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WHAT TO DO ABOUT COLIFORM BACTERIA IN WELL WATER

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Coliform bacteria are a large group of many kinds of bacteria, including fecal coliform bacteria, which occur naturally in the intestines of warm-blooded animals. The group also includes non-fecal coliform bacteria.

One species of fecal coliform bacteria is *Escherichia coli* (*E. coli*). If *E. coli* or other fecal coliform bacteria are in well water, the water has come into contact with human or animal waste and could cause disease.

People who drink water from a private well should have the water tested at least once a year to make sure that it is safe to drink. Follow the guidelines below if you receive a positive test result for total coliform or coliform bacteria.

1. RETEST TO CONFIRM CONTAMINATION

If you have received a positive test result for total coliform or coliform bacteria, collect another water sample and have it tested for fecal coliform bacteria or *E. coli.* Although the coliform bacteria can indicate that something may be wrong with the well, the water sample that was tested may have been contaminated during the collection process.

Coliform bacteria are very common and do not necessarily indicate that the water has come into contact with human or animal waste. But the presence of fecal coliform or *E. coli* in water definitely indicates contamination by contact with human or animal waste.

When you have the water retested, test it specifically for fecal coliform or *E. coli*, and take the steps below to get an accurate result.

- Carefully follow the laboratory's instructions for collecting a water sample.
- Before collecting water, remove any aerator, filter, or hose from the faucet.
- Wash your hands, and do not touch the inside of the container.
- Use the faucet that is as close to the well as possible, or use water from a different faucet from the first sample tested.

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2. DON'T DRINK THE WATER

Use bottled water for drinking and cooking until you receive the results from the second water test. If bottled water is unavailable, boil the water used for drinking, cooking, and brushing your teeth to make it safe.

For information on how to disinfect small amounts of water, see Emergency Disinfection of Drinking Water by the U.S. Environmental Protection Agency at *http://water.epa.gov/drink/emerprep/emergencydisinfection.com*.

3. FIND THE SOURCE AND FIX THE PROBLEM

Possible causes of contamination include a faulty wellhead or improper well construction; a well that is shallow or is near a body of surface water (such as a pond, lake, stream, or river); an old, unused, or abandoned well; a septic system; or another concentrated source of contamination nearby.

Source: Faulty wellhead or improper well construction

A diagram of a properly completed well is shown in Figure 1. For other completion methods authorized in Texas, see the *Well Construction and Plugging Specifications* publication by the Texas Department of Licensing and Regulation at *http://www.tdlr.texas.gov/wwd/wwdspecs.htm*.

Check the well for signs of faulty seals, and inspect the surrounding area:

- Is water standing near the well?
- Is the well cap sealed properly?
- Are there problems with the annular seal between the well casing and the soil?

It is usually most efficient to have a licensed well driller check the well and fix the problem.

Source: The well is shallow and/or near a body of surface water

The well may be shallow (especially hand-dug wells), or it may be drawing water from the river or stream, which is contaminating the well water.

If this is the cause:

- Decontaminate the water using a distillation, ozone, ultraviolent (UV), or continuous chlorination treatment method.
- Or, find another source of water, such as by drilling a deeper well or using bottled water.

Source: Old, unused, or abandoned wells nearby

Old wells that have not been plugged may be acting as a conduit for contamination.

- Determine whether old water wells are near your active well.
- If so, follow the guidelines in *Landowner's Guide to Plugging Abandoned Water Wells* (see page 3) on plugging abandoned and/or deteriorated wells.
- Better yet, work with a licensed well driller to have the well(s) plugged properly.

Source: A septic system near the water well

A septic tank should be a minimum of 50 feet from the water well. Septic drain fields or spray fields should be at least 100 feet from the well.

- Maintain or pump your septic system as needed. See *Maintain Your Septic System to Protect Well Water*, available at *https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/esc-015_septicsyspta-3.pdf*.
- Repair the tank or drainfield as needed to prevent leaks that contribute bacteria and nutrients into your drinking water.

Source: Other concentrated contaminants near the well

Animal waste is a common source of bacteria in water wells. Possible sources are runoff from feedlots, pastures, dog runs, or any other land containing animal waste.

- Check the well area for sources of animal waste.
- Move the source(s) if possible.

If you cannot move the source, make sure that the well components are in good condition, and inspect the wellhead regularly.

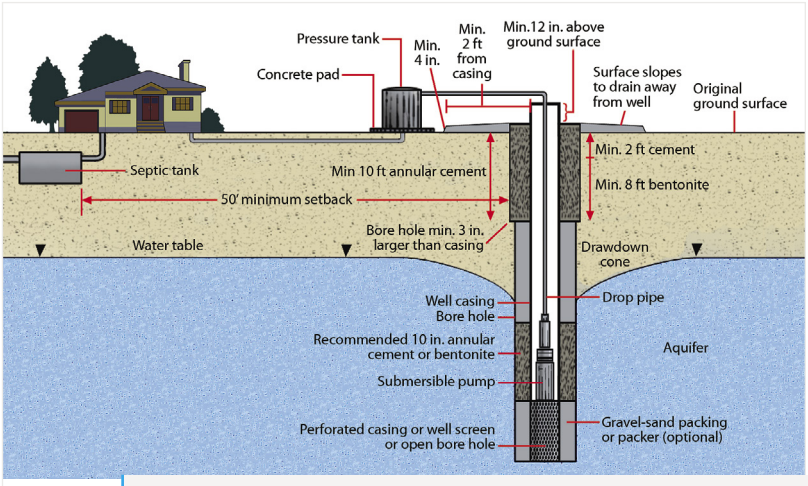

Figure 1. A water well constructed according to Texas regulations.

4. DISINFECT THE WELL

After you have addressed the causes of bacterial contamination, have the well disinfected by shock chlorination. To reduce your risk of exposure to hazardous chemicals and to protect the well components, have a licensed well driller/pump installer disinfect the well.

The Texas Department of Licensing and Regulation has posted lists of licensed well drillers/pump installers in Texas at *https://www.tdlr.texas.gov/LicenseSearch/*.

If you shock-chlorinate the well yourself, follow the instructions in the Texas A&M AgriLife Extension Service publication *Shock Chlorination of Wells* (*https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/esc059.pdf*).

Also review the owner's manual or manufacturer's literature to avoid damaging the components of your well or water treatment system.

5. RETEST THE WATER

Have the well water retested before drinking it untreated. After any negative test result, retest the water in 6 months to a year and at least annually.

FOR MORE INFORMATION

Landowner's Guide to Plugging Abandoned Water Wells. Texas Groundwater Protection Committee. 2010. RG-437, 24 pp. Available at *https://www.tceq.texas.gov/downloads/groundwater/publications/landowners-guide-to-plugging-abandoned-water-wells-rg-347.pdf*

Maintain Your Septic System to Protect Well Water. By R. A. Gerlich, K. Uhlman, D. E. Boellstorff, M. L. McFarland and J. W. Smith. 2014. Texas A&M AgriLife Extension Service. Available at *AgriLifeLearn.tamu.edu*.

Plugging Abandoned Water Wells. By B. Lesikar and J. Mechell. 2010. Texas A&M AgriLife Extension Service B-6238, 8 pp. Available: *https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/plugging-abandoned-water-wells.pdf*

How to Disinfect a Water Well Through Shock Chlorination. By D. E. Boellstorff, M. C. Dozier and D. M. Gholson. 2019. Texas A&M AgriLife Extension Service ESC-059, 3 pp. Available: *https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/esc059.pdf*

Texas A&M AgriLife Extension Service county office: *http://counties.agrilife.org/*

Texas Department of Licensing and Regulation:

Water well regulations: *https://www.tdlr.texas.gov/wwd/laws-rules.htm*

List of licensed well drillers/pump installers in your area: *https://www.tdlr.texas.gov/LicenseSearch/*

Texas Groundwater Protection Committee:

General information on water wells: *https://tgpc.texas.gov/water-wells/#2*

Information on abandoned water wells: *https://tgpc.texas.gov/water-wells/#7*

Texas Well Owner Network: *https://twon.tamu.edu/*

Texas Well Owner Network: Texas Well Owner's Guide to Water Supply. By K. Uhlman, D. Boellstorff, D. Gholson, R. Gerlich and J. W. Smith. 2019. Texas A&M AgriLife Extension publication ESC-029, 96 pp. *https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/esc029.pdf*

What to Do About Coliform Bacteria in Well Water. By D. Gholson, D. Boellstorff, M. McFarland. 2014. Texas A&M AgriLife Extension Service.

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