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Shock Chlorination of Wells and Springs

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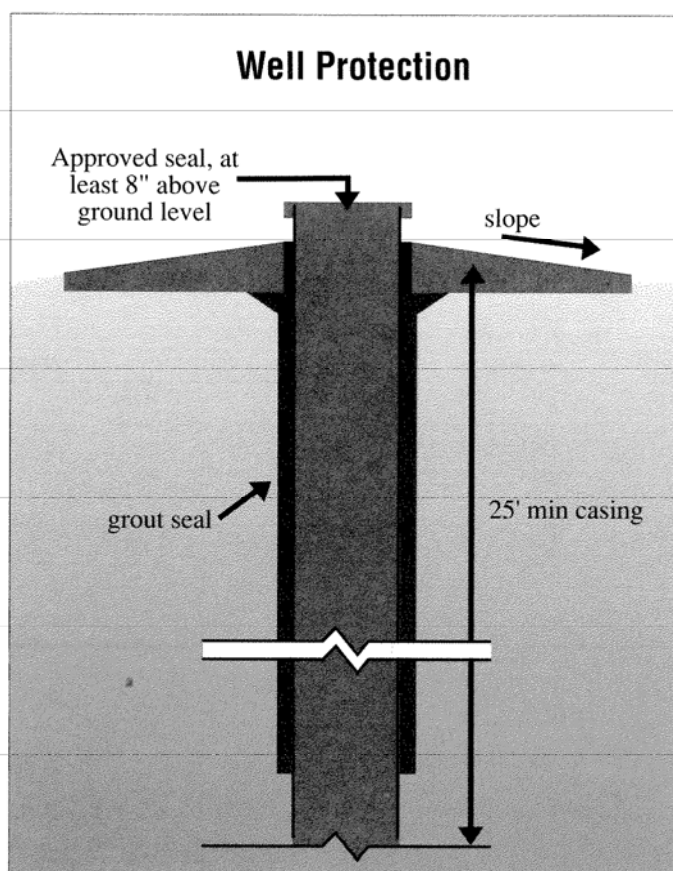
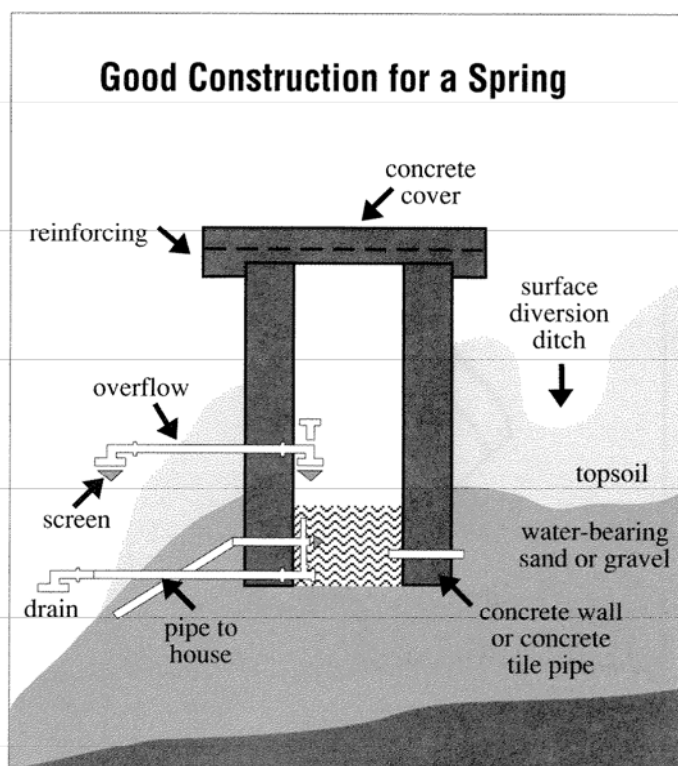
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What should I do if my water is contaminated with bacteria?

First, don't panic! Bacterial contamination is very common. Studies show that more than 40 percent of private water supplies are contaminated with coliform bacteria. Spring-water supplies are the most frequently contaminated, with more than 70 percent containing coliform bacteria.

Next, consider **improving protection** of a well or spring from the inflow of surface water if the supply is contaminated with bacteria. It is important to remember that the ground water is probably not contaminated in these cases; rather the well is funneling contaminants down into the ground water.

Although well pits were the common method of construction several years ago, they are no longer considered sanitary construction.



The well casing of a properly protected well extends above the surface of the ground. The ground slopes away from the well to prevent water from collecting around the casing.

Develop a properly protected spring underground and channel the water to a sealed spring box. At no time should the water be exposed to the ground surface.

It is important to **keep the plumbing system clean** to maintain a sanitary water supply. Each time work is done on the plumbing or pump, the entire water system should be disinfected with chlorine. Simply pulling the pump out of the well, setting it on the grass to work on it, and returning it to the well is enough to contaminate the well with bacteria.

Shock chlorination is the procedure for cleaning and sanitizing a well or spring with chlorine. Concentrations of chlorine used in shock chlorination are 100 to 400 times the amount of chlorine found in “city water.” The highly chlorinated water is held in the pipes for 12 to 24 hours before it is flushed out and the system is ready for use.

Periodic shock chlorination also may be effective to reduce an **iron bacteria** problem.

For wells, the amount of chlorine needed to shock chlorinate a water system is determined by the amount of water standing in the well. Table 1 lists the amount of chlorine laundry bleach or powdered high-test hypochlorite (HTH) needed for wells. If in doubt, it is better to use more chlorine than less.

Table 1. Amount of chlorine needed for shock chlorination.

Laundry bleach (about 5.25% Hypochlorite)

| Depth of water in well | Casing diameter | | | | |
|---------------------------|-----------------|----------|----------|----------|---------|
| | 4 inch | 6 inch | 8 inch | 10 inch | 12 inch |
| 10 feet | ½ cup | 1 cup | 1½ cups | 1 pint | 2 pint |
| 25 | 1 cup | 1 pint | 2 pints | 3 pints | 4½ pts |
| 50 | 1 pint | 1 quart | 2 quarts | 3 quarts | 1 gal |
| 100 | 1 quart | 2 quarts | 1 gal | 1½ gal | 2 gal |
| 150 | 3 pints | 3 quarts | 1½ gal | 2 gal | 3 gal |

High-Test Hypochlorite (HTH 65-75% Hypochlorite)

| Depth of water in well | Casing diameter | | | | |
|---------------------------|-----------------|--------|--------|---------|---------|
| | 4 inch | 6 inch | 8 inch | 10 inch | 12 inch |
| 10 feet | — | — | — | — | — |
| 25 | — | — | — | ¼ lb | ½ lb |
| 50 | — | — | ⅓ lb | ½ lb | ¾ lb |
| 100 | — | ⅓ lb | ¾ lb | 1 lb | 1½ lb |
| 150 | ¼ lb | ½ lb | 1 lb | 1½ lb | 4 lb |

To shock chlorinate a well:

1. Pour the proper amount of chlorine bleach or powdered chlorine dissolved in a small amount of water directly into the well. (Figure 1.)
2. Connect a garden hose to a nearby faucet and wash down the inside of the well. (Figure 2.)
3. Open each faucet one by one and let the water run until a strong odor of chlorine is detected. If a strong odor is not detected, add more chlorine to the well.
4. Let the water stand in the water system for at least 12 to 24 hours.
5. Flush the system of remaining chlorine. Start by turning on outside faucets and letting them run until the chlorine smell dissipates. Let the water run on the

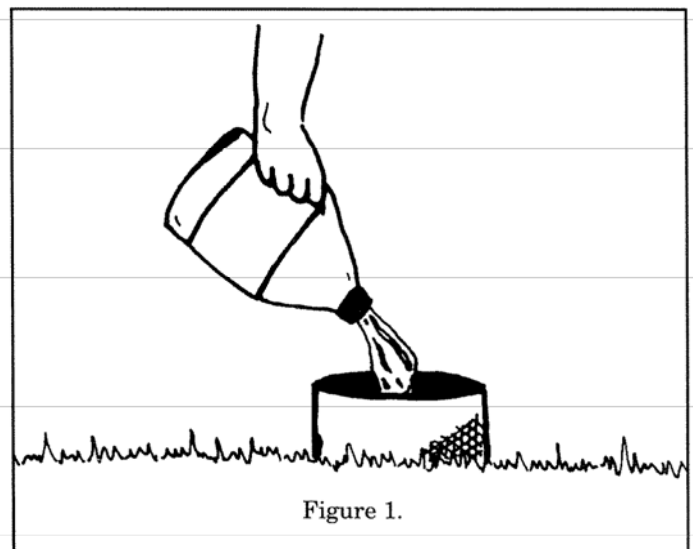


Figure 1.

ground to reduce the load on your septic system. Finally, run the indoor faucets until the system is completely flushed.

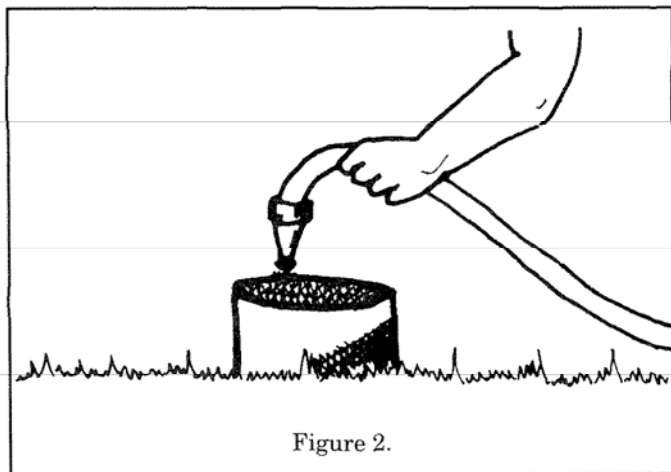


Figure 2.

Shock chlorination of a spring is more difficult. If possible, divert spring water away from the spring box. Mix about $\frac{1}{2}$ cup of household bleach in 5 gallons of water and scrub the walls of the spring box or holding tank or both. Return the flow of spring water back into the spring box and let the fresh

water carry the chlorine through the pipeline to disinfect the plumbing.

Most water treatment equipment, such as water softeners, iron filters and sand filters, should also be shock chlorinated. Check the manufacturer's literature before chlorinating treatment equipment and pressure tank to prevent damage from strong chlorine solutions. *Do not* chlorinate carbon or charcoal filters; doing so will use up their capacity.

Be careful when handling concentrated chlorine solutions. Wear rubber gloves, goggles and a protective apron. If chlorine accidentally gets on your skin, flush immediately with clean water.

Never mix chlorine solutions with other cleaning agents or ammonia, because toxic gases are formed.

Do not use "fresh scent" bleach or other special laundry products to disinfect wells. Use the plain and usually least expensive laundry bleach.

Retest your water supply for bacteria after waiting 1 to 2 weeks. If shock chlorination does not eliminate a bacteria problem, continuous disinfection may be necessary.

For more information on disinfection of water systems, call or visit your county Extension office and ask for Bulletin 765, *Bacteria in Drinking Water*.

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