

Disinfection and Sampling Procedures following maintenance or repair work:
BACTERIAL or CHEMICAL SAMPLING PROCEEDURE FOLLOWING
DISINFECTION

(suggest to follow AWWA standards for disinfection – sampling must follow
IEPA requirements)

Boil Order

Water Association President or representative will notify water system users that a boil order has been issued. A boil order will be issued whenever the pressure within the water system falls below 20 psi or when unsatisfactory water analysis for coliform bacteria occurs. The boil order will include instructions for water users to boil water for 5 minutes before using for drinking, cooking, brushing teeth, etc. or use bottled water instead. The boil order will remain in effect until satisfactory coliform analysis results are obtained. Water system users will be notified of boil order status directly by phone, personal contact, or posted message at their residence. Water association must also contact the Rock Island County Health Department at (309) 793-1955 and the IEPA Regional Office at (815)987-7760 within 2 hours of issuing the boil order.

WATER SAMPLING PROCEDURES:

Loss of water system pressure: Collect 3 water samples from the distribution system. Boil order can be lifted if all samples are satisfactory.

Positive test for coliform: Disinfect system and collect 2 sets of water samples from well and distribution system 24 hours apart. 2 consecutive satisfactory sample results must be obtained before boil order can be ended.

Contact the IEPA Regional Office for sample collection directions if necessary.

DISINFECTION

A new, cleaned, or a repaired well normally contains contamination which may remain for weeks unless the well is thoroughly disinfected. This may be accomplished by the use of ordinary laundry bleach in a solution concentration of 100 parts per million (ppm) of chlorine. The amount of bleach required is determined by the amount of water in the well.

DIRECTIONS FOR DISINFECTION

Amount of laundry bleach (5.25% chlorine) required for each 100 gallons of water equals 3 cups. One equals 8 ounces, 2 cups equal 1 pint, and 4 cups equal 1 quart.

1. Using the table below, determine the amount of water in your well by multiplying the gallons per foot by the number of feet of water in the well. (Considering the well full of water will be satisfactory in most cases, as a slight overdose does no harm.) For example, using the above table, a 6-inch diameter well that is 300 feet deep contains 450 gallons of water (300 ft. x 1.5 gallons/ft.=450 gallons).

Well Diameter (inches)	Capacity (gallons/foot)
3	0.37
4	0.65
5	1.0
6	1.5
8	2.6
10	4.1
12	6.0

2. Each 100 gallons of water in the well requires 3 cups of laundry bleach. Using the same example, a well containing 450 gallons of water requires 13.5 cups (450 gallons/100 gallons x 3 cups=13.5 cups) or 3 ½ quarts of liquid laundry bleach. Mix this total amount in about 10 gallons of water.
3. Pour this solution into the top of the well between the casing and the drop pipe before the well seal is installed.
4. Connect one or more hoses from faucets on the discharge side of the pressure tank to the top of the well casing and start the pump, recirculating the water back into the well for at least 15 minutes. Then open each faucet in the system until a chlorine smell is noticeable. Close all faucets. Rinse chlorine solution off wire and pitless adapter in well casing. Seal the top of the casing with a sanitary well seal.
5. After standing, operate the pump, discharge water from all outlets until all chlorine odor disappears. After several days use, submit a sample of the water to a laboratory for analysis.
- 6.

CHLORINE HAZARDS TO AVOID

When working with chlorine, you should always be in an open or well-ventilated place. Do not allow the strong liquid to remain in contact with the skin or clothing. Solutions are best handled in plastic containers since strong chlorine solutions corrode metal containers.

DISINFECTION OF WATER

The most reliable method for purifying water is to vigorously boil the water for three minutes. This will kill any disease-causing bacteria present in the water. When boiling is not practical, chemical disinfection should be used. Chlorine and iodine are the most commonly used chemical disinfectants.

Liquid chlorine (bleach) is recommended for use in small individual systems when disinfection is necessary. Chlorine may be obtained in powder or liquid form from drug stores or supermarkets. Whichever form of chlorine is used, make sure it is from a source that is fresh. The powder form [calcium hypochlorite is 65 percent available chlorine and the liquid form [sodium hypochlorite (bleach)] is usually 5.25 percent available chlorine. When using the powder, mix by adding the powder to a quart of water. Allow the solution to settle and use the clear liquid, without shaking (See table below). This stock solution loses strength and should be made up fresh at least once a week.

EMERGENCY DISINFECTION OF WATER

Product (Example)	Available Chlorine (Percent)	Stock Solution	*Quantity of stock solution to treat	
			1 Gallon	1,000 Gallons
Bleach	5.25	Full strength	5 drops	1 cup (8 oz.)
Calcium Hypochlorite	65	2 heaping tablespoons (1 oz.) in quart of water	20 drops	1 quart

*Double amount for turbid or colored water.

After adding the stock solution to the water volume being treated, stir it thoroughly and let the treated water stand for 30 minutes before using.

Common household iodine from the medicine chest or first aid kit also may be used to disinfect water. Add 10 drops of 2 percent tincture of iodine to each gallon of water, mix well and let stand for at least 30 minutes before using.

Commercially prepared chlorine and iodine tablets containing the necessary dosage for drinking water disinfection may be obtained at any drug store. They should be used in accordance with label instructions.

DISINFECTION OF EQUIPMENT

Equipment used for storing or transporting potable water must be thoroughly cleaned and disinfected prior to use. Cleaning should be done to remove any dirt, scale, and other loose materials. Disinfection of equipment or tanks should be done by one of the following methods:

7. Add 20 ounces of 65 percent calcium hypochlorite to each 1,000 gallons of water; or
8. Add 2 gallons of 5.25 percent sodium hypochlorite (bleach) to each 1,000 gallons of water; or
9. Add 2 pints of 5.25 percent sodium hypochlorite (bleach) to each 100 gallons of water.

This will result in a solution that has about 100 mg/L chlorine. Let it stand a minimum of 12 hours, then drain through the distribution system, if possible. A residual chlorine test should show a distinct residual in the water drained out of the tank; if not, the disinfection process should be repeated. The complete contents of the tank should be drained to a safe location such as a sanitary sewer, the water should be dechlorinated if a large volume has to be drained to a storm sewer or waterway.

RESIDUAL CHLORINE

When using emergency water sources, the level of residual chlorine in the water for consumption should be between 0.5 and 4 parts per million, after the treatment described in this bulletin. Inexpensive color comparator test kits can be purchased from most large department stores and swimming pool supply companies. Testing for residual chlorine should be performed several times per day for large volume uses and at least twice per day for small volumes.