

Disinfecting a Well After a Flood



If you suspect that your well may be contaminated:

- Do not turn on the pump
- Do not wash with well water
- Do not drink or bathe in water until all the well disinfection steps have been completed, the well has been thoroughly flushed and returned water sample results have been satisfactory.

Safety Precautions

Turn off all power to the well area before clearing debris. Inspect all electric connections for breaks in insulation and for moisture: connections must be dry and unbroken to avoid shock. When the power is back on, a qualified electrician or plumber may need to check the equipment and wiring system.

Carefully inspect the area around the well for electrical and physical hazards. Those may include broken power lines on the ground or in the water; sharp metal, glass, or wood debris; open holes; and slippery conditions. Wear thick rubber-soled shoes or boots (preferably waterproof) to protect against electrical shock. Clear away hazards before cleaning and disinfecting well.

Do not turn on any electrical equipment if there is a persistent smell of fuel such as gasoline coming from the well-head. Allow the well to vent. If the smell persists, contact a **reputable Water Treatment Contractor**. Do not continue with disinfection of the well until the contamination in the well has been removed.

Follow these additional precautions as you prepare to disinfect the well:

- Chlorine solutions can cause chemical burns. Use rubber gloves and wear protective goggles or a face shield as well as

waterproof aprons or rain gear when working with chlorine solutions.

- When mixing and handling chlorine solutions, work in well ventilated areas and avoid breathing vapours.

Disinfection Procedure

CAUTION:

Before disinfection, check the condition of your well. Make sure there is no exposed or damaged wiring. If you notice any damage such as loose well hardware, dislodged well construction materials, or distorted casing, etc, call a well contractor.

Step 1

Scrub or hose off foreign material from the well curbing or casing. If the well cover was not properly sealed and flooding has occurred, sand and silt may have deposited in the well, requiring more cleaning.

Drilled and bored wells: Remove the well cover and thoroughly clean the well to remove all debris. Special tools or pumps may be required to remove silt and sand. Heavy deposits of silt and sand may damage well pumps if not removed before the pump is started. If sand and silt are present, remove the pump and clean it thoroughly before using.

Dug wells: Remove the well cover and thoroughly clean the well to remove all floating debris. If the well is lined, scrub the sides of the well with a brush. Empty polluted water and debris from the well using buckets or pumps. If sand and silt are present, remove the pump and clean it thoroughly before using. Rinse well walls by pouring water along the edges. Empty polluted rinse water from the well again, then allow it to refill.

Step 2

Pump water out of the well until the water is clear. If you have a low-yield well, empty at a slower rate. If available, use outside faucets to drain water from the well. Do not pump contaminated water into any existing pressure tank. Instead, disconnect piping between the pressure tank and pump to allow contaminated water to flow away from the well and tank.

Step 3

Using Table 1, calculate the amount of unscented liquid bleach required.

Step 4

Pour the chlorine solution in the well in a circular pattern to ensure contact with all sides of the casing or lining of the well. If bored and dug wells have no casing or lining, pour the solution down the center of the well hole. If possible, recirculate the water by connecting a garden hose to an outside faucet and place the other end in the well. Allow water to run for approximately 15 minutes to ensure the chlorine solution is mixed in the well.

Step 5

For wells connected to a plumbing system, remove or bypass any carbon filters that are in the system for water treatment or the filter will

remove the chlorine from the water. Open all inside and outside faucets and pump water until you notice a strong odour of chlorine at each faucet. If you do not smell chlorine after running all faucets for 15 minutes, increase the amount of chlorine by one-half of the original amount used and repeat the procedures. Stop the pump and allow the chlorine solution to remain in the well and plumbing system. Allow the water to sit in the system for 12 to 24 hours.

Step 6

After the disinfectant has set in the well for the recommended period, turn on the pump, attach a hose to an outside faucet, and direct the water to a designated area away from the well. The water in the well contains high concentrations of chlorine that can be harmful to plants, septic tanks, and streams. Empty the water in an area where plants or streams will not be harmed. Continue running the water until the chlorine odour disappears, then drain the remainder of bleach in the plumbing system from the inside faucets. With low-yield wells, empty plumbing at a slower rate to avoid over-pumping. Some wells may require that you stop for periods to allow the well to refill. Depending on the depth and size of the well, this process may take from hours to a day or longer.

Table 1:

Disinfection of Well Water with Unscented Household Bleach (Approximately 5.25% Hypochlorite)

Depth of water in well	Volume of bleach added			
	Casing diameter 15 cm (drilled)		Casing diameter 90 cm (dug)	
	New well*	Existing well*	New well*	Existing well*
1.0 m	100 ml	20 ml	3.2 L	0.6 L
3.0 m	300 ml	60 ml	9.8 L	2.0 L
5.0 m	500 ml	100 ml	16.5 L	3.0 L
10.0 m	1000 ml	200 ml	32.0 L	6.5 L

* New wells require a chlorine concentration of 250 parts per million (ppm) for effective disinfection, whereas existing wells require 50 ppm chlorine.

Sampling after Disinfection

Until water has been tested, any water for human consumption should be boiled (rolling boil for one minute), or an alternative water source used. Wait at least two days after disinfection to ensure that the chlorine has been thoroughly flushed from the system.

If the test results show no presence of both total coliform and E. coli, the water can be considered safe to drink from a microbial standpoint. Follow-up with two additional samples, one week apart. To check the safety of your water over the long term, continue to monitor bacterial quality at least twice per year or more often if you suspect any changes in your water quality.

If test results indicate the presence of either total coliform or E. coli, repeat the well disinfection process and resample. If tests continue to show the presence of bacteria, contact your Health Unit for assistance.

Chemical Contaminants:

Flood waters could also contaminate your well with oil, gas, pesticides, fertilizers or other chemicals. The well may need additional chemical treatment if:

- There have been any nearby spills as a result of the flood (damaged oil tanks, etc.).
- There is a change to your water quality such as discolouration or odour.
- You have never tested your well.
- If your well was contaminated with chemicals, contact a reputable Water Treatment Contractor for remediation and submit a water sample for chemical analysis to an accredited private laboratory.

*Content courtesy of the Haliburton, Kawartha, Pine Ridge
District Health Unit*

*Photo from "Protecting Household Drinking Water"
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