COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT, LEXINGTON, KY 40546

Disinfecting Your Well Water

E. Glynn Beck, Kentucky Geological Survey, and
Kimberly Henken, Extension Associate, Family and Consumer Sciences

Shock chlorination is a standard treatment for sanitizing your well water. Listed below are guidelines for using this treatment safely and effectively.

What Is Shock Chlorination?

Shock chlorination is the process used to disinfect private water wells with chlorine (bleach). Shock chlorination is the most widely recommended means of disinfecting the entire water distribution system (well, pump, waterlines, water heater, faucets, etc.) of bacteria.

When Should Shock Chlorination Be Used?

Owners of private water wells are solely responsible for having their water supply tested to ensure it is safe from bacterial contamination. Shock chlorination is recommended:

- at least once a year,
- when a new well is constructed,
- when an existing well is returned to service,
- when lab results indicate a presence of bacteria,
- any time a component of the water distribution system is opened for repair,
- whenever the well is surrounded by flood waters (standing water around or covering the well casing) or when well water becomes muddy or cloudy after a rain, and
- whenever bacterial contamination is suspected, as might be indicated by continuing illness.

What Precautions Should Be Taken Prior To Shock Chlorination?

Make sure that everyone in your home is warned not to use the water during the treatment process. Arrange for an alternative source of drinking and cooking water for at least 24 hours. To avoid eye and skin irritation and discoloration of clothing, wear protective eye goggles, rubber gloves, rubber boots, and clothing (coveralls or a full-length apron). **Do not add other cleaning materials to the bleach solution. Make sure all work areas are well ventilated.** Before disinfecting, check manufacturers' recommendations for pressure tanks, inline sediments filter, and water softeners. **Do not** disinfect activated carbon filters because these filters will remove the bleach until they become overloaded.

What Kind of Chlorine Should Be Used?

It is recommended that you use regular liquid household bleach, which can be purchased in local supermarkets and supply stores. Use only the plain (and generally least expensive) kind of bleach; do **NOT** buy fresh scent, lemon, or other scented bleach products.

What Equipment Will I Need to Properly Chlorinate My Water Well?

1) Bleach,
2) Protective gear mentioned above,
3) A clean water hose connected to an outside faucet, and
4) If needed, tools to disassemble waterlines and gain access to the inside of the well casing.

The Shock Chlorination Process:

1. **Clean**: Remove all loose or foreign debris (leaves, etc.) from the well cover and surrounding area. Scrub inside and outside of the well cover, exposed well casing, and well house flooring, if present, with a strong bleach solution (1/2 gallon bleach per 5 gallons clean water).
2. **Calculate**: To determine the amount of standing water in the well, use the guidelines in Table 1 below. Generally, you should use 3 pints of bleach per 100 gallons of water. Once you have calculated the volume of water in your well, add an additional 100 gallons to compensate for water in the pressure tank, water lines, and water heater.
3. **Pour and Mix**: Remove well cover. Access to the inside of the well may require disassembling the water line and sliding the well cap over. Once access is gained, the water line will need to be reassembled to continue the disinfection process. For further assistance on gaining access to your well, contact your certified water well driller. Hook a clean garden hose to the outdoor faucet nearest the well and place the end of the hose inside the well. With the well cap removed, pour the required amount of bleach into the well, making sure it runs down the sides and piping. Turn the faucet on and recirculate the bleached water through the hose back into the well, rinsing the sides, piping, and wires for a minimum of 15 minutes.
4. **Circulate**: Turn on every faucet in the house, starting with the ones closet to the well. Let the faucets run until you smell bleach, and then turn them off. Do this with both the hot and cold faucets. Run the washing machine and dishwasher on warm until you smell bleach. Flush each toilet until you smell bleach. Similarly, run water through the outside faucets and hydrants. Let the system sit for at least eight hours (preferably 12 to 24 hours) after circulation.
5. **Flush**: After the appropriate time has elapsed, use an outdoor faucet to drain the excess bleached water from the system. Once the outdoor faucet runs clear with no bleach smell, the inside faucets can be cleared. Be sure to run the hot water, dishwasher, and washing machine to flush the lines.
6. **Test**: Have the water tested for bacteria a week or two after the disinfection to ensure the well has been properly disinfected. Please contact your local health department for testing information.

Determining the Amount of Chlorine to Mix with Your Well Water

Step 1: The number of **"feet of water standing in the well"** can be calculated by subtracting the **"static water level"** (distance from the top of the well to the top of the water) from the **"total depth"** (distance from the top of the well to the bottom of the well) as in Calculation 1. If you do not have this information, call your certified water well driller and ask for your well information. A certified driller can also measure your well if needed.

Step 2: After you have calculated the **"feet of water standing in the well**," you will need to calculate the **"gallons of water in well**." Measure the inside diameter of the well casing. Refer to **Table 1** for the appropriate gallons of water per foot of water. Multiply the **"feet of water standing in the well"** by the **"gallons of water per foot of water"** as in Calculation 2. Don't forget to add 100 gallons of water to your total.

Calculation 1: Total depth – static water level = feet of water standing in the well (see Figure 1)

Calculation 2: Feet of water standing in the well x gallons of water per foot of water = gallons of water in well

Table 1. Well Volume

Well Diameter (inches)	Gallons of water per foot of water depth (Gallons/Feet of Water)	Well Diameter (inches)	Gallons of water per foot of water depth (Gallons/Feet of Water)
2	0.163	12	5.87
3	0.367	20	16.23
4	0.653	24	23.5
5	1.02	36	52.9
6	1.47	48	94
8	2.61	60	147

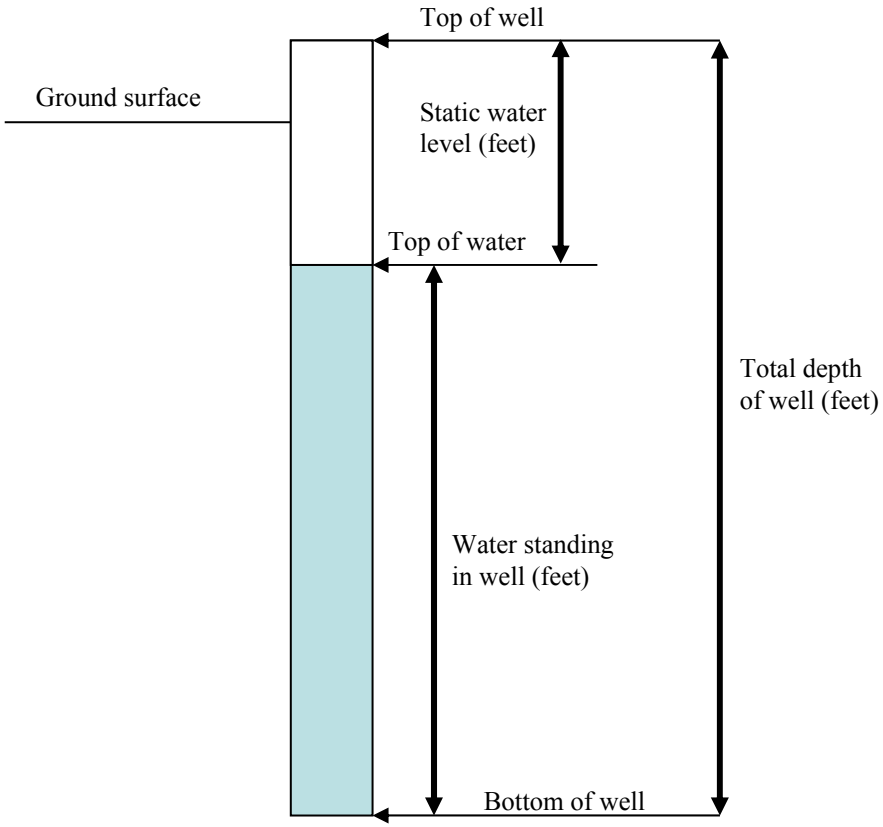

Figure 1. A generalized diagram of a water well.

Disinfection and Well Maintenance Record:

Method/Type of Maintenance	***Date***
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

County Health Department Phone Number: _____

Additional Numbers: _____

Additional Sources of Information

1) "Routine Water Well Maintenance and Disinfection Guide," Kentucky Division of Water. Document can be accessed on the web at: http://kywater.org/GW/GWB-tech_services.htm.
2) "Disinfecting Your Well Water: Shock Chlorination," Cooperative Extension Service, University of Georgia, Household Water Quality Series 4. Document can be accessed on the web at: http://www.fcs.uga.edu/pubs/PDF/HACE-858-4.pdf.
3) "Shock Chlorination of Domestic Water Supplies," Cooperative Extension Service, University of Nebraska-Lincoln. Document can be accessed on the web at: http://www.ianr.unl.edu/pubs/water/g1255.htm.

ENRI #222. Original November 2004; Revised October 2014.

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