

## How to Disinfect Water Storage Tanks Using Chlorine Bleach

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### *In a nutshell...*

Water storage tanks should be cleaned and disinfected at least twice a year to help prevent and remove contamination that can cause illness. This article describes the “how to” using household chlorine bleach.

Eight-five percent of Americans get their daily drinking water from a community water system. About 15% rely on a private well for some or all of their household water. But just about everyone has seen and drunk water from a water storage tank or trailer. They come in all shapes and sizes. Many are permanent; others are temporary like those used at large outdoor events and “water buffalos” used by the military.

In emergencies, ranging from [wildfires](#) to water service disruptions, it is often necessary to quickly obtain a basic water supply. Sometimes, these emergencies require the use of tankers and tanks that have never (or not recently) been used for hauling and storing potable water. **These must be cleaned and disinfected before use.**

Also, if you suspect that your water storage tank or [well](#) may be contaminated, you should obtain an alternative source of drinking water immediately. Commercially bottled water and boiled tap water are safe choices until you can clean and disinfect your storage tank.

### *Why Clean and Disinfect Water Storage Tanks?*

Even water storage tanks in constant use can develop microbial growth over time. They should be cleaned and disinfected [at least twice a year](#) or per local and state regulations.



Proper care and maintenance will kill or prevent the survival of bacteria and viruses (pathogens) that can cause stomach sickness or more serious illnesses. These measures also help prevent scale and slime (called [biofilms](#)) that can contaminate water and harbor pathogens. They also help control sediments and growth of algae that can also cause unpleasant taste and odors. Tanks should be sealed to help prevent contamination and screened to avoid [mosquito breeding](#).

[The University of Arizona](#) provides detailed information on types of household storage tanks, potential contaminants, and options and steps to disinfect water and tanks. A wide variety of [international](#), [state](#), and [county](#) resources on storage tank (and tanker) disinfection are also available. Most call for the use of liquid sodium hypochlorite (chlorine bleach) due to its proven effectiveness, availability, and affordability. Less common options include calcium hypochlorite, ozone gas, and UV light.



Photo credit: University of Arizona

This article provides simple directions for routine (non-emergency) cleaning and disinfection of water storage tanks using household chlorine bleach. The U.S. Centers for Disease Control and Prevention (CDC) provide [online resources](#) for cleaning, disinfecting, and maintaining cisterns and other rain catchment systems.

Tanks used for potable water must be designed for liquid food or drinking water storage, and can never have been used for sewage, firefighting chemicals, fuel, or pesticides (etc.).

### *How to Clean Water Storage Tanks*

The first step is to [empty and clean the tank](#) from the outside. Scrub all internal surfaces using a mixture of detergent and hot water. Use a pole-mounted brush or a power washer to remove any sediment, algae, corrosion, or biofilm. It is also important to clean and rinse all hoses, pumps, and pipes used for filling and emptying the tank. **Only trained professionals using all necessary personal protective equipment and extraction gear can safely enter a confined space!**

Next, wash and rinse the tank until there are no traces of detergent in the water, ideally with a power washer. If high-pressure, hot water is not available, the tank can be filled with (preferably hot) water and left to stand for several hours. Drain all the water from the tank and associated piping. Use a portable pump to remove dirt or rinse water from the storage tank.

### *Adding Disinfectant to Water Storage Tanks*

If unknown, [calculate the volume of the tank](#). Fill it a few feet (quarter-full) with treated potable water. Add and thoroughly mix household chlorine bleach.<sup>1</sup> Online directions vary for how much bleach to add based on tank volume. We recommend using the table below to prepare a free chlorine concentration of 50 mg/L (parts per million or ppm). Mix thoroughly while filling the tank to normal operating level.

To disinfect connected plumbing lines and fixtures, open all taps until a chlorine smell is apparent at each outlet. Close taps and allow the chlorinated water to sit for at least 12 hours to ensure adequate time for disinfection. **Do not consume this 50 ppm concentrated solution!**

### *Drain, Flush, and Refill*

Drain the water storage tank and connected piping to the ground away from plants—not into a septic system (which can kill the necessary “good bacteria”), stream, or pond. This may kill fish and plant life. It may also be illegal, so be sure to check local and state regulations. Ideally, the chlorinated wastewater should be legally disposed into a sewer network. Refill the cleaned and disinfected tank with potable water.

Next, open the valve to distribution lines and run water from the taps until there is no smell of chlorine. Now you can enjoy safe water from your cleaned and disinfected water storage tanks.

Household Bleach Addition to Disinfect Water Storage Tanks Using a 50 ppm Solution	
Tank Size (Gallons)	Oz. (Cups)
50	8 (1)
100	16 (2)
200	32 (4)
250	40 (5)
500	80 (10)
1000	160 (20)
2000	320 (40)

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[www.waterandhealth.org](http://www.waterandhealth.org)

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<sup>1</sup> Use chlorine bleach containing 5 to 6% sodium hypochlorite from an unopened, scentless (no fragrance), and non-splash less gallon bottle. Scented and splash less chlorine bleach are not intended for disinfection.