

# Well Disinfection (Chlorination)

Well chlorination is the practice of using chlorine to kill potentially harmful microorganisms in a well. Water from a new well, a repaired well, or any well which has had the sanitary seal removed should be considered contaminated. The bacteria that contaminate the water are common in the soil and on most surfaces, and may enter the well during construction or maintenance. Therefore, complete and proper disinfection of the well and water system is an important step following the construction, repair, or maintenance of any well. When bacteriological water sample analysis indicates the presence of coliform bacteria, proper disinfection is one step to take to eliminate the contamination in a well. Proper chlorination is also used when analysis indicates the presence of nuisance bacteria.

EQUIPMENT NEEDED:            Large funnel (must fit into ½" vent access port)  
   **Hose to re-circulate water** (must fit into ½" vent access port)  
   Pliers or wrench (to remove vent or well cap)  
   Five gallon bucket with non-corrosive stirring device  
   Chlorine (**see chart on back of this sheet**)  
   One gallon distilled vinegar

**Always use proper Safety Precautions when working with Chlorine. Common precautions may include: proper ventilation, eye protection, respiratory mask, long sleeves, heavy work clothing, and gloves. Other precautions may also be required.**

The procedures described below should be followed when chlorinating a well. Repeat bacteriological samples should be collected 7 to 10 days after the water is free of chlorine.

1. Remove the vent from the well seal and insert a funnel into the opening.
2. Add the correct amount of chlorine to a bucket that has been partially filled with water. Add the chlorine to the water, **NOT** the water to the chlorine.
3. Pour the chlorine solution into the well through the funnel and let it settle into the well for three to four hours. Rinse the funnel with water before pouring distilled white vinegar into well.
4. Attach a hose to a hose bibb, preferably the outside hose bibb that is furthest from the well. Remove the funnel and insert the hose into the vent opening. Turn on the water and recirculate through the hose and into the well. You should be able to detect a chlorine odor. After detecting the chlorine odor, recirculate the water for 30 minutes, being sure to thoroughly wash the inside walls of the casing.
5. Turn off the water and remove the hose. Reinstall the vent.
6. Go to the other outside hose bibbs and run the water until chlorine is detected, then turn off the water.
7. Run the water through the house plumbing, especially the hot water heater, to ensure that the entire water system is thoroughly disinfected. Be sure to run some chlorinated water into all fixtures, including dishwasher and washing machine. (See next section for more information on how to disinfect the hot water heater)
8. Let the water stand in the system for a minimum of 24 hours (use as little water as possible for 24 hours). After 24 hours you may run off the water to the surface through outside hose bibbs. It is best to run the mixture either into a road ditch or the woods. Don't run it into the septic tank or spray it on your lawn since it will upset the bacteriological balance in the septic tank or kill your grass. Someone should be present during this process to avoid pumping the well dry and damaging the pump. After the chlorine is no longer present outside, the inside fixtures may be run off.  
**Do not drink the water or use it for cooking until the water is free of chlorine.**

## Nuisance Bacteria (e.g., Iron Bacteria, Sulfate-Reducing Bacteria, etc.)

To remove nuisance bacteria, a thorough disinfection of the water supply system with chlorine is recommended. The entire water supply system, including the pressure tank and water heater should be disinfected. One must use enough chlorine to allow for the additional water in the complete system (usually ¼ - ½ lb. more than is required for the well). The standard chlorination procedure should be used to chlorinate the well and household plumbing.

## How to Disinfect a Hot Water Heater

1. Turn off the electric power to the water heater, or close the water heater gas valve. This will insure that no heating will take place in the water heater until it is refilled with water.
2. Shut the water supply valve to the water heater.
3. Drain the water from the water heater; connect a hose to the water heater drain valve and open the valve. (Opening a hot water tap in an adjoining room will speed up the process as it provides venting)
4. Periodically open the water supply valve to flush out sediments in the bottom of the hot water heater. When the water runs clear, shut the heater drain valve.
5. Refill the water heater with the chlorinated water by opening the water heater fill valve.
6. When clear chlorinated water runs out of the hot water tap in the adjoining room, close the hot water tap.
7. Restore electric power to the water heater, or re-light the pilot light and open up the water heater gas valve.
8. Allow chlorinated water to stand in water supply system for a minimum of twenty-four (24) hours.

<b>Disinfection of 6" Drilled Wells</b>				
<b>Depth of Water Column</b> (if unsure, use depth of well)	<b>Amount of Calcium Hypochlorite* to Add</b> (in ounces)	<b>Amount of Sodium Dichloro-S-Triazinetrone to Add</b> (in ounces)	<b>Amount of Trichloro-S-Triazinetrone to Add</b> (in ounces)	<b>Amount of Sodium Hypochlorite (5%)** to Add</b> (in ounces and gallons)
50'	2.2 oz	2.7 oz	1.7 oz	19 oz (.15 gal)
75'	3.3 oz	4.0 oz	2.6 oz	28 oz (.22 gal)
100'	4.4 oz	5.3 oz	3.4 oz	38 oz (.30 gal)
125'	5.5 oz	6.7 oz	4.3 oz	47 oz (.37 gal)
150'	6.6 oz	8.0 oz	5.1 oz	56 oz (.44 gal)
175'	7.7 oz	9.3 oz	6.0 oz	67 oz (.52 gal)
200'	8.8 oz	10.7 oz	6.8 oz	76 oz (.59 gal)
225'	9.9 oz	12.0 oz	7.7 oz	85 oz (.66 gal)
250'	11.0 oz	13.3 oz	8.5 oz	95 oz (.74 gal)
275'	12.1 oz	14.7 oz	9.4 oz	104 oz (.81 gal)
300'	13.2 oz	16.0 oz	10.2 oz	114 oz (.89 gal)
325'	14.3 oz	17.3 oz	11.1 oz	123 oz (.96 gal)
350'	15.4 oz	18.7 oz	11.9 oz	132 oz (1.03 gal)
375'	16.5 oz	20.0 oz	12.8 oz	142 oz (1.11 gal)
400'	17.6 oz	21.3 oz	13.6 oz	151 oz (1.18 gal)
425'	18.7 oz	22.7 oz	14.5 oz	160 oz (1.25 gal)
450'	19.8 oz	24.0 oz	15.3 oz	170 oz (1.33 gal)
475'	20.9 oz	25.3 oz	16.2 oz	179 oz (1.40 gal)
500'	22.0 oz	26.7 oz	17.1 oz	189 oz (1.48 gal)

\*Calcium Hypochlorite includes products such as HTH or Lo-Bax

\*\*5% Sodium Hypochlorite is household bleach

Achieving a chlorine concentration of 100 parts per million (ppm) in your water is the standard method of disinfection. Chlorine test strips may be used to check the concentration of the chlorine residual. Stabilized chlorine tablets, or hypochlorite products containing fungicides, algaecides, or other disinfectants should NOT be used.

### Granular Products That Can Be Used to Disinfect Wells

**(these can be purchased at some home improvement stores and at swimming pool supply stores)**

***Sodium Dichloro-S-Triazinetrone*** granular - typically 58% available chlorine

***Trichloro-S-Triazinetrone*** granular - typically 91% available chlorine

***Calcium Hypochlorite*** granular - typically 62% available chlorine

***Verify that product used does not contain "other ingredients" that could be detrimental to your well***

Equivalent Amounts: 16 oz. of 70% Calcium Hypochlorite = 19.4 oz. of Sodium Dichloro-S-Triazinetrone = 12.4 oz. of Trichloro-S-Triazinetrone. Any of these products can be used to disinfect.