WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH
OFFICE OF ENVIRONMENTAL HEALTH SERVICES
FACT SHEET

How to Disinfect a Private Water Well

General Recommendations

Below are the procedures for disinfecting a new water well, an existing well being placed into use or a well that has been disrupted for service or repair, such as new pump installation or reinstallation of an existing pump. Disinfectant should be placed in the well in quantities that should produce a minimum concentration of at least 50 to 100 parts per million (ppm or mg/l). Use extreme caution when following this procedure. Chlorine is a strong oxidizing agent and is highly corrosive, especially at levels over 100 to 200 ppm. It may cause skin and eye damage, or irritation to the nose and/or throat. Use goggles and rubber gloves when handling this material. We also recommend that protective clothing (splash apron) and rubber boots be worn. Always provide adequate ventilation when using chlorine and remember that chlorine is heavier than air.

1. **Determine the volume of water per foot for the well.** Using *Table I*, find the volume of water per foot for your well. Use the diameter of the well. Find the gallons per foot for that well diameter. *Example: The well is measured to have a 6-inch diameter. The gallons per foot of depth for a 6-inch well is 1.5 gallons.*
2. **Determine the depth of water in the well.** *Example: The well is 50 feet deep and the water level is at 20 feet. The well contains 30 feet of water (50-20=30 feet).*
3. **Determine the total gallons of water in the well.** Multiply the depth of water in the well determined in Step 2 by the gallons of water per foot for your well determined in Step 1. This is the total gallons of water in the well. *Example: Multiply 30 feet (the depth of the water in the well) by 1.5 gallons of water per foot to get 45 gallons of well water (30 x 1.5 = 45 gallons of water in the well).*
4. **Estimate the volume of water in the distribution system.** Total the water storage in the system, including the water heater, pressure tank, etc., and add 50 gallons for the pipeline. *Example: The system has a 30-gallon hot water heater and a 30-gallon pressure tank. 30 gallons (water heater) + 30 gallons (pressure tank) + 50 gallons (pipeline) = 110 gallons in the distribution system.*
5. **Determine the water contained in the entire system.** Add the water volume in the well determined in Step 3 and the water contained in the distribution system determined in Step 4 to determine the total water volume to be disinfected. *Example: 45 gallons in the well + 110 gallons in the distribution system = 155 total gallons to be chlorinated.*

Table I. Required Amounts of Disinfectant for about 100 ppm

Well casing diameter (inches)	Water volume per foot of water depth (gallons)	*Disinfectant Required for Each 100 gallons of Water
4	0.65	Laundry Bleach (5.25 % Chlorine) = 3 cups Hypochlorite Granules/Chips (70% chlorine) = 2 ounces
6	1.5	
8	2.6	
10	4.1	
12	6.0	

1 cup = 8 ounces measuring cup
(2 cups = 1 pint; 4 cups = 1 quart)
1 ounce = 1 heaping tablespoon granules
(16 ounces= 1pound)

*Well water containing iron, hydrogen sulfide, or organic substances may require more chemical to create a 200 ppm solution. Chlorine combines readily with these materials, making some of the chlorine ineffective as a disinfectant.

6. **Determine the amount of chlorine product required for a 100-ppm solution.** For each 100 gallons of water in the well or system use the amount of chlorine liquid or compound given in Table I. Mix this total amount in about ten (10) gallons of water. If dry granules or tablets are used, they may be added directly to drilled wells using the manufactures directions. *Example: We will use liquid household bleach containing 5 percent to 6 percent sodium hypochlorite (NaOCl). Divide 155 (total gallons) by 100 = 1.55 100-gallon units. Multiply 1.55 100-gallon units times 3 cups/100-gallon units = 4.65 cups.*
7. **Introduce the chlorine material into the well and distribution system.** The total amount of this solution shall be poured into the top of the well and splashed around the casing of the well. Ensure that the solution has contacted all parts of the well. Attach a hose to the water hydrant or faucet nearest the well and run water through the hydrant and back into the well. This will thoroughly mix the chlorine solution and well water. Start the pump, recirculating the water back into the well for at least fifteen (15) minutes. Then open each faucet in the system until a chlorine smell is evident. **If a water softener is attached it is always best to check with the water treatment company before you allow any chlorine into the water softener.** You may bypass the water softener unit throughout the entire chlorination process. It is best to verify the chlorine concentrations by using a test kit. Chlorine test papers are available through restaurant suppliers. The maximum detectable limit is 200 ppm. If chlorine is not present or is weak at any faucet, add small amounts of chlorine into the well to maintain or increase the desired chlorine concentration. Close all faucets.
8. **Let the chlorine disinfect the system.** The most difficult step is to refrain from using water from the well so that the chlorine can disinfect the system. The system should remain idle for at least 2-3 hours, preferably overnight.
9. **Flush the system to remove the chlorine.** After the water system chlorination has been completed, the entire system must be emptied of chlorine and thoroughly flushed with fresh water by running water out of each faucet or hydrant until the chlorine odor dissipates. Distribute the waste water on gravel roads or other areas without plants or aquatic life, which it might harm. **Do not allow the chlorinated water to enter the septic system.** If possible, attach a hose to outlets inside the house and distribute the water to a nongrass area away from the house. The chlorine will eventually evaporate into the atmosphere.
10. **Test or Retest the water supply for bacterial contamination.** The final step is to test or retest the water to ensure that the water source is bacteria free. Take a water sample 1-2 weeks after chlorinating the well. Although, most chlorination treatments are successful; do not drink the water until the laboratory results confirm that no bacteria are present. Retest the well every month for 2-3 months to be sure contamination is not reoccurring. If test results are negative, an annual water analysis program can be reinstated.

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