AgriLIFE EXTENSION
Texas A&M System

Disinfecting Water Wells and Stored Water

- If your well has been flooded, assume that the water in it is contaminated.
- Do not use the well water for drinking, cooking, making ice, brushing your teeth, or even bathing until you are sure that it is not contaminated.
- During the disinfection process, do not allow people or animals to drink or have prolonged contact with water from the system.
- **To make the water safe after a flood:**
  - Add chlorine to the well to disinfect it (instructions below).
  - Have the water tested to make sure that the disease-causing organisms have been eliminated.
  - Also disinfect most water treatment equipment, such as water heaters, softeners and pressure tanks.
  - During the process, temporarily disconnect or bypass drinking water filters such as carbon filters and reverse osmosis systems.
  - Treat the well when faucets and toilets will not be used for at least 12 hours, preferably 24 hours.
  - During treatment, do not use an automatic watering system for animals or irrigation.
  - The most common sources of chlorine for well disinfection are dry chlorine (at least 65 percent calcium hypochlorite) and liquid household bleach (5.25 percent sodium hypochlorite).
  - Do not use bleach that has a "fresh scent," lemon fragrance, or other additives.

Decontaminating and disinfecting a well

1. If the well is shallow, has been flooded by surface water, or is in an unconfined aquifer, pump it out to remove any potential contaminants. Pump out at least 3 well volumes of water from a faucet near the wellhead. At a minimum, pump the well for at least 1 hour before beginning the disinfection process.
2. Remove the plug or screen on the well cap to access the inside well casing.
3. Turn off electric power to the pump.
4. Remove the well cap.
5. Determine the amount of chlorine needed:
   a. Measure the amount of water standing in the well. The standing water depth in the well is the depth of the well minus the static water level, which is the level of the water table in a well when the pump is not operating.
   b. If you do not know the well's standing water depth, use a volume of bleach equal to twice the depth value for the diameter of the well casing (see Table 1 or 2). For example, an 8-inch casing diameter with unknown standing water depth would require 3 gallons of household bleach.
6. Prepare a solution of bleach and water, and pour the solution into the top of the well. The amount of bleach depends on the depth of water in the well and the diameter of the well casing, which is a steel or plastic pipe placed in a well to maintain the well opening and to serve as the lining to the well.
7. Recirculate the water by connecting a hose to a faucet and spraying the water back into the well for at least 10 minutes.
8. Open every faucet in the system and let the water run until the smell of chlorine can be detected.
9. Close all the faucets and seal the top of the well.
10. Drain all water heaters to allow the chlorinated water to circulate through the hot water system also.
11. Flush out household plumbing, including the water heater. Make sure the water is clear and free of sediment.
12. Allow the chlorinated water to stand in the system for at least 12 hours, preferably 24 hours.

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13. The next day, operate the pump by turning on all faucets, beginning with those outside, and flushing out the water until there is no chlorine odor.
14. Dilute the beach by placing the appropriate amount of bleach (Table 1 or 2) in a 5-gallon bucket and filling the bucket with clean water.
15. Use a funnel to pour the solution around the sides of the well casing.
16. Connect a garden hose to a nearby faucet and wash down the inside of the well.
17. Continue the washing process for 10 minutes, and make sure you can smell a strong chlorine odor.
18. Do not operate the water system for 2 hours.
19. After 2 hours, open the faucet closest to your well.
20. Allow the water to run until you can smell a strong odor of chlorine, then close the faucet.
21. Go to the next faucet and repeat. If you do not smell the odor, check the chlorine rate and add more chlorine to the well, repeating steps 1 through 4.
22. Do not operate the water system for at least 12 hours, preferably 24 hours.
23. Flush the remaining chlorine from the system. Begin by turning on the outside faucets and letting the water run until the chlorine odor dissipates.
24. Let the water run on the ground to reduce the load on your septic system. However, do not let the chlorinated water run onto lawns, gardens, or other plants because chlorine can injure them. Place the garden hose so that it drains into a field or low-lying area away from desirable plants. Be careful not to discharge the chlorinated water directly into a pond, lake, river, or stream.
25. Turn on the indoor faucets until the system is completely flushed.

Testing the well water

- After disinfection, have the well water tested by a certified laboratory to make sure there is no bacterial contamination.
- Some county health departments and local hospitals may also test water samples for bacteria. The cost ranges from $8 to $30.

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Table 1. Amount of chlorine laundry bleach (about 5.25 percent hypochlorite) needed for shock chlorination.

Standing water depth in well	Casing diameter				
	4 inches	6 inches	8 inches	10 inches	12 inches
10 feet	½ cup	1 cup	1½ cups	1 pint	2 pints
25 feet	1 cup	1 pint	2 pints	3 pints	4½ pints
50 feet	1 pint	1 quart	2 quarts	3 quarts	1 gallon
100 feet	1 quart	2 quarts	1 gallon	1½ gallons	2 gallons
150 feet	3 pints	3 quarts	1½ gallons	2 gallons	3 gallons

Table 2. Amount of high-test hypochlorite (65–75 percent hypochlorite) needed for shock chlorination.

Standing water depth in well	Casing diameter				
	4 inches	6 inches	8 inches	10 inches	12 inches
10 feet	–	–	–	–	–
25 feet	–	–	–	¼ pound	¼ pound
50 feet	–	–	⅓ pound	½ pound	¾ pound
100 feet	–	⅓ pound	¾ pound	1 pound	1½ pounds
150 feet	¼ pounds	½ pound	1 pound	1½ pounds	4 pounds

- Well disinfection does not eliminate hydrocarbons (fuels, oils), pesticides, heavy metals, or other types of contamination. If you suspect such contamination, the water will require special testing and treatment.
- For a list of Texas laboratories certified to analyze drinking water samples, see the Texas Commission on Environmental Quality Web site at *http://www.tceq.state.tx.us/assets/public/compliance/compliance_support/qa/sdwa_lab_list.pdf.*
- For more information, call the Texas AgriLife Extension Service at 979-845-2425.

Checking for damage to the well

- Inspect the well for physical damage.
- Look for signs of leakage.
- If it appears damaged, consult a licensed water well contractor to determine whether repairs are needed.
- If the pump and/or electrical system has been under water, do not turn on the pump. There is a danger of electrical shock or damage to your well or pump.
- Once the floodwaters have receded and the pump and electrical system have dried, have a qualified electrician check the wiring system.

Obtaining clean water

- **Find an alternative source of water for drinking, cooking and washing:**
  - A public water supply
  - A neighbor's well if you know it is safe
  - Bottled water
  - If you can't find a convenient source of safe water, boil your well water for 1 minute before using it.