

# Guidance for Disinfection of Wells

The purpose of disinfection is to destroy harmful (pathogenic) organisms. The type and extent of disinfection used is determined by the source and condition of the water to be treated. Both CHLORINE RESIDUAL and CONTACT TIME are essential to effectively kill pathogenic microorganisms.

## DISINFECTION OF HOUSEHOLD WELLS AND HOUSEHOLD WATER SYSTEMS

Well disinfection can eliminate or reduce many different kinds of harmful bacteria and viruses as well as harmless bacteria which can cause unpleasant taste and odors. However, disinfection will **not** correct water problems caused by chemical contamination from nitrate, fuels, pesticides, or other substances. Well disinfection should be performed under the following circumstances:

- When coliform bacteria are present in the water
- After flooding of the well
- After plumbing installation, e.g. softeners, sinks, filters
- After casing or pump repairs - submersible types or other
- When water taste or odor changes, e.g. from iron or sulfur reducing bacteria
- As part of annual maintenance
- During startup of seasonal wells

The following is a suggested procedure for disinfecting a household well and water system. Should you have any concerns about safely disinfecting your well, you are encouraged to hire a licensed well driller or licensed pump contractor.

1. You will first need to choose the type and quantity of disinfectant. The most common disinfectant is household bleach (sodium hypochlorite). **Note: Do not use scented bleach or any swimming pool products containing stabilized chlorine.** The table below should help you determine how much household bleach to use.

Chlorine compound required to dose 100 feet of water-filled pipe at 50 parts per million*	
Diameter of pipe or casing	5% available chlorine (household bleach)
2	2 ounces
4	9 ounces
6	20 ounces
8	34 ounces (4 ¼ cups)

\* A smaller dose may be sufficient for your well and household system

2. Pump the well until water is relatively clear. Turn off the pump.
3. There should be a vent or plug that can be opened in the top of the well casing. If there is no threaded plug in the well seal, you should have the well disinfected by a licensed well contractor or licensed pump installer. It is recommended that you first add the bleach to a clean bucket of

water. **Always read the label on the bleach container and follow manufacturer use instructions.** Pour the bleach solution into the well using a funnel.

4. Allow the well to stand for 30 minutes to permit chlorine to mix in the well water.
5. If possible, connect a garden hose to the faucet nearest the well and turn on the pump. Then use the hose to wash down the inside of the well casing with chlorinated water. This can be done by returning the water through the chlorination opening.
6. Turn on each outlet (hose bibs, faucets, toilets) one at a time until a chlorine odor is detected. You may also use chlorine test strips or a test kit to measure for detectable chlorine. Once chlorine is detected, close all outlets.

**CAUTION!**

Water softeners, filtration systems, or other water treatment units should be disinfected because such equipment may harbor bacteria. However, treatment units and appliances (e.g. washing machines and dishwashers) may be damaged by excessive amounts of chlorine and may need to be by-passed during the process described in this handout. Follow manufacturer instructions for how to disinfect your particular appliances.

**CAUTION!**

Be aware that these procedures may loosen sediment, rust, and biofilm deposits within the well system, causing temporary problems with sediment, rust particles, discoloration and plugging of filters and screens. If your well has not been disinfected for many years, you may wish to begin with a weaker solution of chlorine. If the water runs red or brown, pump it out on the ground surface without re-circulating it back into the well or through the house. Once the color gets lighter, mix a new chlorine solution batch and begin the process again.

7. Let the chlorinated water stand in the well, the storage tank, and any piping in the house overnight (24 hours is preferable). The effectiveness of disinfection is the product of the concentration of disinfectant and the amount of time the water is in contact with the disinfectant.
8. After the appropriate time has elapsed, use an outdoor faucet(s) to drain the excess bleached water from the system.

**CAUTION!**

\*Do not run the chlorinated water into your septic system as this can kill many of the beneficial bacteria in the system. Also, the amount of water required to flush the well may hydraulically overload and damage the septic system.

\*Since a strong chlorine solution may harm vegetation, dispose of the chlorinated water away from sensitive plants.

\*Do not discharge water into a lake or stream as this may harm aquatic life.

**Once the outdoor faucet(s) runs clear with no bleach odor**, the inside faucets can be cleared. Be sure to also run the hot water to flush the lines.

9. Once you are sure there is no more chlorine left in the system, the water should then be tested for coliform bacteria to be sure that it is safe for drinking. The disinfection process may need to be repeated.

### *Disinfection of Household Wells Continued.....*

#### **\*SAFETY TIPS\***

#### **ELECTRICAL**

EXTREME CAUTION is advised, as you will be working with electricity and water! Potentially lethal voltages exist! If you are not acquainted with working with electricity, seek professional advice! Your safety precautions should include:

- Turn off all power to the pump before removing the well cap
- While the power is off, examine for chaffed wire insulation or missing wire nuts and repair as necessary
- Wear rubber soled shoes or boots, preferably waterproof

#### **CHEMICAL**

Severe eye damage may result from contact with chlorine, including bleach and highly chlorinated household water! Your safety precautions should include:

- Warn users of the water to not drink or bathe in the water while chlorine is still present in the system
- Do not leave bleach jugs within reach of children - ingestion of bleach is the most common toxic exposure for children in the U.S.
- Wear gloves, as well as protective goggles or a face shield when working with the bleach.

#### **RESPIRATORY**

Well pits and storage tanks pose an extreme hazard as they frequently contain a build-up of toxic gases or simply lack sufficient oxygen to sustain life!

- **DO NOT ENTER WELL PITS OR STORAGE TANKS!** Death can occur in even a shallow well pit. Refer disinfection of wells in pits AND storage tanks to licensed well or pump contractors.

**For more information, please contact the  
Shasta County Environmental Health Division at 530-225-5787**