



WELL DISINFECTION PROCEDURE

Chemicals

The two forms of chlorine most often used for disinfection are sodium hypochlorite and calcium hypochlorite. Use an NFS approved product for public water systems if possible. Sodium hypochlorite and calcium hypochlorite have different percentages of available chlorine. Household bleach (sodium hypochlorite) usually has 5.25 percent chlorine, while calcium hypochlorite usually has 65 percent chlorine. The dosages used in the disinfection process will vary based on this percentage (see Tables 1 & 2).

The most commonly used chemical to disinfect wells is chlorine in the form of liquid household bleach (sodium hypochlorite). Household bleach is easy to obtain, inexpensive, and already in liquid form for easy mixing. **Use fresh bleach that does not contain detergent or other additives.** Make sure all the bleach is flushed from the system before consuming the water.

Calcium hypochlorite is used to disinfect swimming pools and can be found at hardware stores and pool equipment outlets. **This material should be handled with caution since the dust will irritate the eyes, nose, mouth, and skin. Calcium hypochlorite is also highly corrosive when wet.**

Chlorination Steps

1. Calculate the amount of chlorine needed to establish a concentration of 100 ppm chlorine for coliform and non-coliform bacteria within the system (refer to Tables 1 & 2). More chlorine may be necessary if the water is turbid or with high organic material. Iron bacteria problems require 1000 ppm chlorine. Follow calcium hypochlorite directions carefully, dissolving in water before adding to your well. Dropping crystals or tablets directly into the well will not mix evenly for adequate disinfection.
2. Remove the well casing cap. Be careful not to contaminate the cap. Pour the liquid chlorine down the well casing, rinsing the walls thoroughly. If you have a hose nearby, flush hose water down the well until you can smell chlorine come out of the hose. This will mix the chlorine with the well water. If you do not have a hose nearby, then dilute the chlorine in 10 gallons of water and pour it slowly down the well, washing the casing wall. Recap your well.
3. Run water through every tap in the house, including tubs, utility sinks, showers and toilets, until you can smell chlorine. Let the chlorinated water sit in the lines for a minimum of 12 hours, preferably 24 hours. Do not use chlorinated water for pets, house plants, bathing or clothes washing.
4. After 12-24 hours, discharge the chlorinated water onto a lawn or unused land area until you no longer smell chlorine. Do not empty into streams, ditches, or lakes, or into your septic system. The little remaining chlorinated water in house water lines can be emptied into your septic system or city sewer. You can now use the water.
5. If your water was very contaminated, you may want to boil your drinking and tooth brushing water until you are certain the problem is solved. Add a teaspoon of bleach to your dish rinse water and allow dishes to air dry. Ice made from contaminated water is not safe and must be discarded. Showers and clothes washing should not pose a health risk.

Retesting

After flushing out the chlorine and waiting a **minimum of three days, preferably seven days**, you should have your water tested. Obtain a test kit from the lab, or make arrangements with a Registered Sanitarian. You may need to chlorinate more than once with heavy contamination.

If you have any questions, or your water supply has some unusual characteristics not addressed here, please call (406) 258-4755.

GENERAL FORMULA USED IN TABLES BELOW: Use lengths in feet. 2 tablespoons = 1 ounce = 28.35 grams Well diameter in ft. squared x 100 x water depth in ft. x 0.001503 = tablespoons needed % chlorine

TABLE 1. Quantities of **calcium hypochlorite** at 67% required to obtain 100ppm for water well disinfection.*

Dept of water in well (by feet)	Well diameter in feet (inches)		
	.333 (4 inch)	.5 (6 inch)	.666 (8 inch)
10	1T	1T	1T
20	1T	2T	3T
50	2T	3T	5T
100	3T	6T	3/4C
150	4T	1/2C	1C
200	6T	2/3C	1 1/4C

TABLE 2. Quantities of liquid household bleach (sodium hypochlorite) at 5.25% required to obtain 100ppm for water well disinfection.*

Depth of water In well (by feet)	Well diameter in feet (inches)		
	.333 (4 inch)	.5 (6 inch)	.666 (8 inch)
10	2-1/2T	1/2C	3/4C
20	1/2C	3/4C	1 3/4C
50	1C	2 1/3C	4 1/3C
100	2 C	4 1/2C	½ Gal.
150	3 C	1Q + 3C	3/4 Gal
200	1Q	2Q + 3/4C	1 Gal

*For iron bacteria, times quantity by 10 to obtain 1000 ppm. Quantities are as indicated: T=tablespoons; C=cups; Q=quarts; Gal=gallons 16T = 1C; 4C = 1Q; 4Q = 1Gal.