

Disinfecting Your Well

It may be necessary to disinfect your well if it has been unused for several months (seasonal use) or if it tests positive for indicator bacteria (coliforms). Problems which can result from bacterial contamination of a well include unpleasant tastes or odours as well as an increased risk of gastrointestinal illness. The method below describes a general procedure to disinfect your well. If you have any questions about this procedure, contact an Environmental Health Officer at your local Health Unit or a registered well contractor for advice.

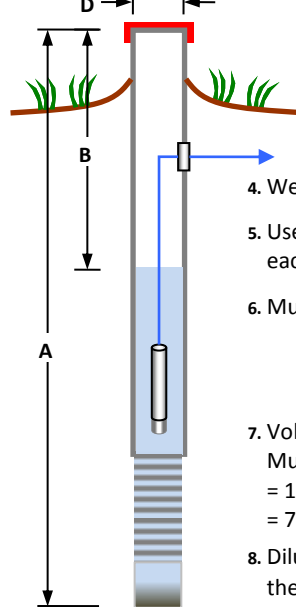
- Purchase **unscented** household bleach (5% to 6% sodium hypochlorite). Never use scented bleach or chlorine-free bleach.
- Turn off the well pump.
- Remove the well cap.
- Protect any electrical cables, to prevent the risk of electrical shock.
- Check your well driller's log or well pump installation report to find the depth of your well (A), the static water level (B), and the well diameter (D). If you have no records, see our handout on finding well dimensions. (Record these values on the inside of your well cap for future reference.)
- Calculate the amount of bleach to add using the table in **Figure 1** below. If in doubt, adding a little extra bleach is fine.
- Dilute the unscented bleach 10:1 with clean water before adding it to the well.
- Pour the diluted bleach solution into the well. To make sure that the bleach gets all the way to the bottom, **either**:
 - (a) Pour the bleach through a funnel into a hose inserted to the bottom of the well (see **Figure 2**: shallow well) , or
 - (b) Pour in the bleach at the top of the well and recirculate the well water until it is well-mixed. To recirculate water throughout the well, run a hose from the house back to the well and stick the discharge end of the hose into the top of the well casing. Turn on the pump and run it until you smell bleach coming out of the hose. (**Figure 2**: deep well.)
- Start the well pump and open all inside and outside taps one at a time.
- Close each tap one-by-one when you begin to smell bleach at that tap. Stop the pump when you can smell bleach at every tap. [Note: If you **cannot** smell chlorine bleach at any tap, open the taps fully open and run water for up to 10 minutes. If you still do not smell any bleach at the taps, repeat the procedure using twice as much bleach until the scent of bleach is evident at the taps.]
- Open the valve or plug at the top of the pressure tank just before stopping the pump to allow the solution to contact the entire inside surface of the tank. Then close the valve or plug.
- Leave the chlorinated water in the system for **6 to 12 hours**. This is a very strong chlorine solution (50 ppm; about what you should use for cleaning floors) – DO NOT DRINK THE WATER.
- Pump out the water until the bleach odour disappears, **using an outdoor tap not connected to your septic system** and away from any stream, ditch, or drain connected to a fish-bearing stream.
- Submit a sample from the well **7 days** after disinfection for a lab analysis of indicator bacteria (*E. coli* and total coliforms). Repeat the disinfection procedure if the sample contains any bacteria.

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Bleach Required to Disinfect Water Systems (50 mg/L)

Diameter (D) of Well, or Pipe		Bleach (5% to 6% hypochlorite) per depth of water column in well	
inches	mm	per 10 feet	per 3 metres
2	50	1 tsp	5 mL
4	100	4 tsp	20 mL
6	150	10 tsp	50 mL
8	200	6 Tbsp	100 mL
10	250	10 Tbsp	150 mL
12	300	14 Tbsp	200 mL
24	600	4 cups	800 mL
36	900	8 cups	2 L
48	1200	14 cups	3 L
60	1500	20 cups	5 L
72	1800	30 cups	7 L
96	2400	3 gal	13 L

* 3 tsp = 1 Tbsp; 16 Tbsp = 1 cup; 4 cups = 1 quart; 4 quarts = 1 gallon



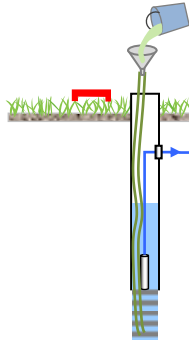
Example:

1. Depth to bottom of well (A) = 90 ft (27 m)
2. Static water level (B) = 20 ft (6 m)
3. Water column (A – B) = 90 ft – 20 ft = 70 ft (21 m)
4. Well diameter = 6 in (150 mm)
5. Use 10 tsp (50 mL) of bleach to disinfect each 10 ft (3 m) of water column
6. Multiplier = $\frac{\text{water column}}{10 \text{ ft (3 m)}}$
= $\frac{70 \text{ ft (21 m)}}{10 \text{ ft (3 m)}} = 7.0$
7. Volume of bleach = Value in table (step 5) × Multiplier (step 6)
= 10 tsp (50 mL) × 7.0
= 70 tsp (350 mL) ... about 1½ cups
8. Dilute 1½ cups (350 mL) bleach in 10 times the volume of clean water (10 × 350 mL = 3.5 L or ~ 1 gallon)

Figure 1. Calculating how much unscented household bleach is needed to disinfect your well.

Shallow Well

- Remove well cap.
- Dilute 1 part bleach in 10 parts water.
- Pour diluted bleach down hose to bottom of well.



Deep Well

- Remove well cap.
- Dilute 1 part bleach in 10 parts water.
- Pour diluted bleach down well.

- Run hose from house to well.
- Recirculate water from hose to well until scent of bleach is clearly evident.

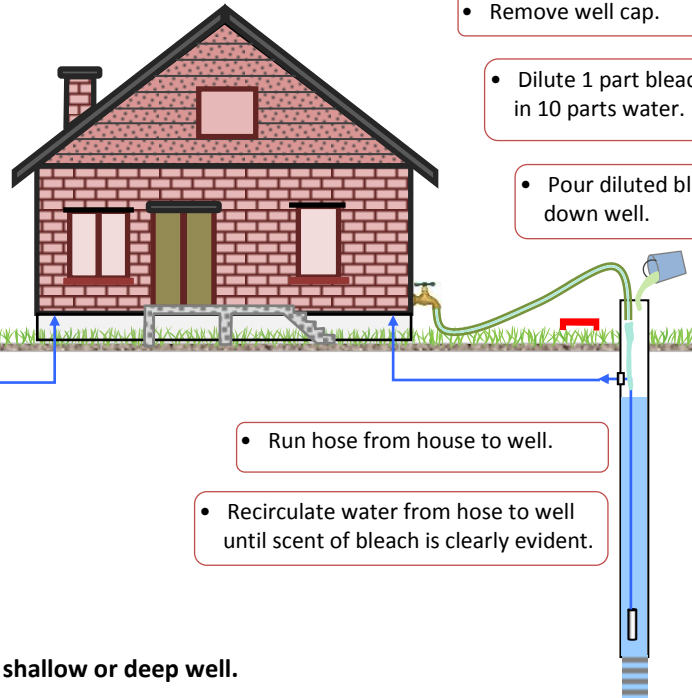


Figure 2. Adding and mixing diluted bleach in shallow or deep well.

Prepared by: D.Tamblyn, PHE, Mar 2014

Finding a drilled well's dimensions

Adapted from: www.flotecpump.com

If you are planning to disinfect your well or buy a new well pump, you need to know the well diameter, total depth, and static water level. This information is on the original well driller's log, and also on a well pump installation report from a qualified contractor. Keep these records safe! It may also be recorded on the inside of the well cap. Here are two methods you can use to determine your well dimensions if you don't have any records.

CAUTION Turn off your well pump first. Take care putting anything into your well. Don't use anything that may get caught on pipes or edges in the well. Use a fishing weight or a rounded object and tie it carefully. If you are *not* going to disinfect your well afterwards, you need to ensure that everything entering the water in your well has been carefully sanitised.
PLEASE DON'T DROP ANYTHING DOWN THE WELL ! (You may never get it back...)

1. Cotton String and Sinker Method

This is a simple method that can be done in a few minutes. Using thick cotton string makes it easier to find the static water level. Materials:

- Tape measure
- Ordinary string
- Fishing weight (sinker).

Step One – Lower weight and string into well casing

Turn off your well pump and remove the well cap. Tie a small but heavy weight ($\frac{1}{2}$ to 2 lb – deeper wells require heavier weights) to the end of a piece of string (be sure there is enough string; some wells are hundreds of feet deep). Lower the weight into the well until you feel it touch the bottom. If your well has a sump and there is silty sediment accumulated there, the bottom may feel soft and sticky. You may think the weight is stuck in the mud, but with a slow, steady upward pull it will come free in a few minutes. *Don't panic.* 😊

Step Two – Mark the string

Take up the slack and use a Sharpie or other waterproof marker to mark the string at the top of the well casing.

Step Three – Measure

Pull the string and weight out of the well. Pay attention to the string as it is withdrawn and identify the location where the string becomes wet. Mark that point with the permanent marker. Stretch the string and measure from the bottom of the weight to the ground level mark. This is the depth of your well (**A**). The normal (or 'static') water level (**B**) is the length of the dry portion of the string up to the well casing mark.

2. Floater and Sinker Method

Here is another method that uses common fishing equipment. Items needed:

- Tape measure
- Fishing rod
- Fishing weight (sinker)
- Fishing bobber (float).

Step One – Measure well depth

Turn off your well pump and remove the well cap. Get an ordinary fishing rod with a full reel of steel or strong nylon line. Attach a heavy sinker ($\frac{1}{2}$ to 1 lb) to the line, lower it down to the bottom of the well, and take up the slack. Using a permanent marker, mark the line at the top of the well casing. Reel in the line and measure the distance between the mark and the sinker. This is the well depth (**A**).

Step Two – Measure static water level

Remove the sinker and place a small, clean bobber on the fish line. Drop the bobber down the well casing until it hits the water level. Take up the slack and mark the line. Reel in the bobber and measure from this new mark to the bobber. This is the static water level (**B**).

