

## **Shock Chlorination**

Proper shock chlorination will disinfect:

1. The entire well depth
2. The porous water-yielding geological formation around the bottom of the well shaft
3. The pressure system
4. Some of the water treatment equipment (**CAUTION** – some water treatment equipment/filters will be **permanently damaged by chlorine**, or will be rendered ineffective, so be sure to check that each element in your water purification system can tolerate chlorination. If not, remove it, divert chlorination around it, or plan to replace it after shock chlorination is completed. This includes any filters in the system, ex activated charcoal filter. Particulate/sediment filters may stay in line during shock chlorination.
5. The distribution system

Shock chlorination is **recommended** whenever a well is new, repaired or found to be contaminated. It is essential following a flood or entrance of surface water into the well. It is also done to control nuisance problems such as iron bacteria and sulfur bacteria.

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Before shock treatment, warn everyone not to use the water. Children and elderly persons in the household may require special care. Strongly chlorinated water (if less than 500 ppm chlorine) is not harmful to livestock but they will refuse to drink unless very thirsty. Make provisions for drinking water before doing a shock chlorination treatment, particularly if the chlorine is to be left in the system overnight.

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**Proper and effective shock-chlorination procedure requires:**

1. A dose of 50 to 200 ppm of free chlorine evenly distributed throughout the piping and fixtures
2. Testing of the residual to verify that the levels are present at the fixtures and hose bib or valve sections.

3. Contact time with the piping, undisturbed for 12 to 48 hours. The longer contact time the better the result.
4. Retesting of the chlorine residual after 12 hours

**If the chlorine residual is less than 10 ppm after 12 hours, repeat the entire procedure above. If the beginning dose is 50 to 100 ppm and the remaining residual after 12 hours is less than 10 ppm, this indicates severe bio-fouling or large amounts of dirt or slime present. Be sure you have all the needed materials and equipment before beginning this process.**

**Remove all loose or foreign debris and thoroughly clean the well house or storage tank.**

**Scrub accessible interior surface with a strong chlorine solution (1/2 gallon bleach per 5 gallons water).**

1. Mix 1 quart of household bleach (5.25 percent available chlorine) in 5 gallons water; pour into well while pumping. REPEAT this process.

Use only an outside faucet until you smell chlorine. Then run the inside faucets, one tap at a time, only long enough to smell chlorine. This is done to avoid adding a large amount of chlorine to the septic system. Circulate solution until strong chlorine odor is observed at each inside tap. Close the taps as soon as you smell the chlorine.

continue circulating one hour

2. close taps and stop pump if it is being manually controlled - otherwise it will stop automatically when the pressure returns to normal
3. Mix additional 2 quarts bleach in 5 gallons water; pour into well without pumping. (note: as much as 1.5 – 2 gallons of bleach may be needed to obtain bleach smell [purification levels] in well and at outside faucets. The amount is determined by the water column in the well and amount of water

**in the distribution system.)**

**allow well to stand at least 8 hours (preferably 24-48 hours)**

- 4. pump water to waste at an outdoor tap, away from grass and shrubbery, until chlorine odor dissipates**

**Note: a faint chlorine odor may persist 7-10 days**

- 5. After complete chlorine removal (2-3 weeks after flushing), test water for biological contamination. Coliform test and E. coli test – Very Important!**

**NOTE: Repeat coliform testing in more than approximately 3 weeks to be sure there is not a continued source of coliforms running into the well. (ex. such as drainage from a septic field or surface water entering the well)**

**If a bacteriological problems persist following shock chlorination a definite health hazard exists, and the problem must be identified and eliminated or a continuous chlorination system may be required.**

#### **Special Precautions:**

- 1) If the pump pumps faster than well can recharge – empty well – restart is required and damage can occur to pump. Solution is**
  - a. if you don't know well depth and standing water depth, and pump rate you must observe water flow during entire charge and flush cycles to prevent emptying the well of water. When water flow diminishes, stop process temporarily, then start again after a reasonable (hours) recharge period. The water quantity being pumped will be back to previous level if this is done properly, and well will not run dry.**
- 2) Filtration system activity can be destroyed if chlorine is introduced without taking certain filters off line. Must bypass sensitive filters during entire process. New filters or filter matrices (content of filter) replacements will be needed if they are damaged.**

- 3) Chlorine goes into septic system: kills septic tank and can damage entire system. Is prevented by discharging chlorinated water onto ground outside before doing inside faucets
- 4) Too much chlorine added at beginning will cause very long discharge / and flush times and use of very large amounts of water. Chlorine binds to organics, clay, rock and other substances in well and may be removed very slowly.
- 5) Coliform sampling too soon after chlorine shocking produces false negatives and puts homeowner and occupants at risk of diseases resulting from fecal contamination of well
- 6) Do not drink or use water as long as chlorine levels are above 2 to 5 parts per million – keep discharging outside onto ground in safe area