Safe Water INFORMATION

North Dakota
Department of Health
701.328.5210
701.328.5211

Proper Well Disinfection

Including treatment for flooded wells

A water well can become contaminated during construction or repair. Flooding can also contaminate a well. The simplest and most effective way to disinfect a well is to properly apply a chlorine solution to kill any harmful bacteria in the well and plumbing.

To rid a well of harmful bacteria, the well should first be pumped to remove as much contaminated water as possible. After pumping, the well should 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. To ensure effective disinfection, the following steps should be followed.

Procedure for Disinfecting a Well

1. Before you start, you need to know some facts about your well: (a)the ***diameter*** of your well casing pipe and (b)the ***depth of water*** in your well. If you have a copy of your driller's log or can get one from your well driller, this information should be noted. If not, measure the diameter of your well casing pipe and the depth to the top of the water in your well. Subtract the depth to the top of the water in your well from the total depth of your well to get the depth of water in your well.

Once you know the ***depth of the water*** in the well and the ***casing pipe diameter***, use the table provided on the back to determine how much chlorine you need ***for each 10 feet*** of water depth in your well.

Measure enough disinfectant for each 10 feet of water depth 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, 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 supply companies.

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 in 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. Or you can drop 65 percent calcium hypochorite 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 the odor of chlorine is apparent.

5. Then turn off all faucets. 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 taps until you can no longer smell chlorine.

6. When time does not permit well disinfection by this procedure, 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 2 hours. Pump the well and run all taps to remove all traces of chlorine.

For assistance in disinfecting your well, call the North Dakota Department of Health, your local health unit or a certified well driller.

Note: 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.

Procedures 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 test result showing the water is free from harmful bacteria.

If chemical contamination is suspected, contact the North Dakota Department of Health or your district health unit for sampling and testing advice. If you suspect a problem with a particular chemical, you may request an analysis for that specific chemical. To determine only the general mineral content of your drinking water, check with a laboratory for more specific instructions.

Laboratories Certified for Water Testing*

Astro-Chem Lab, Inc.
4102 Second Ave. W
PO Box 972
Williston, ND 58801
701.572.7355

Fargo Cass Public Health
401 Third Ave. N
Fargo, ND 58102
701.241.1360

First District Health Unit
801 11th Ave. SW
PO Box 1268
Minot, ND 58702
701.852.1376

Minnesota Valley Testing Laboratories
1411 S 12th St.
Bismarck, ND 58504
701.258.9720
1.800.279.6885

Southwestern District Health Unit
2869 Third Ave. W
Dickinson, ND 58601
701.483.0171

Grand Forks Public Health Dept.
122 S Fifth St., Ste. 210
Grand Forks, ND 58201
701.787.8100

For chemical analysis:
Division of Chemistry
2635 E Main Ave.
PO Box 937
Bismarck, ND 58506
701.328.6140

*These laboratories may not be certified for every test. Charges for services will vary. Check with the laboratory to ensure it can perform the tests you need.

Note: High concentrations of chlorine on or near the well screen in waters high in iron or iron bacteria may result in oxidation of iron on the well screen. This may partially plug your well screen, reducing the rate at which water enters the well.

QUANTITY OF DISINFECTANT REQUIRED

(to give a dose of about 100 milligrams per liter or 100 parts per million)

Diameter of Well Pipe in Inches	Disinfectant for every 10 feet of water in your well		
	5-1/4% Sodium Hypochlorite*	65% Calcium Hypochlorite**	
		Tablets	Powder
2	2 1/2 teaspoons	1/4 tablet	1/2 teaspoon
3	2 Tablespoons	1/2 tablet	3/4 teaspoon
4	1/4 cup	1 tablet	1 1/4 teaspoon
5	1/3 cup	1 1/4 tablets	2 teaspoons
6	1/2 cup	1 3/4 tablets	1 Tablespoon
8	1 cup	3 1/4 tablets	1 1/2 Tablespoons
10	1 1/4 cup	5 tablets	2 Tablespoons
12	2 cups	8 tablets	3 Tablespoons
18	4 cups	16 tablets	1/2 cup
24	1/2 gallon	30 tablets	1 cup
36	1 gallon	65 tablets	2 cups
48	2 gallons	116 tablets	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 supply companies*