



**H P E N V I R O N M E N T A L
I N C O R P O R A T E D**

HOW TO DISINFECT A PRIVATE WELL

Disinfection of a well with chlorine is helpful in removing or destroying contamination of a temporary nature. It is employed after new well construction to neutralize contamination from equipment or surface origin, introduced during construction. It is also used when existing wells have accidentally become contaminated.

Temporary disinfection lasts only as long as the chlorine is present in sufficient amount to destroy the contamination. This type of disinfection will not remedy contamination that is entering from an underground source such as seepage from a sewage disposal system.

Disinfecting the Well

If microbial contamination is discovered in private well water, immediate disinfection is required. This task can be carried out either by ground water professionals or by the homeowner using an array of information resources available from state and local health departments and government agencies. The most commonly used well water disinfectants are sodium hypochlorite (chlorine bleach) and calcium hypochlorite (chlorinated swimming pool disinfectant).

Before disinfecting a well it is important to ascertain, to the extent possible, that the well is located and constructed such that it is protected from contamination sources. The following section lists the necessary supplies and a procedure for disinfecting private wells.

Private Well Disinfection Supply List

- ✓ EITHER sodium hypochlorite (unscented chlorine laundry bleach containing 5 to 6% sodium hypochlorite) OR calcium hypochlorite (swimming pool granules containing 65 to 70% calcium hypochlorite-available at hardware stores and pool supply stores)
- ✓ A two-gallon or larger bucket
- ✓ A garden hose long enough to reach as far as possible into the well
- ✓ A funnel that fits into the end of the garden hose

Private Well Disinfection Directions

Determine the appropriate amount of chlorinating chemical needed to obtain 100 parts per million (ppm) available chlorine for routine disinfection or 500 ppm for emergency post-flood disinfection using Chart A for sodium hypochlorite or Chart B for calcium hypochlorite.

Chart A: Quantities of Liquid Household Bleach³ (5-6%) Required for Well Disinfection

[T = tablespoon; C = cup; Q = quart; G = gallon]

Depth of Water in well (ft)	Well Diameter in feet (inches)					
	4 inches		6 inches		8 inches	
	Routine	Post-Flood	Routine	Post-Flood	Routine	Post-Flood
10	2 1/2 T	3/4 C + 1/2 T	1/2 C	2 1/2 C	3/4 C	3 3/4 C
20	1/2 C	2 1/2 C	3/4 C	3 3/4 C	1 3/4 C	2 Q + 3/4 C
50	1 C	1 Q + 1 C	2 1/3 C	2 Q + 3 2/3 C	4 1/3 C	1 1/4 G + 1 2/3 C
100	2 C	2 Q + 2 C	4 1/2 C	1 G + 6 1/2 C	1/2 G	2 1/2 G
150	3 C	3 Q + 3 C	1 Q + 3 C	2 G + 3 C	3/4 G	3 3/4 G
200	1 Q	1 G + 1 Q	2 Q + 3/4 C	2 1/2 G + 3 3/4 C	1 G	5 G

Chart B: Quantities of Dry Calcium Hypochlorite Pool Chemical⁴ (67%) Required for Well Disinfection
 [T = tablespoon; C = cup]

Depth of Water in well (ft)	Well Diameter in feet (inches)					
	4 inches		6 inches		8 inches	
	Routine	Post-Flood	Routine	Post-Flood	Routine	Post-Flood
10	1 T	5 T	1 T	5 T	1 T	5 T
20	1 T	5 T	2 T	1/2 C + 2 T	3 T	3/4 C + 3 T
50	2 T	1/2 C + 2 T	3 T	3/4 C + 3 T	5 T	1 1/2 C + 1 T
100	3 T	3/4 C + 3 T	6 T	1 3/4 C + 2 T	3/4 C	3 3/4 C
150	4 T	1 1/4 C	1/2 C	2 1/2 C	1 C	5 C
200	6 T	1 3/4 C + 2 T	2/3 C	3 1/3 C	1 1/4 C	6 1/4 C

Footnotes

1. If water is muddy or cloudy, as after a flood, run water from an outside spigot with a hose attached until the water becomes clear and sediment-free.
2. Divide the appropriate amount of chlorinating chemical among three or four bucketsful of water, mixing thoroughly.
3. Remove the well casing cap being careful not to contaminate the cap or let any debris fall into the well. Place one end of the garden hose as far as possible into the well. Place the funnel into the other end of the hose and pour the contents of each bucket through the hose while alternately raising and lowering the hose to disperse the disinfectant throughout the water supply.
4. When the correct amount of disinfectant has been added, close the well cover if the well has no pump. If the well has a pump, draw the chlorinated water through all the fixtures and outlets until the smell of chlorine is noticed. This will ensure that all piping and fixtures are disinfected.
5. Leave the chlorinating solution in the entire water supply system for at least twelve hours, but preferably, overnight.
6. Flush the chlorinated water completely out of the water supply system by opening a tap. The system will be flushed when the chlorine odor is no longer detectable.
7. After 7 to 10 days, sample water for coliform bacteria. If bacteria are detected, repeat disinfection procedure as many times as necessary until bacteria are no longer detected. If water becomes contaminated again after a short time, it is important to identify and remove the source of contamination.

More Information: Additional information may be obtained by contacting the following agencies.

Virginia Department of Health (www.vdh.state.va.us)

Maryland Department of the Environment (www.mde.state.md.us)

U.S. Environmental Protection Agency (www.epa.gov)

National Ground Water Association (www.ngwa.org)

U.S. Geological Survey (www.water.usgs.gov)