



**Public Health**  
Prevent. Promote. Protect.

**Bismarck-Burleigh Public Health**

# Well Safety

Flooding is the most common disaster in the U.S. and can cause a variety of problems to urban and rural communities. However, by utilizing these suggestions, you can learn how to stay safe before, during and after a flood.

## WELL SAFETY

Following an emergency, access to safe drinking water may be difficult to ensure. However, there are a variety of solutions to help create safe drinking water.

## CHEMICAL DISINFECTION

Chlorine or iodine tablets should be administered by trained personnel. A 1% chlorine stock solution from sodium hypochlorite (liquid bleach), calcium hypochlorite or high-test hypochlorite (powdered chlorine) should be utilized. The amount of chlorine needed depends on the concentration of organic matter in the water.

## SOLAR DISINFECTION

Ultra-violet rays are used to inactivate pathogens present in the water. Bottles need to be cleaned, filled to three-quarters full and shaken 20 times before being filled completely. Filled bottles are then exposed to sunlight for 6 hours to 2 days, dependent on obscurity of sun.

## FILTRATION

Ceramic filters with small pores, often coated with silver bacteriostasis have been shown to remove microbes and other suspended solids. These filters will often need to be cleaned and/or replaced.

## COMBINED FLOCCULATION/CHLORINATION

Commercially available sachets improve microbial quality of drinking water. These systems treat 10 liters of water that are stirred and strained.

## BOILING

Households can disinfect water by bringing it to a rolling boil, prior to drinking. This will kill pathogens effectively, except at high altitudes.



## SAFE STORAGE

While water may be safe initially, it can become contaminated during transportation or storage. Using containers with narrow openings, or spouts/spigots/taps protect water during storage.

## DISINFECTION OF BORED/DUG OR DRILLED/DRIVEN WELLS AFTER AN EMERGENCY

NOTE: If water smells like fuel or has a chemical odor, or if you live in an area where the potential of fuels, pesticides or other hazardous chemicals is high, contact your local public health unit for advice. Contaminated water will not be made safe by boiling or disinfection. Until you know the water is safe, use bottled water or a confirmed safe supply of water.

Do not enter the well pit. Gases and vapors can build up in well pits, creating a hazardous environment. Wear protective goggles or a face shield when working with chlorine solutions. Chlorine solutions may cause injury to the eye, irritate skin, and damage clothing. Work in well-ventilated areas and avoid breathing vapors when mixing and handling chlorine solutions. Warn users not to drink or bathe in water until all the well disinfection steps have been completed.

1. If the well has an electrical pump, turn off all electricity and clear debris from around the top of the well.
2. Repair the electrical system and pump if needed. Contact a qualified electrician, well contractor, or pump contractor if you are not experienced with this type of work.
3. Start the pump and run water until it is clear. Use the outside faucet closest to the well to drain potentially contaminated water from the well and keep unsafe well water out of the interior household plumbing. If there isn't a pump, bail water from the well with a bucket until water is clear.
4. If the well is connected to interior home plumbing, close valves to any water softener unit.
5. Determine the amount of liquid household bleach needed to disinfect the well. Use only unscented bleach.
6. Using a 5-gallon bucket, mix the bleach with 3-5 gallons of water (12-19 liters).
7. Remove the vent cap if using drilled or driven wells.
8. Add the bleach water mixture to the well. Avoid all electrical connections. Attach a clean hose to an outside faucet and use it to circulate water back into the well for thorough mixing. If there isn't a pump, mix water by pouring it back into the well using a bucket.
9. Rinse the inside of the well casing with a garden hose or bucket for 5-10 minutes.
10. Open all faucets inside the home and run the water until you notice a strong odor of chlorine (bleach) at each faucet. Turn off all faucets and allow the solution to remain in the well and plumbing for at least 12 hours.
11. After at least 12 hours, attach a hose to an outside faucet and drain the chlorinated water onto an area without plants or other vegetation, such as a driveway. Continue draining until the chlorine odor disappears. Avoid draining into open sources of water (streams, ponds, etc.).
12. Turn on all indoor faucets and run water until the chlorine odor disappears.
13. Until well water has been tested, boil it (roiling boil for 1 minute) before using or use another alternative water source. Wait at least 7-10 days after disinfection, then have the water in your well tested. Water testing cannot be done until all traces of chlorine have been flushed from the system.

Bored and dug wells can be difficult to disinfect because of how they are constructed. Many are shallow and have no lining, casing, or grouting, which can allow contaminants to enter the well from the land surface or upper soil levels. If contamination problems continue, consider upgrading the existing well or drilling a new well.

The disinfection process may damage water softeners due to the large amounts of chlorine used. Follow your manufacturers' instructions for appropriate methods to disinfect your softener unit. You will need to bypass the unit until the disinfection process is complete.

**SOURCE:** CDC, WHO