
A water well can become contaminated during construction or repair. Flooding also can contaminate a well. Contamination may be bacterial, chemical, or both.

Proper well construction is critical to the safety of drinking water. If your well is not properly sealed and protected, it can become contaminated at any time.

For bacterial contamination where no chemical contamination is suspected, the simplest and most effective way to destroy harmful bacteria in a well and plumbing is disinfection with a chlorine solution. Before disinfecting, the well should first be pumped to remove as much contaminated water as possible. After pumping, the well can be treated with a chlorine solution. The effectiveness of disinfection depends on the concentration of disinfectant, the time it is allowed to remain in the water, well construction and overall water quality. Follow the procedure below to ensure effective disinfection.

If chemical contamination is suspected, contact your local public health unit or the North Dakota Department of Health for sampling and testing advice. This would apply, for example, if your well water has an uncharacteristic and strong chemical taste and/or odor. If you suspect a problem with a specific chemical, analysis can be targeted toward that chemical. Do not drink the water until it is determined to be biologically and chemically safe.

Procedure for Disinfecting a Well

1. Before you start, you need to know (a) the diameter of your well casing pipe, (b) the depth to water in your well, and (c) 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. 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. Measure enough disinfectant for every 10 feet of water in your well and add it to 5 gallons of water in a bucket. You can find chlorine at most grocery stores in the form of laundry bleach (with no artificial scents), sold under such trade names as Hilex, Clorox and Purex. Sixty-five percent calcium hypochlorite powder or tablets are available from water treatment or swimming pool companies (see table on back).
2. Pour the chlorine and water mixture into the well casing pipe. If you are repairing or constructing a well, chlorine should be added just before you install the pumping equipment.
3. Bacteria are destroyed when they come into contact with chlorine. Agitate the water in the well to ensure thorough mixing. To do this, turn on your outside faucet. Using a hose, rinse down the inside of the well casing until you can smell the chlorine in the water coming out of the hose. 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.
4. 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. Turn off all faucets.
5. 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 until you can no longer smell chlorine. To prevent hydraulic overload, do not discharge large volumes of chlorinated water to your septic system. In addition, do not discharge the water onto delicate plants or lawns, as chlorine will kill vegetation.
6. 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. For assistance in disinfecting your well, call a certified well driller, your local public health unit or the North Dakota Department of Health.

Over

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.

Certified Bacteriological Laboratories

Astro-Chem Lab, Inc.
Williston, ND
701.572.7355

Grand Forks Environmental Laboratory
Grand Forks, ND
701.746.2595

Fargo Cass Public Health
Fargo, ND
701.476.4089

Division of Laboratory Services
North Dakota Department of Health
Bismarck, ND
701.328.6272

First District Health Unit
Minot, ND
701.852.1376

Minnesota Valley Testing Laboratories
Bismarck, ND
701.258.9720 / 800.279.6885

Southwestern District Health Unit
Dickinson, ND
701.483.0171 / 800.697.3145

Charges for services will vary. Check with the laboratory to ensure it can perform the tests you need.

| 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 | 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.

For additional information, please contact Gary Stefanovsky at gstefano@nd.gov or 701.328.5287.