

Preparedness Keys

STORING WATER FOR DISASTERS

BOTTLED WATER (PRE-PACKAGED)

Commercially pre-packaged, bottled water is probably the safest and most convenient choice for water in emergency situations. It's important to remember that different types of water bottles have a varying shelf life:

Clear plastic water bottles (e.g., 16.9 ounce sport bottles) – 2 year shelf life

Hard plastic “dispenser” style bottles (typically 3 or 5 gallon) – 5 year shelf life due to use of food-grade polyethylene or polycarbonate bottles

Soft, opaque (milk jug style) plastic jugs (1 gallon or 2.5 gallon dispensers) – not recommended as the container material is not rated for long-term storage and eventually breaks down.

The rated shelf life for bottled water is all based on keeping the water stored in a cool, dark location. Exposure to heat or sunlight can accelerate the degradation of the plastic containers. If water must be stored in a hot location, such as the trunk of a car, rotate the water more regularly (e.g., at the end of every summer).

STORAGE CONTAINERS FOR WATER

If you chose to store water on your own, use food grade water storage containers, such as those found at outdoor supply stores or big box retailers. Food grade water storage containers won't transfer noxious or toxic substances into the water during storage. Check the container label or contact the manufacturer if you are uncertain if the container meets food grade standards. If a container is (US) FDA approved, then it is safe for storage of water.

Examples of food grade water storage containers include:

4, 5 or 7 gallon plastic water jerry cans available online, outdoor stores, or big box stores (must be rated for potable water)

55 gallon water barrels made from high density polyethylene – FDA approved, BPA free, available online or through disaster supply stores (remember that you'll need a siphon pump and bung nut wrench to access the water)

275 or 330 gallon intermediate bulk container (IBC) tank made from high density polyethylene (must be food grade and a new container is recommended)

Standard garden hoses should never be used to fill water containers, as the hose contains lead to keep the hose flexible. Only use a drinking water hose that states that it is lead free! Lead free hoses are widely available online or at RV camping supply stores. Also, if the container is clean, there is no need to treat the water when the container is filled. It is generally better to treat the water just prior to use (see “Treating Water in a Disaster” below).

If you are not able to use a food grade water storage container, be sure the container you choose:

Has a top that can be closed tightly

Is made of durable, unbreakable materials (i.e. not glass)

DO NOT USE containers that previously have been used to hold liquid or solid toxic chemicals (bleach, pesticides, etc.)

ALTERNATIVE SOURCES OF WATER

Emergency water can also be obtained from numerous places within your home, but will require a little effort to access the water.

1. WATER HEATER

Most homes use tank water heaters, which typically contain 40 – 75 gallons of water. This water is clean and potable, with a small caveat. After an earthquake, you should shut off the water supply line to your water heater (located at the top of the water heater). This will isolate the water in the tank in case the municipal water supply has been contaminated. You will also want to turn off the gas or electricity to the water tank so that the water cools. To access the water in the tank, use the drain valve at the bottom of the tank; to release the vacuum as water empties out, to open the pressure relief valve at the top of the water tank to allow air into the tank.

2. TOILET TANKS

While it may not sound pleasant, the water in the tank to a toilet is still clean, assuming that an automatic toilet bowl cleaning product is not being used. This will provide a couple of gallons of potable water. There may be sand sediment that has fallen out from the water supply, or some rust from the toilet tank hardware, but the water is drinkable.

3. WATER PIPES

Two story houses with upstairs plumbing will hold some a gallon or two of water in the pipes. To access this water, open up a faucet upstairs to break the vacuum seal. Then, turn on a faucet downstairs and collect the water as it drains out of the pipes. Remember, there is water in both the cold and hot water pipes. Keep in mind that this water is safe to drink, as long as the main water supply has not been contaminated. To avoid contamination, it is important to shut off the water main to the house right after a major earthquake or disaster, before water has been used.

4. POOL WATER (NOT RECOMMENDED)

Due to the amount of chlorine and other chemicals present in pool water, it is not recommended for safe human consumption. Given enough time, the chlorine and other chemicals will break down and dissipate, but then there is the risk of algae, bacteria, and other pathogens. While it is possible to drink pool water after boiling or filtration, this water is best used for sanitation purposes, which can help conserve emergency water supplies for drinking purposes.

TREATING WATER IN A DISASTER

There may be situations where water is available, but is not considered safe for human consumption. This may result after repairs have been made to the municipal water supplies, water has been obtained from questionable sources, or water is being pulled from storage containers after a long time.

The following methods can help to make water safe to drink and assume that the water is clear. If the water is cloudy, filter it first through a clean cloth, paper towel, or coffee filter OR allow it to settle, before drawing off the clear water for treatment below:

BOILING

Boiling is proven method of killing disease-causing organisms, including viruses, bacteria, and parasites. The taste of boiled water can be improved by pouring it a few times from one container to another, then allow the water to stand for a few hours, OR by add a pinch of salt for each quart or liter of boiled water.

If the water is clear:

Bring the clear water to a rolling boil for one minute (at elevations above 5,000 feet, boil for three minutes).

Let the boiled water cool.

Store the boiled water in clean sanitized containers with tight covers.

DISINFECTANTS

If you don't have safe bottled water and if boiling is not possible, you can make small quantities of clear safer to drink by using a chemical disinfectant such as unscented household chlorine bleach. Disinfectants can kill most harmful or disease-causing viruses and bacteria, but are not as effective in controlling more resistant organisms, such as the parasites *Cryptosporidium* and *Giardia*.

To disinfect water with liquid chlorine bleach:

Only use fresh, unscented household liquid chlorine bleach (less than one year old).

Follow the instructions for disinfecting drinking water that are written on the label of the bleach.

If the necessary instructions are not given, use the table below and add the appropriate amount of bleach using a medicine dropper or teaspoon (assumes a typical 8.25% sodium hypochlorite*; concentrations may vary).

VOLUME OF WATER

AMOUNT OF BLEACH TO ADD*

1 quart/liter - 2 drops

1 gallon - 6 drops

2 gallons - 12 drops (1/8 teaspoon)

4 gallons - 1/4 teaspoon

8 gallons - 1/2 teaspoon

Stir the mixture well.
Let it stand for at least 30 minutes before you use it.
Store the disinfected water in clean, sanitized containers with tight covers

FILTERS

Many portable water filters can remove disease-causing parasites including *Cryptosporidium* and *Giardia* from drinking water. Available at most outdoor stores, these portable water filters are designed to remove bacteria and protozoa in the backcountry setting using a microscopic filtration system. Some may also use an activated carbon filter to remove chlorine and some organic chemicals (e.g., pesticides). They will not remove viruses, however, which are so small that they pass through the filtration matrix.

Carefully read and follow the manufacturer's instructions for the water filter you intend to use. In disaster situations where the water supply may be contaminated with biological waste, it is recommended to add a disinfectant such as iodine, chlorine, or chlorine dioxide to the filtered water to kill any viruses and remaining bacteria.

LIMITATIONS


It is important to remember that treating water in a disaster through boiling, disinfection, (and some filters), will not remove most chemicals, salts, or heavy metals. Therefore, it is important to have a good supply of commercially bottled water or water in storage containers to ensure an adequate and easily accessible source of water.

\$20+

<https://youtu.be/iUsdx0UC2uUC2uU>

Up to 100,000 gallons per filter.

PURCHASE



\$300+

<https://youtu.be/Xo4Klg6nb0C2uU>

Up to 6000 gallons per filter (includes viruses)

PURCHASE



Other Resources

1. [Environmental Protection Agency: Emergency Disinfection of Drinking Water](#)
2. [Centers for Disease Control: Creating and Storing an Emergency Water Supply](#).
3. [American Red Cross: Water Treatment](#)