



PRIVATE WELL WATER IN CONNECTICUT

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Publication #27: Disinfection Procedure for Private Wells

All wells at some point need to be properly disinfected to ensure that the bacteriological quality of your well water is satisfactory. All newly constructed wells, or existing wells that have been repaired should be disinfected and tested before the water is consumed. Household plumbing should also be disinfected following any maintenance or repairs to properly sanitize internal plumbing that may have been exposed to contamination.



When should you consider disinfecting your well?

- When a water test result indicates that bacteria is present in your well water system.
- Any time the interior of the well has been exposed for any reason.
Examples: after construction, repair or maintenance of the well; repair or replacement of the well pump; repair or replacement of the well cap.
- Any time the water system plumbing has been exposed to the environment.
Examples: repair or maintenance of piping in the well, between the well and your home, or piping within the home.
- If the area around the well has been flooded.
- To reduce iron and manganese bacteria in your well water.
- If you are restarting a well and its plumbing system at a seasonal dwelling. Refer to Publication #32: Start Up and Shut Down Procedures for Seasonal Private Wells for general guidance regarding start up and shut down of your seasonal private well.

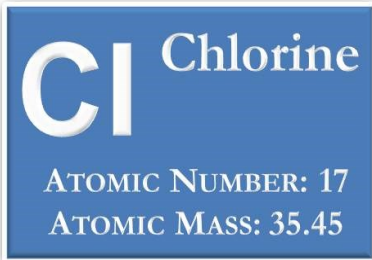
It is important to understand that shock disinfection is not a permanent solution if your private well and water system are prone to bacteriological contamination. Some common examples that can cause bacteriological problems include, but are not limited to: improper water system construction, a well that is too close to a septic system or other source of pollution, a damaged well cap or well casing, or damaged plumbing. These types of problems should be corrected prior to disinfecting the water system to help prevent recontamination. Refer to [Publication #26: Private Wells; Types & Construction](#) for more information on properly constructed and located wells.

For newly drilled wells, coordinate the disinfection and collection of any required water quality samples with the well driller, pump installer and plumbing contractor. The Connecticut Public Health Code requires new wells to be tested for bacteria and other parameters to assure safety of the water supply. Sample results must be submitted to your [Local Health Department](#) and total coliform bacteria must be absent (zero) before the water quality for your new well can be approved, at which point the well can be used for domestic purposes.



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Your well and plumbing system should be purged of any sediment, foreign matter, or corrosion materials before beginning the disinfection process. These substances reduce chlorine's effectiveness. It is also important to note that chlorine acts as an oxidant in water. This means, if your well or plumbing system has scale build up with iron, manganese, or other minerals; disinfecting with a strong chlorine solution may cause precipitates to form when chlorine is added. These solids could clog or damage your well pump, faucet aerators or other water system components. If you have concerns about

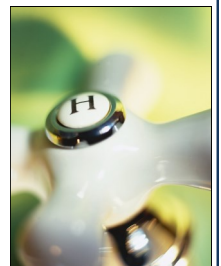
this, you may want to consult with a registered well drilling contractor, licensed plumber, or a water system professional prior to disinfection.

Please read through these instructions in their entirety prior to beginning the disinfection procedure so you can plan ahead for materials you may need to obtain before starting.

1. Go to your home's electrical power panel. Shut-off power to the well pump. Electrical power to the well pump should be off before any further work is started to prevent electrical shock when handling the well cap and wires for the well pump.
2. Carefully remove the well cap or sanitary seal. Keep in mind that the well cap and well cap gasket may be old and brittle due to age and may require replacement to ensure a watertight sanitary seal after the well disinfection is complete. If your well is equipped with an older style cap, you should consider replacing it with a new watertight well cap with a screened and shielded air vent.
3. Prepare a chlorine solution by mixing the required amount of plain, unscented chlorine bleach to about 10 gallons of water. For effective disinfection, a minimum of a 50 parts per million (ppm) chlorine dosage is specified. See Tables 1 and 2 below and "Examples" for the exact amount of chlorine compound needed to develop the required 50-ppm dosage.

Note: Use only plain, unscented household bleach.

4. Pour the 10-gallon chlorine and water solution down the well casing.
5. Turn the power to the well pump back on and run the chlorinated water through all fixtures. During this time, it is important that all parts of the water systems come in contact with the chlorinated water. This includes, but is not limited to: all faucets, the hot water heater, washing machine, dishwasher, tub fixtures, shower heads, and outdoor hose bibbs. Once a chlorine odor is noticed from the running tap or plumbing fixture, turn it off.
*If you have a water treatment device installed, consult with the manufacturer or a water system professional prior to disinfection. It may be necessary to disinfect these devices separately and to have the filter media or filter cartridge replaced.
6. Connect a water hose to one of the home's hose bibbs and connect a spray nozzle to the other end of the water hose. Spray down the interior of the well casing to promote circulation of the chlorine and water solution back down and along the inside of the well casing.
7. Once again, shut-off power to the well pump. Properly replace the well cap to prevent subsequent contamination. Ensure that all bolts are fastened with enough torque to compress the gasket or well seal to create a watertight condition between all pieces of the well cap and between the well cap and well casing. Be careful not to over tighten the bolts to prevent damaging the well cap.



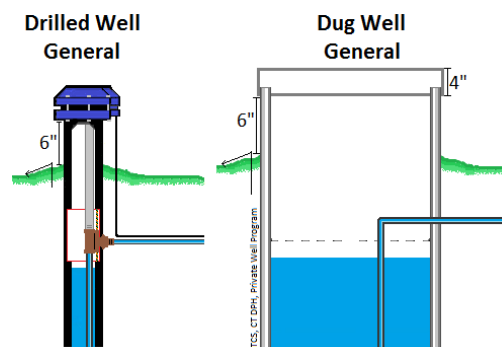
8. Allow the chlorinated water to stand idle in the well and plumbing system for at least six hours, but preferably overnight or up to 24 hours.
9. Turn the power to the well pump back on and use an outside hose bibb to flush the water to waste; however, care should be taken to avoid contact of chlorinated water with grass and other plants. Once the chlorine has been flushed from the well, turn on faucets and taps within the house to flush the chlorinated water from the plumbing system. If you have a low yielding well, be mindful to slowly flush the chlorine out of the water system so the well does not run dry. In some cases it may take a few days to completely flush all chlorinated water from the well and plumbing system.
10. All water tanks should be flushed thoroughly after the chlorine has dissipated so that any sediment formed will not interfere with the water quality analysis.
11. If possible use a free chlorine residual test kit to determine if there is any chlorine residual remaining in the water. If chlorine is still present continue to flush your water as needed. A bacteriological sample cannot be collected and analyzed until the chlorine residual is no longer detected.
12. After confirming that there is no chlorine residual remaining, contact a [state certified laboratory](#) to collect a sample for bacterial analysis. Refer to [Publication #24: Private Well Testing](#) for more information. If the test is found positive for coliform bacteria, you may want to consider resampling to confirm the first test. Occasional positive tests result may result from improper sampling technique. If the resample test indicates the presence of coliform bacteria repeat the same steps to disinfect the well and plumbing system.

Well Construction Considerations

Most private wells are either drilled or dug. In the case of a drilled well, the well casing should be steel and extend a minimum of six inches above the established grade (above ground). It should also be equipped with a watertight well cap with a screened and shielded vent. The following web site lists well caps that have been certified to be watertight: www.watersystemscouncil.org. If your well is located in a well pit, you should consider properly extending the well casing with steel casing so that it extends a minimum of six inches above the established grade. The well pit should be filled in and eliminated.

Dug wells are considered “high risk” water sources. They are typically not constructed watertight and can allow the entrance of surface water, insects, and rodents and therefore are more prone to bacteriological contamination. Dug wells should be inspected and repaired prior to disinfection. They should be tightly sealed after chlorination. Serious consideration should be given to replacing the dug well with a properly constructed drilled well when possible, or connecting to a public water system, if available.

Refer to [Publication #26: Private Wells; Types & Construction](#) for further detail regarding properly constructed and located wells.



Well Diameter	Gal/Ft of Well	Well Diameter	Gal/Ft of Well
2.5"	0.254	24"	23.4
4"	0.672	30"	36.6
6"	1.47	36"	52.6
8"	2.61	42"	71.6
10"	4.08	48"	93.6
12"	5.86	54"	119.0
16"	10.45	60"	146.0
18"	13.20	72"	211.0

The volume of water to be disinfected is based on the depth of the well minus the static water level (refer to examples and diagram below Table 2). To help find a document with information on the static water level and completed well depth of your well please refer to [Circular Letter 2014-27 Well Completion Reports](#).

Volume of Water (Gallons)	Liquid 8.25% Sodium Hypochlorite (plain, unscented bleach) ¹	Dry Calcium Hypochlorite (HTH, Perchloron or similar compound with 70% available chlorine)	# of 5-gram Tablets
50	4.8 fl. oz.	0.5 oz.	3
100	9.6 fl. oz.	1.0 oz.	6
150	14.4 fl. oz.	1.5 oz.	9
200	19.2 fl. oz.	2.0 oz.	12
300	28.8 fl. oz.	3.0 oz.	17
500	1.5 quarts	5.0 oz.	28
1,000	3 quarts	10.0 oz.	56
2,000	1.5 gallons	1 lb. 3 oz.	
3,000	2.25 gallons	1 lb. 13 oz.	
4,000	3 gallons	2 lbs. 7 oz.	

1. Household bleach sold in stores is typically 8.25% sodium hypochlorite content, check container label to verify sodium hypochlorite concentration.

Note: 1 quart = 32 fluid ounces; and, 1 gallon = 4 quarts

EXAMPLE A

Given: Well Diameter (drilled well): **6 inches**; Depth of Well: **530 feet**;
Static water level (*distance between the ground level & water level inside the casing*): **30 feet**

Calculations: Using Table 1

530 feet (*depth of well*) – 30 feet (*static water level*) = 500 feet x 1.47 gal per foot (*from Table 1*)
= 735 gallons of water to be disinfected

Dosage Required: to achieve 50 ppm Chlorine

Using Table 2:

Approximately: 2.25 quarts plain, unscented bleach; or
7.5 oz. of 70% HTH or similar compound; or
42 HTH tablets (5 grams each)

EXAMPLE B

Given: Well Diameter (dug well): **36 inches**; Depth of Well: **25 feet**; Static water level: **5 feet**

Calculations: Using Table 1

25 feet (*depth of well*) – 5 feet (*static water level*) = 20 feet x 52.6 gal per foot (*from Table 1*)
= 1052 gallons of water to be disinfected

Dosage Required: to achieve 50 ppm Chlorine

Using Table 2:

Approximately: 3 quarts plain, unscented bleach; or 10 oz. of 70% HTH or similar compound; or,
56 HTH tablets (5 grams each)

