

Shock Disinfection of Water Supply Systems

When a water supply has been exposed to bacterial contamination, it is advisable to disinfect the system using a commercial chlorine compound such as chlorine bleach. Disinfection should occur after: construction of a new water supply, repairs are made to an existing water supply, a positive coliform or E. coli test, or any time the well cap or lid has been removed.

The disinfection process outlined below is intended to eliminate the effects of previous contamination, but will not continue to disinfect or render safe a water supply that is continuously or intermittently contaminated. Therefore, before disinfecting the water supply system, all sources of pollution should be eliminated and proper repairs should be made. Contact a water system specialist or the Tompkins County Health Department (TCHD) for advice.

The most convenient source of chlorine is ordinary household bleach. Chlorine bleach contains about 5.25% chlorine (sodium hypochlorite) and is available at most grocery stores. Note that "Ultra" Chlorine Bleach products contain 6% chlorine. If possible, use NSF approved chlorine, as other types have additives in them. **DO NOT** use scented bleach. The Health Department does not recommend the use of chlorine pellets for shock disinfection as they take longer to dissolve and therefore may not provide adequate disinfection. In addition, not all pellets are NSF approved, some are intended for use in pool systems and contain chlorine stabilizers and possible algaecides, not fit for human consumption.

Shock Disinfection Procedure:

1. Ensure that you have potable drinking water (bottled water or disinfected well water) available. Your well water will be heavily chlorinated for 1-2 days after this procedure, so you may consider doing laundry and showering before you begin.
2. Disconnect carbon or charcoal filters. Chlorinated water should be allowed to pass through water treatment devices such as softeners, iron filters and water sand filters to disinfect them.* Water softeners can be shocked separately by adding 1/2C household bleach into the salt (brine) solution. Check with the manufacturer to ensure chlorine will not damage the water treatment equipment. To save energy during this procedure, turn your hot water heater to pilot if it is gas, or off if it is electric.
3. Refer to the chart on the back of this sheet to determine the amount of chlorine to use. Using more chlorine than is recommended is not advisable and can do harm to your sewage system and your well. Dilute the chlorine in a 5 or 10 gallon bucket with water, then pour this dilution into the well casing, dug well, reservoir, or other structure to be disinfected.
4. Run the hose into the well again for at least 10 minutes, or until you smell a strong chlorine odor, to mix and recirculate the chlorine solution. Be sure to rinse around the inside of the casing and disinfect the well cap as well. Cover the well.
5. Turn on each indoor and outdoor tap, one at a time. When the water coming out has a strong chlorine odor, turn that tap off and proceed to the next one. Allow the chlorine solution to sit in the distribution piping for a minimum of ten hours. This step sanitizes the distribution piping.
6. Flush the chlorinated water from all the lines after the contact time has elapsed. You may want to run water through a hose to the road ditch or a location away from the well or septic system before turning on the indoor faucets. This is not required, but prevents the exposure of your septic system to high levels of chlorine. At this stage, the water will probably be discolored and may contain some particles and sediment. Repeated exposure to elevated chlorine levels can negatively impact the functioning of your septic system. Also, be aware that heavily chlorinated water can be harmful to your lawn, trees, or garden.

7. Reconnect any water conditioning equipment you may have disconnected. Continue to use the water for all household purposes except those intended for consumption (drinking, ice-making, washing of fruits and vegetables to be eaten raw). After one to two weeks, collect a water sample for microbiological testing. It is critical when resampling that no chlorine be present in the water. If the bacteriological problem has not been eliminated, contact the TCHD for further advice and assistance.
8. Ensure that the water continues to be safe to drink by testing the water for bacteria again, 2 to 3 months after the shock chlorination procedure.

Quantities of liquid household bleach, 5.25% sodium hypochlorite, required for water well disinfection:

Table 1: **10 hour minimum contact time**
(100 ppm chlorine concentration)

Feet of Water in Well	Well Diameter (inches)				
	3	4	5	6	8
30	1/2C	3/4C	1C	1 1/4C	2 1/2C
40	1/2C	3/4C	1 1/4C	2C	3 1/4C
60	3/4C	1 1/4C	2C	2 3/4C	1 1/4Q
80	1C	1 3/4C	2 1/2C	3 3/4C	1 1/2Q
100	1 1/4C	2C	3C	1Q	2Q
150	1 3/4C	3C	1 1/4Q	1 3/4 Q	3Q
200	2 1/4C	1Q	1 1/2Q	2 1/4Q	1G
250	2 3/4C	1 1/4Q	2Q	2 3/4Q	1 1/4G
300	3 1/2C	1 1/2Q	2 1/4Q	3 1/2Q	1 1/2G

KEY: C = cups Q = quarts G = gallons

Note: Caution should be exercised when handling bleach solutions. If chlorine accidentally gets on your skin, immediately flush the area with clean water and follow instructions on bottle label.

* If your water system includes a storage tank, contact the Health Department for further information on proper treatment.