How To Store Water For More Than 25 Years Without Rotation

In my roles as a survival instructor, emergency preparedness writer, and CERT Program Director, I have come across a lot of claims about water storage and treatment technology and practices.

Some of them are true and some are fabrications. How can consumers of water storage and treatment equipment tell which equipment will save lives and which will get them sick?

I normally cringe when hearing the word "overwhe

lming” used in conjunction with emergency preparedness because the more prepared

you become, the less afraid you should be, and the less overwhelmed you should

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ctive, there is a lot of information to digest and fact check. You have to decide ho

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To answer these questions for myself and for my readers, I have done a lot of research and field testing and have attended a lot of training. At one of the water-treatment classes I attended, I met a water quality scientist named Max Gyllenskog. He tests water treatment products and storage methods by testing water samples in the water quality lab at our County Health Department. He also flies all over the world to set up water treatment in the wake of disasters and way too many letters come after his name to list. So, his recommendations aren't the typical, "Well, I used such and such backpacking for a week and I didn't get sick!" He tests water treatment methods and products in a lab and can tell you how many pathogens were in the sample before and after

treatment and he blew many of the misconceptions that I had right out of the water … no pun intended.

Common Myths & Misconceptions

Mini in-line micro-tubule water filter capacity

You may have heard the sales propaganda that a Sawyer (or any other) mini in-line micro-tubule water filter can filter 200K gallons of untreated surface water! That's just not true. In fact, the claim is downright outlandish. Any company that makes claims like that should be ashamed of themselves and if you believe it, you should probably have your BS-meter recalibrated.

Mini in-line filters filter water through tiny microtubules that clog easily, even when using a strainer and pre-filter, and must be backflushed. As the foreign matter is compacted into a filter's microtubules and pushed back out, it wears on the filter and this wear eventually causes microscopic cracks. There is no way to detect these cracks and they allow contaminated water to pass through the filter and into its output. Once micro-cracks develop, a filter still eliminates some pathogens from the water, but not at the rate claimed. Ice crystals also cause cracks, so don't allow a micro-tubule filter that has been used to freeze.

How much water can little in-line filters really filter? A realistic volume is around 100 gallons, which is a lot of drinking water in a survival situation. I still use inline filters, but I only brand that make reasonable claims.

I store Household Bleach is the Go-to

Water Treatment Method

Household bleach could save your life, but it isn’t good for you. Using too much can kill you and use too little won’t kill all the pathogens. Since bleach gets weaker as it ages, it’s recommended that you use chlorine test strips to measure the amount of free chlorine available in treated water. The recommended treatment method for treating drinking water in most emergencies is boiling. By the time water gets up to a rolling boil, the pathogens in it will die. And that’s true even at high altitude on Mount Everest.

I have a well, so I don’t need water storage

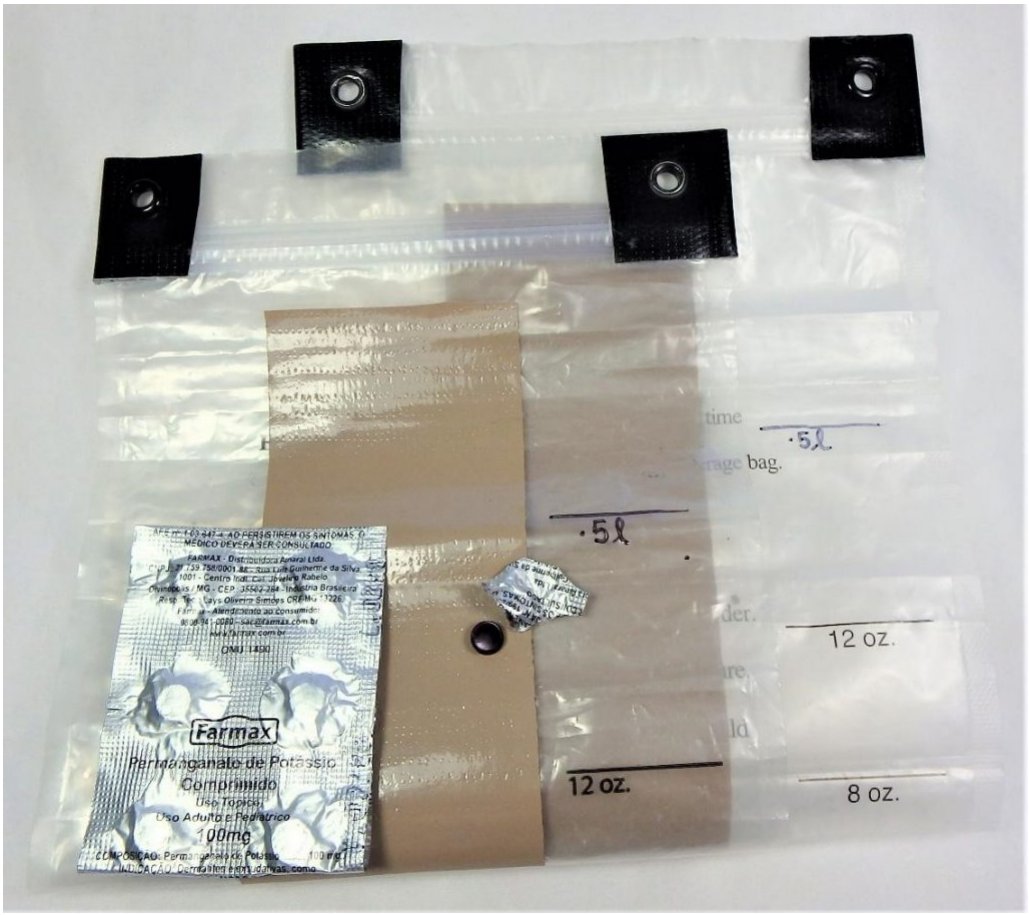
Many of the same factors that affect the quality of city water, also affect the quality of well water. An earthquake that stirs up sediment in your city’s water lines, may also stir up sediment in your well. You should still store water even if you own a well. In fact, you’ll also need equipment to bring up well water when the power is out and test kits to periodically test the water that comes from your well.

All I need is …

Water treatment methods include boiling, disinfection using various chemicals, filtration, exposure to UV light, desalination, distillation and even allowing plants to carry out disinfection for you. Each of these methods has strengths and weaknesses and what is appropriate for one situation may not be appropriate in another.

While boiling may be the recommended method, sometimes it may not be safe to create a fire, or you may lack the fuel to do so. Some chemical disinfection methods are lightweight but leave behind an undesirable aftertaste that can turn keeping kids hydrated into a battle. The point is to learn multiple

methods to treat water and know when each method is and is not appropriate to use.



While chemical water disinfection with potassium permanganate is far from ideal (it is a poor disinfectant), long storage life, extreme multi-use, and compactness make it worthy of inclusion in pocket survival kits. A single tiny tablet can treat more water than you are likely to drink in a week-long survival ordeal. Potassium permanganate is also used to improve water quality and to oxidize iron and manganese for removal by filtration.

How to Store Water for 25 Years or More

Some organizations recommend rotating stored water every six months! That is a lot of work and fortunately, it is totally unnecessary. If you follow the directions below, the drinking water you store should last twenty-five years or even longer.

How Much Water Should I Store?

While the government recommends a minimum of one gallon (4 liters) per person per day or 14 gallons (56 liters) per person. This ration allows 2 quarts (2 liters) to drink for 2 weeks and 2 quarts (2 liters) for food preparation and sanitation, you need more than this in hot climates, extremely cold climates, at high altitude, and during periods of exertion, such as emergencies. The young, old, sick, and nursing mothers also need more than this. For these reasons, I suggest at least doubling this to 2 gallons (8 liters) per person per day for a minimum of two weeks or 28 gallons (112 liters) per person. If you don't have nearby access to surface water, I would consider increasing these numbers.

Remember, these numbers reflect the minimum volume of water that you should store. If you have the means to store more water, do.

Choose Storage Containers

What kind of storage container should I use?

Don't use milk cartons because you'll never get the milk proteins out of the plastic and they'll give bacteria food they need to multiply.

Don't use barrels previously used to store fruit juice. As with milk cartons, the sugars in the fruit juice embed in the plastic, feeding bacterial growth. Vendors often advertise them as food grade, but they are not recommended for long-term storage of emergency drinking water.

Use opaque containers labeled "HDPE" & "2". Where possible, use containers designed for long-term water storage. If you store water in 55-gallon drums, you'll also need a bung wrench and a siphon hose. A standard shaker siphon approved for drinking water will do. Don't bother with the plastic pump

siphons sold by many emergency preparedness stores because they are very poor quality.

Store some water containers that are small enough for everyone in your household to handle like this stackable 3.5-gallon (13.2 liters) containers.

Store water in more than one container so you don’t lose your entire water

supply if the container becomes compromised. Some of these containers should be la

rge, so you can store plenty of water, but others should be smaller so smaller amou

nts of water can be transported where they are needed. You'll also need buckets

for hygiene and may also need a cart to haul water home from a nearby water source

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How heavy of a container can you handle? Water weighs eight pounds (3.6kg) per gallon, so choose a size of container that can be easily handled by all members of your household where possible.

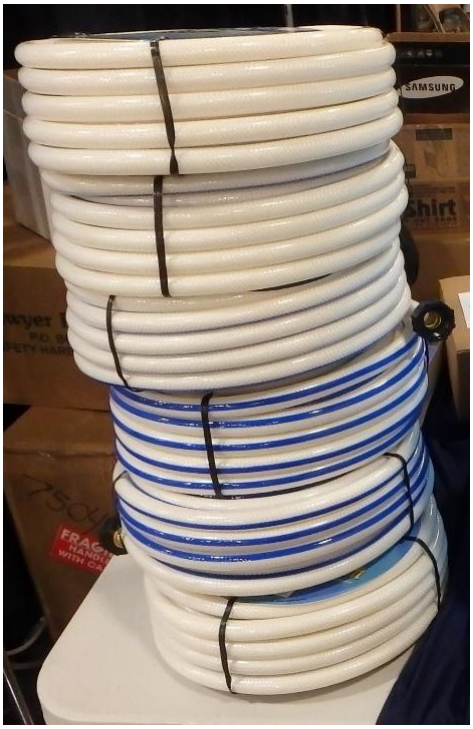
Cleaning Containers

Previously used or opened containers must be cleaned before use.

1. Wash with dishwashing soap and water.
2. Rinse thoroughly with potable water.
3. Sanitize with bleach solution. Mix one teaspoon of unscented liquid chlorine bleach (5-6% sodium hypochlorite) in a quart of potable water.
4. Cap the container and shake it so the bleach solution coats every surface of the container.
5. Back the cap off to where it is loose and then momentarily invert the container to coat the cap and threads as well.
6. Wait at least 30 seconds.
7. Empty the container.
8. Rinse the container twice with potable water.

If you are using brand new, never opened plastic drums, disinfection is not necessary because they are formed (and caps are installed) at high-enough temperatures that they’re sterile inside. You should give them a good rinsing though to rinse out any plastic leftover from the manufacturing process.

Filling Containers



To fill containers, be sure to use an RV drinking water hose, not a garden hose!

Fill containers with tap water. Here in the USA, water the come s out the tap has

already been treated and is safe to store “as is.” Fill containers full unless they

may freeze during winter. In that case, fill them to the freeze line or above depend

ing on how thick ice gets in your neck of the woods. Full containers store longer th

an partially full ones. While freezing 55-gallon drums is unlikely in most of the

lower forty-eight states, the smaller a container is, the lower the thermal

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Garden hoses contain bacteria and sometimes even contain contaminants such as lead, so don’t use them to fill your water containers or you’ll contaminate the container you just disinfected. Fill your containers with an RV drinking water hose instead.

If your water is stored properly, it’s not necessary to add an additive, but if you would like to, Max recommends a silver/copper ion solution. The reason is that while chlorine-based products will disinfect the water at the outset, after that they diminish in effectiveness over time, whereas the silver/copper ion solution persists and will continue to deactivate pathogens as long as it remains in the water.

Storing Water

Water is best stored somewhere cool, dark, and dry. It should not be stored in direct sunlight, so cover barrels stored outside with a tarp. Moisten gaskets regularly to prevent them from drying out and breaking the seal, as an airtight seal should be maintained. Inspect containers annually and don’t open them until you decide to use or replace the water.

Experts disagree whether it is necessary to elevate water containers, so they do not rest directly on a cement pad. The idea is that cement off-gassing can penetrate plastic drums, contaminating the water inside. Because the cost of setting drums on 2×4’s is negligible and it certainly won’t cause any harm, the practice is recommended.