Cleaning Flooded Wells

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Frequently during flood situations, private wells can be partially or fully submerged by surface water.

When this happens, the well can become contaminated with a host of materials that can include sewage, petroleum products, sediment, bacteria, viruses and other floating debris.

The smell of the water sometimes will change if surface water gets into a well. If you suspect surface water contamination and you must use the water for drinking or food preparation, here are some recommendations from the Environmental Protection Agency for making it safe:

- Boiling the water will kill most types of disease-causing organisms that may be present. If the water is cloudy, filter it through clean cloths or allow it to settle and draw off the clear water for boiling. Boil the water for one minute, let it cool and store it in clean containers with covers.

- If you can't boil water, you can disinfect it using household bleach. Bleach will kill some, but not all, types of disease-causing organisms that may be in the water. If the water is cloudy, filter it through clean cloths or allow it to settle and draw off the clear water for disinfection. Add 1/8 teaspoon (or eight drops) of regular, unscented liquid household bleach for each gallon of water, stir it well and let it stand for 30 minutes before you use it. Store disinfected water in clean containers with covers.

After the floodwater recedes, the well should be disinfected and the water tested to make sure it is safe. Obtain a water test kit for bacteria and nitrates from your county health department or a private certified laboratory. North Dakota testing laboratories are listed on the last two pages of Drinking Water Quality: Testing and Interpreting Your Results at www.ag.ndsu.edu/publications/environment-natural-resources/drinking-water-quality-testing-and-interpreting-your-results.

Before the well can be disinfected, it needs to be inspected. First, turn off the electricity to the pump. Look at the area surrounding the well casing. Remove accumulated debris and sediment. If the well cap is missing or the casing is damaged, call a certified well installer because large amounts of sediment and other materials may be in the well and can't be seen looking down the well.

If the well cap is still on and not damaged, look inside the well for damage to the pump, piping, wires, casing, etc. You will need a good flashlight to look down the well. If the inside of the well casing is relatively clean, the well can be disinfected using shock chlorination. Shock chlorination also should be done after a well installer has pulled the pump and cleaned the well.

Use the following steps to shock chlorinate a well:

- Before turning on the well pump after a flood, the only place you want water to come out in the house or barn is at outside faucets and hydrants, bathtubs and sinks. Disconnect all other water appliances. Use the bypass valves on water filters, water softeners and water treatment devices. Shut off the supply valve to the water heater and drain it. If the water heater is electric, shut off the power; for a natural gas or propane water heater, shut off the fuel supply and put out the pilot light.
- With the electricity off to the well pump, clean the well cap and the outside of the casing with a solution of 1 ounce of laundry bleach in 2 gallons of clean water. Use a coarse brush.
- Turn on the electricity and pump the well until the water is clear. Do this at the faucet or hydrant nearest to the well. Collect discharge water in a white bucket to check the color of the water and look for sediment. Next open each faucet in the home until it runs clear. Close all faucets and turn off the electricity to the pump.
- Prepare a mixture of household bleach and water to pour down the well. You will need at least one 10-gallon container or two 5-gallon containers for mixing the bleach and water. Be sure to use eye protection and rubber gloves when mixing. You'll need to have at least 200 parts per million (ppm) of chlorine throughout the water column in the well. The amount of household bleach to achieve this depends on the diameter and depth of water in the well. If your well is 3 to 4 inches in diameter with about 50 feet of water, mix 2 quarts of bleach in 10 gallons of clean water. For a well 5 to 6 inches in diameter with 50 feet of water, mix 1 gallon of bleach with 10 gallons of clean water. If you are not sure of the amount of water in your well, double the amount of household bleach in the mixture. Since household bleach is about 6 percent chlorine, doubling the amount will not do any harm. Remember, 200
- Pour the diluted bleach solution into the well against the side of the casing. Avoid pouring directly onto the pump wiring if possible but try to wash down the entire inside of the casing.
- Next, mix the chlorine throughout the water column in the well. Turn on the electricity. If possible, connect a garden hose to the nearest hydrant or faucet and place the discharge end in the top of the well. Run the water for 15 minutes. You also can mix the chlorine by starting and stopping the pump quickly several times. Let the chlorine mixture sit in the well for at least an hour.
- One at a time, open every water outlet on the system. Run the water until you can smell the chlorine, then close the faucet. Flush the toilets, refill the water heater and allow the chlorine solution to remain in the system for at least four hours, although eight hours would be the best.
- To purge the chlorine from the system, open all the faucets or hydrants. Start with the faucet or hydrant nearest the pressure tank and work your way to the farthest faucet or hydrant. Run each one until you can't smell chlorine.

Now use your water test kit to obtain a water sample for bacterial safety. You should continue to use an alternative water source or boil your water until the laboratory reports that the water is safe.

A safe report indicates that E.coli and total coliform bacteria are absent. You should have the well tested again in about two weeks to make sure that the disinfection has been completely effective.

Learn more by watching the 9:28 video on Shock Chlorination of a Private Well at www.ag.ndsu.edu/flood/home/after-the-flood?b_start:int=20.