# Disinfection of Onsite Water Storage Tanks

Homeowners and small water system operators impacted by the Natural Disaster may need to disinfect a water storage tank which could be potentially contaminated with harmful bacteria. If you suspect that your water storage tank may be contaminated or are uncertain about the level of contamination, you should obtain an alternative source of drinking water immediately. Bottled water and/or boiled water are a safe alternative for drinking, cooking, dishwashing, personal hygiene and bathing until your water supply is determined to be safe for consumption.

Please contact a California certified laboratory for the appropriate test methods to make sure that your drinking water does not have harmful bacteria. Refer to the State Department of Public Health Environmental Laboratory Accreditation Program (ELAP) testing at http://www.waterboards.ca.gov/drinking_water/certlic/labs for a list of certified laboratories.

**A water storage tank should be disinfected when the following circumstances occur:**

- When water quality analysis confirms that well water tested positive for Total Coliform or *E. coli* bacteria
- When the surrounding area near the water storage tank or well has been flooded
- When dead animals or birds have been found in the tank
- When major changes occur effecting the taste and/or odor of the water
- When significant well casing or well pump repairs are conducted

## How to Disinfect a Water Storage Tank

Liquid sodium hypochlorite, commonly known as bleach, can be effectively used for water disinfection. It is important to remember that chlorine is a highly dangerous substance and should be handled by an **experienced professional** following strict guidelines to make sure the disinfection is done safely and properly.

The following procedures should be used to disinfect water storage tanks with Hypochlorite Solution (bleach):

1. Drain the tank and clean it thoroughly. A high-pressure hose or pressure washer is recommended. Remove loose debris and dirt.
2. Fill the tank with water to a depth of one to three feet.
3. Add hypochlorite solution to the tank. The amount of hypochlorite added to the tank should be sufficient to achieve a minimum of 10 mg/L free chlorine in the water when the tank is filled to its normal operating level. The values given in the table below can be used to determine how much hypochlorite to add to a 10,000-gallon tank depending on the strength of the solution.

| Target Chlorine Concentration (mg/L) | 5.25% Chlorine | 12.5% Chlorine |
|---|---|---|
| 10 | 2 gallons | 1 gallon |
| 20 | 4 gallons | 1.75 gallons |

*Note: Volumes given are not exact but have been rounded to an even measurement quantity.*

4. If the water has a higher than normal chlorine demand (such as waters with high iron, manganese, hydrogen sulfide or color), use the amount listed to achieve a 20 mg/L dosage.
5. The amount of chlorine should be adjusted relative to the size of your water storage tank. Thoroughly mix the hypochlorite solution in the tank.
6. Fill tank to its normal operating level and allow the chlorine to sit for 24 hours to have adequate disinfectant contact time.

7. Once the free chlorine residual has reached a level of less than or equal to 2.0 mg/L, draw a sample from the tank and have it tested for the presence of total coliform bacteria. If the test for coliform bacteria is negative, the storage tank may be placed back into service and the water may be used.

   To reduce the free chlorine level to 2.0 mg/L it is often necessary to add a chemical dechlorination agent such as sodium bisulfate to neutralize the chlorine. As an alternative, the water in the tank may be disposed of and the tank refilled. However, the chlorine residual should be reduced to as close to zero as practical before disposing of the water. **Disposal of chlorinated water by draining it into surface water is illegal.**

For tank sizes other than 10,000 gallons, use the table below to determine how much hypochlorite solution to use to obtain 10 mg/L. Double the amount to achieve a 20 mg/L dosage.

| | 5.25% Hypochlorite | | 12.5% Hypochlorite | |
|---|---|---|---|---|
| Tank Volume (gallons) | Ounces | Gallons | Ounces | Gallons |
| 500 | 20 | | 5 | |
| 1,000 | 30 | | 10 | |
| 2,000 | 50 | | 20 | |
| 3,000 | 80 | | 40 | |
| 4,000 | 110 | | 50 | |
| 5,000 | 130 | 1 | 60 | |
| 10,000 | 250 | 2 | 110 | 0.8 |
| 20,000 | 510 | 4 | 210 | 1.7 |
| 30,000 | 760 | 6 | 320 | 2.5 |
| 40,000 | 1020 | 8 | 430 | 3.3 |
| 50,000 | 1270 | 10 | 530 | 4.2 |
| 100,000 | 2540 | 20 | 1070 | 8.3 |

For additional information regarding methods for disinfecting water storage tanks please refer to the American Water Works Association standard (AWWA C652-92) for the disinfection of water storage facilities. This standard is used to define the minimum requirements for the disinfection of water storage tanks, including the preparation of water storage facilities, disinfection procedures with adequate disinfectant levels, and sampling and testing for the presence of bacteria. Disinfecting a potable water storage tank per AWWA standards can be difficult; it is recommended that an experienced professional handle all chemicals used in the disinfection process.

## For more information:

- EPA Safe Drinking Water Hotline: 1-800-426-4791
- EPA Drinking Water: http://water.epa.gov/drink
- Los Angeles County Department of Public Health: 626.430.5420 or email: waterquality@ph.lacounty.gov