



SAFE DRINKING WATER IN AN EMERGENCY

George F. Smith

Professor, Resource Development

Why?

You and your family can survive for several days without food but only a short time without water. In a disaster when safe drinking water is not available from normal sources, we need to be prepared.

How Much Do I Need?

In moderate weather a normally active person requires a minimum of ½ gallon of water per day for drinking and food preparation. (Some of our need for liquid can be met by using juices from canned fruits and vegetables). Additional water will be needed for dishwashing, bathing and brushing teeth. One reference recommends a total of 1 gallon per person a day on hand for all these uses.

How Do I Store It?

To prepare for possible emergencies from unexpected bad weather or other problems, water can be stored in any large container including your bath tub. Rinse the tub with clean water to be sure there is no soap residue before filling it.

For long term storage, any food-grade plastic or glass containers are suitable provided that they have been thoroughly cleaned with soap and water and have been sanitized with a solution of ½ teaspoon of bleach per pint of water followed by a final rinse with clean water. If water is to be stored in used plastic milk containers, special care should be taken to clean, sanitize and rinse the handle area to remove any residue.

Containers such as empty bleach containers should NOT be used for two reasons. First, these are not food grade containers. Secondly, a child may not be able to understand that some bleach bottles are safe to drink out of and others are not. Do not take a chance. The results could be tragic.

It is not necessary to treat water for storage, providing the water comes from an intact, microbiologically safe water supply. All public water supplies are treated and should be microbiologically safe. If stored properly, they should have an indefinite shelf life. But you may want to rotate and replace this water ever 6-12 months with fresh, microbiologically safe water.

Water that might be microbiologically contaminated should be boiled for at least 1-3 minutes before storage. Water from untested and untreated water supplies, such as a farm pond or private well, should be purified and treated before storage.

Clearly mark all containers “drinking water,” with the current date and store the tightly capped containers in a cool, dry place away from direct sunlight. To improve the taste of “safe” water stored for an extended period of time, pour from one clean container to another clean container several times. Another method of storing water for an extended period of time is to freeze it. Freezing water will allow you to store it in a safe state to be used as you need it. The frozen water will also serve as “cold sink” and will help keep the food frozen until power is restored. One problem with freezing water is you will use up a lot of space to store a several day supply of water for your family.

Other Emergency Sources:

Other sources of water for an emergency are snow, rain water, ice cubes, frozen containers of water, your hot water tank or your toilet tank (not the bowl). *Do not drink from the toilet tank if a chemical disinfectant or purifier has been added to the water.* Be sure you know where to shut off incoming water to avoid contamination if water lines are broken in an earthquake or other natural disaster.

To obtain a free flow of water from the hot water tank, it is sometimes necessary to open the valve at the top of the tank as well as the faucet at the bottom of the tank. The flow of water will also be increased if any hot water faucet in the home is turned on before draining water from the hot water tank. Be sure to turn off gas or electricity to the tank before draining off water for emergency use.

TO PURIFY WATER:

Boiling:

Vigorous boiling for at least 1 to 3 minutes is the most certain treatment. The cysts of a microscopic organism, *Giardia lamblia*, can be found in surface waters (lakes, streams, rivers, etc.) in even the most remote areas. Boiling is currently considered the most reliable method to kill *Giardia*.

Purification Tablets:

These chemical treatments found in many stores work well against most waterborne bacteria and viruses that cause disease but are not yet considered as reliable as heat in killing *Giardia*. In an emergency, if chemical purification is

necessary, use an iodine based product if a choice is possible since it is more effective than chlorine under certain water conditions. If possible filter or strain the water first, add the amount recommended on the package and let it stand for at least 30 minutes. If the water is cloudy or very cold wait at least an hour or use additional purification chemical.

Bleach Purification

In an emergency, liquid household bleach can also be used. It must contain hypochlorite, preferably 5.25%; add according to table below then stir and mix.

Do not use scented bleaches. They are not safe for purification.

Amount of Water	Clear Water	Cloudy Water
1 quart	2 drops	4 drops
1 gallon	8 drops	16 drops
5 gallons	½ teaspoon	1 teaspoon

Mix the bleach thoroughly into the water. Let it stand for 30 minutes. The water should have a slight chlorine odor. If it does not, repeat the dose and let the water stand for an additional 15 minute period of time, pour from one clean container to another clean container several times to allow chlorine to vaporize and improve taste.

Filters:

Some filters sold for water “purification” do not filter out particles small enough to eliminate Giardia or other microorganisms that can cause disease. Their use is discouraged by many authorities including the National Park Service.

References

1. “Safe Drinking Water in an Emergency.” David E. Baker and Melinda Hemmelgarn, University of Missouri Cooperative Extension Service.
2. “Is the Water Safe? Think Before You Drink.” National Park Service, U.S. Department of the Interior.