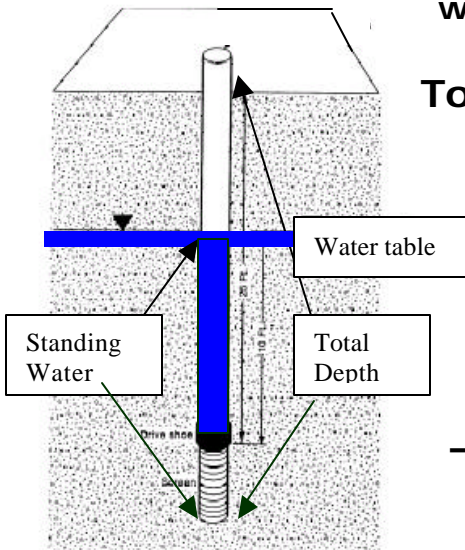


Chlorination Procedure With The Addition Of Salt



1. Calculate the standing water in the well.



Total depth – depth to water = _____
(standing water)

Volume factor

- 2" diameter well = 0.17 gal./ft.
- 4" diameter well = 0.66 gal./ft.
- 5" diameter well = 1.04 gal./ft.
- 6" diameter well = 1.50 gal./ft.
- 8" diameter well = 2.60 gal./ft.

_____ standing water × _____ volume factor
(gallons/foot) = _____ gallons
water needed to mix for treatments

***** See the attached sheet for the amount of salt & chlorine calculated for your well based on the standing water.**

Example of 100 Feet Standing Water Calculations

Concentration of salt solution	Amount of salt needed for 100 gallons H ₂ O	
1 % salt solution	8.3 pounds	
4 % salt solution	33.3 pounds	* has been field tested

2. **Add the water softening salt (foodgrade).** A 5-10 % salt solution has been utilized with success. Use solar salt or smaller sized salt. **Caution, larger salt pellets may cause pump problems if the pellets do not dissolve quickly.**



3. **Recirculate the salt solution with the hose for ~15 minutes.**
4. **During the procedure don't be surprised by the color of the water. The chlorine will cause "crud" to be freed up and turn high iron water brownish/orange.**

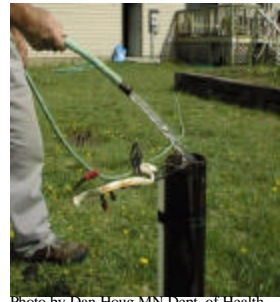


Photo by Dan Houg MN Dept. of Health

If the salt solution has removed a large amount of bio-film (crud) from your piping and it looks like it may clog the plumbing, run off the solution prior to adding chlorine or more salt. (If you run off a large amount of salt you may add more to bring it to a concentration closer to what you began with).

5. **Mix the chlorine solution with a combination of granules and liquid bleach up to a concentration of 1000 parts per million chlorine.**

Example of 100 Feet Standing Water Calculations

Chlorine Strength of Chlorine Water Mixture	Amount of Bleach Needed per 100 Gallons H₂O (Sodium Hypochlorite – contains 5% chlorine)	Amount of Granular Chlorine Needed per 100 Gallons H₂O (Calcium Hypochlorite – contains 70 % chlorine)
500 ppm	4 quarts (1 gallon)	0.60 pounds (~10 oz.)
1000 ppm	2 gallons	1.2 pounds (~20 oz.)

Solution Containers. Mix the solution in a **NEW CLEAN** garbage can, other large container, or clean a garbage can and line it with a new plastic garbage bag. Place the can(s) next to the well to pour the solution or siphon the chlorine solution from the can(s) down the well



6. **Add the chlorine solution to the well. Recirculate the water, with a hose attached to a hose bib, back to the well until hose water contains chlorine – run a few minutes more.**



Photo by Dan Houg MN Dept. of Health

7. **Pressure Tank and Hot Water Heater Preparation.**

- A. Turn the power to the water pump off and drain the pressure tank. The chlorine solution must come into contact with the entire interior of the pressure tank.
- B. If you are able to turn off the hot water heater, drain and flush the unit.
- C. Turn the water pump back on. Bring the full strength chlorine solution into the water heater. Turn the heater back on and raise the temperature to 160 degrees. **DANGER!** Make sure your water heater has a working pressure relief valve. This temperature is hot enough to scald and burn. **USE CAUTION!**



8. **Run water to all outlets** until you smell bleach to obtain contact of solution with piping. (***) **Caution - bypass all treatment units.)** Outlets include any faucet, toilet, shower, laundry tubs etc.



DO **NOT** run the chlorine solution into the washing machine if it is possible to avoid. Chlorine solution may be run up to the faucets that are connected to the machine but not into the machine.

Turn off the water and let it sit in the system for as long possible (24 hours is recommended).

11. **Flush the chlorine/salt mixture from the system with a hose attached to an outside faucet.** It will take a LONG time to flush the chlorine from the well. Keep the water flowing and the chlorine will go away.
- A. **Flush the chlorine/salt out to the "back 40".** Avoid grass, shrubs and flowers because the chlorine may damage them. Driveways are a relatively safe option.
 - B. **Never flush the chlorine/salt solution from the well into the septic system.** The septic system cannot handle the volume or the chlorine. Septic systems work by bacterial action.
 - C. **Pressure Tank and Water Heater Flushing**
After the chlorine mixture has been flushed from the well and while you are draining the pressure tank, turn off and drain the chlorine solution from the water heater. Refill the water heater with fresh water. Turn on the water heater and **turn the temperature back down to a safe level**, 110 to 120 degrees are often recommended

- D. The chlorine solution left in the pipes can be flushed to the septic system.

Washing Machines

If the chlorine solution ran into the washing machine Run the washing machine through a couple of cycles of just water with a cup of "Iron Out" (or similar product) to clear up the iron spots.

- E. Dry chlorine tablets or granules (calcium hypochlorite) dissolve slowly in cold water, especially in deep wells. If you use dry chlorine you may have the chlorine "smell" back in the mornings. Make sure **all** the chlorine is gone before you put a treatment unit back on line.

12. **Sample the water supply after all the chlorine has been flushed from the system.** A chlorine test kit is the best way to determine when the chlorine is gone from the system and a reliable sample can be obtained.

*** Bypass Treatment Units

Bypass **ALL** water treatment units during the chlorination process. The chlorine and "crud" flushed from the system can ruin these devices!

A. Cartridge Filters

Remove the filter cartridge, put the unit back together, and disinfect the housing. Replace the cartridge with a new one after the chlorine has been flushed from the system.



B. Water Softeners

Disinfect the water softener either just before or immediately after the water system is disinfected. To disinfect the softener add 1/4 to 1/2 cup of household bleach to the small fill tube (3-4 inch) in the large brine (salt) tank and do a manual recharge. (Do not use more than 1/2 cup of bleach.)



For further information on wells, drinking water quality, or groundwater check out the WDNR's Bureau Of Drinking Water and Groundwater's WEB page at: <http://www.dnr.state.wi.us/org/water/dwg>.