



**Do not drink the water until it is determined to be biologically and chemically safe.**

## What is the hazard?

During flooding conditions, your well can become contaminated. Contamination may be bacterial, chemical or both.

- **Bacterial contamination:** The simplest and most effective way to destroy harmful bacteria in a well and plumbing is disinfection with a chlorine solution.
- **Chemical contamination:** Contact your local public health unit or the North Dakota Department of Environmental Quality (NDDEQ) for sampling and testing advice. If you suspect a problem with a specific chemical because of an uncharacteristic and strong chemical taste and/or odor, analysis can be targeted toward that chemical.

### ***Procedure for determining the amount of chlorine needed to disinfect a well***

Before you start, you need to know (1) the diameter of your well casing pipe, (2) the depth to the top of the water in your well, and (3) the total depth of your well. This information should be noted on your well driller's log if it is available. If not, measure the diameter of the well casing pipe, the depth to the top of the water in your well and the total depth of your well.

To calculate the length of the water column in your well, subtract the depth to the top of the water from the total depth of your well to get the length of the water column in your well. Once you know the length of the water column in the well and the casing pipe diameter, use the table provided in this fact sheet to determine how much chlorine you need for every 10 feet of water in your well.

1. Before disinfecting, the well should be pumped to remove as much contaminated water as possible.
2. Measure enough disinfectant for every 10 feet of water in your well and add it to 5 gallons of water in a bucket.
  - a. Chlorine can be found at most grocery stores in the form of laundry bleach (unscented), i.e., Clorox and Purex.
  - b. Sixty-five percent calcium hypochlorite powder or tablets are available from water treatment or swimming pool companies (for mixing see table on back).
3. Pour the chlorine and water mixture into the well casing pipe. If you are repairing a flooded well, chlorine should be added just before you install the pumping equipment.
4. Agitate the water in the well to ensure thorough mixing as bacteria are destroyed when they come into contact with chlorine. Using an outside faucet and hose, rinse down the inside of the well casing until you can smell the chlorine in the water coming out of the hose.
  - a. If you have a deep well with a high water level, you may need to add chlorine through a hose inserted down the well casing pipe. You may also drop calcium hypochlorite tablets down the well casing pipe to ensure proper mixing.
5. The tanks, pipes and fixtures in your water system should be disinfected at the same time as the well. Open all faucets and let the water run until chlorine can be smelled at each faucet, then close.
6. Allow the chlorine solution to remain in the well and piping system for 12 to 24 hours. Before drinking the water or using the well, pump the well and run all faucets and outdoor hoses until you can no longer smell chlorine. To prevent hydraulic overload, do not discharge large volumes of chlorinated water to your septic system.
7. When time does not permit well disinfection by this procedure, you can superchlorinate the well by using four times the amount of chlorine listed on the table. Allow the chlorine solution to remain in the well and piping system for at least two hours. Pump the well and run all faucets to remove any trace of chlorine.

## QUANTITY OF DISINFECTANT REQUIRED

(provides a concentration of about 100 milligrams per liter or 100 parts per million)

Diameter of Well Pipe (inches)	Gallons/10 ft. of Pipe Inside	Disinfectant for every 10 feet of water in your well		
		6% Sodium Hypochlorite*	65% Calcium Hypochlorite** Tablets	65% Calcium Hypochlorite** Powder
2	1.63	2 1/2 teaspoons	1/4	1/2 teaspoon
3	3.67	2 Tablespoons	1/2	3/4 teaspoon
4	6.52	1/4 cup	1	1 1/4 teaspoons
5	10.20	1/3 cup	1 1/4	2 teaspoons
6	14.68	1/2 cup	1 3/4	1 Tablespoon
8	26.11	1 cup	3 1/4	1 1/2 Tablespoons
10	40.80	1 1/4 cup	5	2 Tablespoons
12	58.75	2 cups	8	3 Tablespoons
18	132.20	4 cups	16	1/2 cup
24	235.02	1/2 gallon	30	1 cup
36	528.80	1 gallon	65	2 cups
48	940.09	2 gallons	116	3 1/2 cups

\* Sodium hypochlorite or laundry bleach can be purchased at most grocery stores.

\*\* 65% calcium hypochlorite powder and tablets are available from water treatment or swimming pool companies.

### Procedure for laboratory testing

After flushing your drinking water system to remove all chlorine, a water sample should be submitted to a laboratory for bacteriological analysis. Special sample containers for this test are available from the laboratory. If the test shows that harmful bacteria are still present in the water, chlorination should be repeated. Do not drink the water until you get a satisfactory test result showing the water is free from harmful bacteria. Charges for services will vary. Check with the laboratory to ensure it can perform the tests you need.

### Certified bacteriological laboratories

Astro-Chem Lab, Inc.  
Williston, ND  
701-572-7355

Fargo Water Treatment Plant  
Fargo, ND  
701-476-4089

Minnesota Valley Testing Laboratory  
Bismarck, ND  
701-258-9720

Bismarck Water Treatment Plant  
Bismarck, ND  
701-355-1660

First District Health Unit  
Minot, ND  
701-852-1376

Southwest District Health Unit  
Dickinson, ND  
701-483-0171

Division of Microbiology  
ND Department of Health  
Bismarck, ND  
701-328-6272

Grand Forks Environmental Laboratory  
Grand Forks, ND  
701-746-2595

Williston Water Treatment Plant  
Williston, ND  
701-577-7104

*Feel free to use this information, but please credit the North Dakota Department of Environmental Quality.*