## APPENDIX D - SUGGESTED PROCEDURES FOR DISINFECTED WELLS

Disinfection of all wells is recommended to eliminate pathogenic organisms as well as organisms that can grow in wells and thereby cause clogging and affect the quality of water produced. Disinfection of the well is the final act of well construction or repair before it is placed in service. Wells should also be disinfected following repair or replacement of the pump and/or well maintenance. The procedures described in this appendix are recommended for disinfecting wells; however, other methods may be used provided it can be demonstrated that they will yield comparable results. For new wells, disinfection should take place following development (this will assure that the well is purged of drilling mud, dirt, and other debris that reduces the effectiveness of the disinfection), testing for yield, and installation of the pump. When there is a delay in pump installation, interim or partial disinfection should be undertaken.

**Disinfection involves seven steps:**

- 1. A chlorine solution containing at least 50 mg/l (or parts per million) available chlorine, is added to the well. Table 6 lists quantities of various chloride compounds required to dose 100 feet of water-filled casing at 50 mg/l for diameters ranging from 2 to 24 inches. For wells that have been repaired or when a pump has been repaired or replaced and, bringing the well back into service quickly is desired, the solution should contain at least 100 mg/l available chlorine. To obtain this concentration, double the amounts shown in Table 6.
- 2. The pump column or drop pipe shall be washed with the chlorine solution as it is lowered into the well.
- 3. After it has been placed into position, the pump shall be turned on and off several times (i.e., “surged”) so as to thoroughly mix the disinfectant with the water in the well. Pump until the water discharged has the odor of chlorine. Repeat this procedure several times at one-hour intervals.
- 4. The well shall be allowed to stand without pumping for 24 hours.
- 5. The water shall then be pumped to waste until the presence of chlorine is no longer detectable. The absence of chlorine is best determined by testing for available chlorine residual using a test kit designed for this purpose. Testing for available chlorine residual is simple and inexpensive. Test kits can be obtained from chemical supply houses, swimming pool suppliers, etc.

  Disposal of the waste should be away from trees, shrubs, or lawns and into storm sewers, drainage ditches, etc. Note that heavily chlorinated water should not be wasted into the plumbing system of homes that utilize individual sewage disposal systems (septic tanks). Such strong disinfectants could neutralize the bacteria needed to stabilize the sewage and also could damage the soil adsorption system.
- 6. A bacteriological sample shall be taken and submitted to a laboratory for examination (see Appendix D).
- 7. If the laboratory analysis shows the water is not free of bacterial contamination, the disinfection procedure should be repeated. Depending on the level of contamination, it may be necessary to use a higher concentration chlorine solution (several times that shown in Table 6). The water should then be retested. If repeated attempts to disinfect the well are unsuccessful, a detailed investigation to determine the cause of the contamination should be undertaken.

  Where small individual domestic wells to be treated are of unknown depth or volume, at least one pound (0.45 kilograms) of calcium hypochlorite (70 percent available chlorine) or two gallons (7.5

liters) of household bleach (sodium hypochlorite), such as Clorox or Purex, may be used in lieu of the chemicals shown in Table 6.

**Table 6 Chlorine Compound Requires to Dose 100 Feet of Water-Filled Casing at 50 Milligrams Per Liter[1]**

| | Chlorine Compounds | | |
|---|---|---|---|
| **Diameter of Casing (Inches)** | **(70%) Calcium Hypochlorite[2] (Dry Weight) [3]** | **(25%) Chloride of Lime (Dry Weight)[3]** | **(5.25%) Sodium Hypochlorite[4] (Liquid Measure)** |
| 2 | 1/4 oz (7 g) | 1/2 oz (14 g) | 2 oz (59 mL) |
| 4 | 1 oz (28 g) | 2 oz (57 g) | 9 oz (266 mL) |
| 6 | 2 oz (57 g) | 4 oz (113 g) | 20 oz (0.6 L) |
| 8 | 3 oz (85 g) | 7 oz (0.2 kg) | 2-1/8 pts (1.0 L) |
| 10 | 4 oz (113 g) | 11 oz (0.3 kg) | 3-1/2 pts (1.7 L) |
| 12 | 6 oz (0.2 kg) | 1 lb (0.45 kg) | 5 pts (2.4 L) |
| 16 | 10 oz (0.3 kg) | 2 lb (0.9 kg) | 1 gal (3.8 L) |
| 20 | 1 lb (0.45 kg) | 3 lb (1.4 kg) | 1-2/3 gal (6.3 L) |
| 24 | 1-1/2 lb (0.7 kg) | 4 lb (1.8 kg) | 2-1/3 gal (8.8 L) |

**Notes for Table 6:**

1. Some authorities recommend a minimum concentration of 100 mg/L. To obtain this concentration, double the amounts shown.

2. HTH, Perchloron, Pittchlor, etc.

3. Where dry chlorine is used, it should be mixed with water to form a chlorine solution prior to placing it into the well. Note that dry chlorine shouldalwaysbe added to water, not vice versa. Further, the chemical should be added slowly. These precautions are necessary to lessen the possibility of a violent chemical reaction.

4. Household bleaches such as Chlorox, Purex, etc.

You can locate this information at: https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Standards/Combined-Well-Standards/Appendices