Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services

Cleaning, Disinfecting, and Flushing Drinking Water Storage Tanks at Small Public Water Systems

Maine CDC Drinking Water Program • 11 SHS Augusta, ME 04330 • 287-2070 • www.medwp.com

Overview

Cleaning, disinfecting, and flushing potable water storage tanks at small public water systems (PWS) are important components of proving safe and clean drinking water to consumers. This document provides guidance for small water systems such as Transient, Non-Transient Non-Community, and Small Community PWS to properly care for their water storage tanks.

Tanks should be cleaned:

- Every 5 years (depending on water quality and system);
- Annually for seasonal public water supplies during startup;
- If sediments and/or biological growth is observed inside the tank;
- If any repairs or modifications are done to the water system;
- If coliform bacteria is detected in the water system; and/or
- If there are any noticeable changes in water quality (taste, odor, color issues).

Safety Considerations

Storage tanks meet the Occupational Safety and Health Administration (OSHA) definition of a "confined space" and entry into the tank by an individual must meet OSHA regulations for confined space entry. Confined space regulations require that only trained individuals enter a confined space, using all necessary personal protective equipment and extraction gear. Entry to the tank should be considered a last resort. Please also consider that health and safety precautions should be taken when handling cleaning solutions such as sodium hypochlorite (chlorine bleach).

Preparing to Clean Your Storage Tank

If the tank(s) cannot be isolated prior to cleaning, a Do Not Use Order must be issued at the facility and required notifications posted at all drinking water sites. *You must also notify the Drinking Water Program that a Do Not Use Order is in effect at your public water system.* This is to protect public health due to the potential of highly chlorinated water in the distribution system. Lifting this order requires satisfactory water sample results.

STEP 1: Cleaning

Use a long-handled brush and/or power washer to physically remove any built up debris, corrosion, bio-film and/or sediments in the tank. Use a portable pump or drain to flush out dirty water from the tank.

STEP 2: Disinfecting

Use the disinfection equation to determine the amount of chlorine bleach to add to the tank that will result in a tank full of water with a free chlorine residual of 10 ppm. Add the calculated amount of bleach to the empty tank and fill the tank to the overflow level with water. Leave the tank filled for 24 hours.

For alternative tank disinfection, refer to AWWA Standard C652: Disinfection of Water Storage Facilities at AWWA.org

Disinfection equation for achieving a concentration of 10ppm free chlorine in a water tank

⇒ Using **8.5%** sodium hypochlorite (concentrated Clorox)

$$\frac{\text{Tank volume (gallons)} \times 10\text{ppm}}{1{,}000{,}000 \times 0.085} = \text{gallons of 8.5\% bleach needed}$$

Example for a 5,000 gallon tank:

$$\frac{5{,}000 \text{ gallons} \times 10\text{ppm}}{1{,}000{,}000 \times 0.085} = 0.6 \text{ gallons}$$

STEP 3: Flushing

After the chlorine solution has sat in the tank for 24 hours, flush out/empty the storage tank. *Do not drain the tank into a septic system or adjacent surface water body.* Chlorine solution can kill the good bacteria in your septic system and harm aquatic creatures living in nearby lakes and streams. Refill the tank and flush all taps until chlorine can no longer be smelled. If a portable pump is used, ensure that the intake hose is clean and wiped down with bleach to prevent contamination. Continue flushing until the waste water is clear and no chlorine odor is detected.

STEP 4: Testing

If a Do Not Use Order was placed on the system, contact the Drinking Water Program to determine the necessary steps for removing the order. If a Do Not Use Order was not necessary, once the storage tank has been thoroughly flushed, test for free chlorine residual to ensure it is non-detectable (or zero). This can be done using an approved HACH DPD color metric test kit. Once a non-detectable chlorine residual has been obtained, collect operational & maintenance (O&M) total coliform bacteria water samples. If the test results are negative for bacteria, the drinking water is considered safe to use and drink.

Questions?

If you have any questions about this procedure please contact your public water system inspector or call the Drinking Water Program at 287-2070.