



# Disinfecting Domestic Water Wells and Storage Tanks

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QUALITY

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## □ When to disinfect

Well disinfection should be performed under the following circumstances:

- A positive total coliform or *E. coli* test
- After flooding of the well
- After casing or pump repairs - submersible type or other
- When drinking water tastes or odors change
- As part of annual maintenance
- During startup of seasonal wells

**Note:** If you suspect that your well may be contaminated, it is best to contact the local DEQ office or district health department for specific advice. Disinfecting a well can sometimes be done by the well owner, but with some wells it can be difficult to properly introduce the disinfectant into the well or other parts of the system that need disinfecting. *DEQ recommends hiring a professional such as a licensed plumber, licensed water system operator, pump installer, or licensed well driller to disinfect your well.* If a professional is not available, carefully follow the steps listed below after discussing the procedure with your [local DEQ](#) or [district health department](#):

## □ Disinfecting a drilled domestic water well

1. **Preparation.** Treatment supplies include clean water hoses, a clean 5-gallon mixing bucket, and a clean container for the sanitary well cap. Calculate the required chlorine dose using the table below. Prior to treatment, inform everyone who may use the water that it is being treated and should not be used. Provide an alternative drinking water supply for the house, such as bottled water.

**Table: Quantity of household bleach required to properly disinfect a drilled well with a concentration of 100 ppm of chlorine in clear water standing in the well.**

Use non-scented household laundry bleach (5.25% chlorine).

Depth of Water in Well (feet)*	Well Diameter		
	6"	8"	10"
10'	1 cup	1 cup	2 cups
20'	1 cup	2 cups	1 quart
30'	2 cups	1 quart	1½ quarts
40'	2 cups	1 quart	2 quarts
60'	3 cups	1½ quarts	3 quarts
80'	1 quart	2 quarts	3½ quarts
100'	1½ quarts	2½ quarts	1 gallon
150'	2½ quarts	1 gallon	1½ gallons

\* In a situation where it is inconvenient to determine the depth of well or depth of water, a minimum of ½ gallon of household bleach may be used for wells up to 8 inches in diameter with water estimated to be less than 80 feet deep. Use 1 gallon for similar size wells with water deeper than 80 feet. In case of a well yielding more than 50 gallons per minute, special procedures are required. Seek the advice of your local district health department or regional Idaho Department of Environmental Quality (DEQ) Office.

2. **Remove the sanitary well cap.** If the well has a sanitary well cap, unbolt and remove the cap from the top of the well casing to access the well. After cleaning the cap to remove debris, dirt, oil, and grease, place it in a clean container.
3. **Introduce the chlorine.** Using a bucket of clean water, mix the correct amount (see table, page 1) of non-scented chlorine with 3 to 4 gallons of water and pour the chlorine mixture so it runs down the inside of the casing.

If the well is fitted with a sanitary well seal, a threaded plug will need to be removed from the top of the seal, and a funnel placed in the hole to introduce the chlorine solution into the well.

If a storage tank (other than a pressure tank) is on the system, it may be advisable to add bleach directly to the storage tank at the same time you are disinfecting the well (see “Disinfecting a storage tank” below). Let the storage tank drain into the distribution system. After sitting 24 hours, drain the storage tank through a drain valve or through the distribution system.

**CAUTION: Do not drink the water after the introduction of chlorine, or use it for other domestic uses because of the high concentration of chlorine in the water. Normal use can resume after the system is flushed (see Step #7 below) and tests show no contamination.**

4. **Recirculate the chlorine.** Next, to recirculate the chlorine in the well, attach a clean garden hose to a nearby faucet and recirculate the water back into the top of the well casing by turning on the tap and letting the water run for approximately 15 minutes. If at all possible, spray the sides of the well casing during this process. During this time, the odor of chlorine must be detected in the water. If it is not, continue the procedure until the odor of chlorine is detected.

To recirculate the chlorine solution when the well is fitted with a sanitary well seal, a piece of tubing may need to be fitted to the end of the hose that can be inserted into the hole in the well seal.

5. **Distribute the chlorine.** After recirculating the chlorine, open all water taps, both inside and outside the house, and let the water run until the odor of chlorine is detected in each tap. Then turn the taps off. Let the chlorinated water stand in the system for at least 24 hours (4 hours minimum), if at all possible, before flushing the chlorine from the system.

√ **One note of concern:** If the system uses a bladder pressure tank which does not have a flow-through design, special precautions are needed to insure proper disinfection of the tank. After chlorine is mixed in the well and the well pump is off, open the first tap until chlorine odor is detected and the well pump starts running again. Turn off the tap and wait until the well pump stops. The chlorine solution should then be in the bladder tank. Then proceed with opening and closing the other taps as noted above.

6. **Flush the system.** To purge the chlorine from the system, open all the outside taps first and let the water run until no chlorine is detected. Flush onto a gravel drive or road. Next, open the inside taps until the chlorine is gone. **Do not** pump the highly chlorinated water into a septic system, and **do not** drain the chlorinated water directly into a stream or on vegetation.
7. **Retest.** *To determine if the water is safe to use*, a bacteriological water sample(s) should be collected several days after the chlorine is completely out of the system. To assure that all the chlorine has been flushed from the system, it is recommended that the chlorine residual be measured in the water using a chlorine test kit that uses the “DPD method” and is capable of measuring down to 0.1 ppm (parts per million) total chlorine. Disinfection should be repeated if the water sample(s) indicate the continued presence of coliform organisms. If continued

disinfection does not clear up the contamination, contact your local district health department or DEQ regional office for professional advice.

**Continue using bottled water or water that has been boiled at a rolling boil for 1 minute until sampling shows no contamination in your well.** Remember, boiling water concentrates levels of nitrates in water. This means that *young infants and women that are pregnant should use bottled water instead of boiled tap water* for drinking and cooking.

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### √ **Disinfecting a storage tank**

To disinfect a storage tank or other large volume of water, thoroughly mix non-scented household bleach (5.25% chlorine) in the reservoir, at the ratio of 1 gallon of bleach for every 1,000 gallons of water (i.e., 1 quart for every 250 gallons of water). This will give a chlorine concentration of 50 parts per million (ppm).

**CAUTION: Do not drink this water, or use it for other domestic uses because of the high concentration of chlorine in the water. Normal use can resume after the system is purged of chlorine and tests show no contamination.**