chlorinated water to remain in the plumbing system overnight, or for 24 hours if possible. During this time, the water should not be used for drinking or cooking.

Sixth - After disinfecting the well and plumbing system, flush all faucets until the bleach odor disappears and the water is clear of any debris or color. Flush outside faucets first—you do not want to flood the septic system.

Seventh - Submit another bacteriological sample to determine if the disinfection process was successful.

Keep in mind that a single disinfection may not be sufficient because certain well systems, particularly shallow wells, hand-dug wells, wells in fissured areas, and old wells are more vulnerable to contamination. Water from these types of systems should be checked by periodically submitting samples for bacteriological analysis.

8 To ensure the disinfection process was effective, repeat the steps for proper sampling, carefully following guidelines. Most reasons for an unsuitable sample can be avoided.

For additional assistance, contact the Texas Commission on Environmental Quality regional office in your area. To find the office in your area, visit the following site:

<http://www.tceq.state.tx.us/about/directory/region/reglist.html#1>

Submersible Pump

