pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DISINFECTION OF HOME WELLS AND SPRINGS

Editor's Note: The disinfection procedure described below is only a temporary measure for use by homeowners to treat for bacteriological contamination (not including the organisms that cause giardiasis or cryptosporidiosis) and may *not* be used by public water suppliers. It should not be considered a permanent correction for a home groundwater source that is continuously exposed to microbiological contamination due to improper location and/or construction.

Disinfection of a home groundwater source should be performed under any of the following conditions:

- After completing construction of a new well or spring supply
- When repair or reconstruction of a well or spring, pumps or attached piping is completed
- If the well or spring has been temporarily flooded or subjected to another temporary source of bacteriological contamination
- Upon receipt of a laboratory report indicating an unsatisfactory bacteriological analysis of the well or spring supply

MATERIALS NEEDED

You will need a two-gallon or larger bucket, a length of garden hose long enough to reach as far as possible into the home water source, a funnel that fits into the end of the garden hose, and a suitable quantity of a liquid or granular chlorinating compound.

Chlorinating compounds are sold at grocery, hardware, plumbing, and swimming pool supply stores under various trade names. You should look for one of the following:

1. Liquid Forms
   - Unscented laundry bleach containing five to six percent sodium hypochlorite
   - Sodium hypochlorite solution containing five to 14 percent sodium hypochlorite

   NOTE: Do not use a laundry bleach containing scent additives. These additives should not be consumed. Since liquid laundry bleach weakens with time, obtain a fresh supply rather than using old laundry bleach you may have at home.
2. Granular Forms
   - Swimming pool granules containing 65 to 70 percent calcium hypochlorite
   - Calcium hypochlorite granules (65 to 70 percent)

   NOTE: Do not use stabilized chlorine products that are meant for swimming pools or non-chlorinated "pool shock" products. These products are not intended for disinfecting wells or springs. There are fast dissolving pellets containing chlorine that are specifically made for disinfecting wells. This should not be confused with the larger stabilized chlorine pellets (one to three inches in diameter) that should not be used. Please check the product label.

Chlorinating products must be handled in accordance with the manufacturer's directions. Failure to follow instructions could cause bodily injury. Wearing eye and body protection during the procedure is strongly recommended. Do not drink well water containing high levels of chlorine. The water should be tested for bacteria after the disinfection procedure has been completed. Until tested and found potable, bring the water to a rolling boil for at least one minute before consuming or using for food preparation.

PROCEDURE

1. First, remove any cover over the well casing or spring vault to allow access to the water source.
2. Then, add the appropriate amount of chlorinating compound (see below) to three or four buckets of water (6 to 10 gallons total) and mix thoroughly.
   - For liquid chlorinating products with 5 to 6 percent available chlorinating chemical, use about 1½ quarts of the chlorinating product.
   - For liquid chlorinating products with more available chlorinating chemical, reduce the amount used. For example, for products with 10 percent, use about ¾ quart or for products with 14 percent, use about ½ quart of the chlorinating chemical.
   - For granular chlorinating chemicals with 65 to 70 percent available chlorinating chemical, use about 4 ounces (8 tablespoons) of the chlorinating product.

   The process of mixing the appropriate amount of chlorinating product with six to ten gallons of water is important for the following reasons:
   - It helps to mix the disinfectant evenly through the water in the well and force the disinfectant into the surrounding water-bearing rocks.
   - It prevents the concentrated chlorinating chemical from corroding the metal pump and other metal parts of the well.
3. These amounts of chlorinating products will disinfect about 150 gallons of water to 100 - 150 parts per million (ppm). That corresponds to 100 feet of water in a 6-inch diameter well, a spring vault with inside dimensions of 5 feet long by 5 feet wide and a water depth of 1 foot, or a dug well with an inside diameter of 5 feet and a water depth of 1 foot. If your well or spring holds more or less water, the amount of chlorinating product should be increased or decreased proportionately.
4. Place one end of the garden hose into the well or spring (remove the pump, if necessary) so that the hose is as far into the well or spring as possible.
5. Place the funnel into the other end of the hose and, with help, pour the contents of each bucketful of diluted chlorinating product through the hose while alternately raising and lowering the hose to disperse the disinfectant throughout the water supply.
6. When the appropriate amount of disinfectant has been added to the water supply, do the following:
   - If the water source has no pump, close the cover over it.
   - If the water source has a pump or is piped to a house or other outlets, draw the chlorinated water through all the fixtures and outlets until the smell of chlorine is noticed, so that all of the piping and fixtures are disinfected. After the odor is noticed, turn off the water at the fixture or valve outlet.
   - In some cases involving wells, running the water from fixtures may not produce a chlorine odor quickly. In those cases, it may be necessary to run the water from an outside faucet through a garden hose and back into the well to further mix the chlorinating chemical into the well water.
7. The chlorinating solution should remain in the entire water supply system for at least four hours and preferably overnight. The water should be pumped out after that period until no odor of chlorine remains at the fixtures and outlets. Please avoid discharging water containing detectable amounts of chlorine into storm drains, waterways, ponds, creeks, etc. Fish and aquatic animals are very sensitive to very low levels of chlorine and can be killed.
8. Once the water source is chlorine-free, wait an additional 2-5 days and then resample for bacteria. If total coliform organisms are present, the water should not be consumed unless it is brought to a rolling boil for at least one minute. If total coliform organisms are not found, the water is considered bacteriologically potable. However, the well or spring should be sampled for bacteria at least annually.
9. If the well or spring continues to be contaminated after disinfection and sampling or is found to be contaminated as the result of a future sample, the construction or location of the water supply should be re-evaluated.

For more information, visit www.depweb.state.pa.us, keyword: Drinking Water.