Disaster Relief

Drinking Water in an Emergency

Many kinds of emergencies can affect the safety of your drinking water. Natural disasters such as floods, tornadoes, hurricanes, ice storms, and other emergencies may cut off your drinking water supply with no warning. Planning for this assures you have safe drinking water in such an emergency.

Why Do I Need an Emergency Plan?

A person can survive several days or even weeks without food but only a short time without water. In a natural disaster or other unforeseen situation, your drinking water can quickly and without notice become unsafe to drink. By planning before the disaster, you can be sure you will have safe drinking water in an emergency. Remember: After the emergency, it's too late to make plans!

How Much Water Should I Store?

To plan emergency water needs, keep in mind that you may be without electrical power and other basic services for several days. In normal weather, a typically active person needs at least one-half gallon of water a day just for drinking and cooking. That doesn't count the extra water needed for washing, brushing teeth, and washing clothes.

To be safe, store at least 6 gallons of water per person per week. Some of the body's need for liquids can be met by using juices from canned fruits and vegetables. As a rule, store at least 1 week's emergency water supply for each member of your family.

What Containers Should I Use?

You can use food-grade plastic or glass containers for storing water. Make sure containers are cleaned and sanitized as described later in this publication. Food-grade containers are store-bought plastic or glass containers that have held food or beverages, such as soda, water, juice, or punch. You can buy new plastic water storage containers at sporting goods stores.

It's best not to use milk jugs to store water, because there may be harmful bacteria in the dried milk. Also, don't use empty bleach containers. They aren't food grade, and a child may not understand why some bleach bottles contain safe drinking water while others are hazardous.

Don't take a chance; the results could be tragic.

How Do I Clean and Sanitize Containers?

Whether containers are new or used, clean and sanitize them before storing water in hem. Otherwise, you run the risk of contaminating clean water with a dirty container. Make sure your hands are clean, as well.

Begin by cleaning with hot, soapy water. Completely clean the inside and the outside of the container, including the handle, the lid, and where the lid fits. Next, rinse well with plain water. Then, sanitize by rinsing with a solution of one-half teaspoon of household bleach per pint of water. Last, rinse with clean water.

Once you clean and sanitize the container, fill it with water you know is safe, and screw the cap on tightly. For safety reasons, clearly mark all containers “drinking water” with the current date. This safeguard will make sure every family member knows which containers are for drinking and which aren't.

Mississippi State University Extension Service

Where Should I Store the Water?

Store the containers upright in a cool, dry place. Because direct sunlight and heat gradually weaken plastic containers, store them away from heat and light to prevent possible leaking. Water is heavy, so store the containers on a strong shelf or in a cabinet. To improve the taste of water stored for a long time, pour it back and forth from one clean container to another before drinking.

A freezer is also a good place to store water for a long period. Freeze water in plastic bottles only; glass will likely break. You probably won't have enough freezer space to store all the water you will need in an emergency, but storing at least some is a good idea. If you lose electricity, the frozen water will help keep foods in your freezer frozen until power is restored. Don't completely fill the container with water; leave 2 to 3 inches of space at the top to prevent bursting as the water freezes.

Do I Need To Disinfect (Add Chemicals to) the Water?

This depends on the source of your drinking water, which is probably a public water supply, bottled water, or an untested source such as a private well or spring. Purify any untested source or any source you're unsure about to make sure it is safe to drink. Read further for instructions to purify water.

Public Water Supplies

If your drinking water comes from a public supply (city or rural water system), you won't need to add a chemical disinfectant. Public water supplies are already "treated" with needed disinfectants and should be safe. An exception to this is if the system has issued an emergency "boil water" notice, when you would need to disinfect the water before drinking it.

Although properly stored public water should have an indefinite shelf life, replace it with a fresh supply every 6 to 12 months for the best taste.

Bottled Water

Before water can be sold as bottled water, it must pass tests to make sure it is free of harmful contaminants. In Mississippi, bottled water also must be tested each week for bacteria and once a year for a broad range of chemicals. Unopened bottled water should be safe to store without added chemicals.

Although bottled water isn't necessarily better or worse than public water supplies, it is convenient. If you plan to store bottled water for emergency use, get it before a natural disaster; you may not be able to get to a store afterward.

Private Wells and Other Untested Sources

If the water you plan to store comes from a private well, spring, or other untested source, purify it before storage to kill bacteria that may be in the water. It is not necessary to purify water from a proven source such as a city water system or bottled water. Several methods to purify untested water are available.

How Do I Purify Untreated Water?

Any one of the methods listed below will purify water if done properly. Regardless of the method you choose, boil the water first as an added precaution. Then choose one (and only one) of the treatment options. Some methods, particularly purification tablets containing iodine, may give the water an off taste and color. If you plan to use tablets, get them before any emergency, because you may be unable to do so afterward. Iodine and bleach also are poisonous, so keep them out of children's reach.

Boiling

Bring water to a rolling boil for one minute. Pour into a clean container as soon as the water cools, and store in a safe place.

Bleach

Liquid household bleach that contains sodium hypochlorite (chlorine) will purify water. But it's important to know that not all bleaches are the same for purifying water. To be safe and most effective, use "regular" full strength bleach containing 5.25 percent sodium hypochlorite (read the label). Do not use scented bleach; it isn't 5.25 percent strength, plus it's more likely to have an "off" taste. Use the following table as a guide for adding bleach. Stir to mix completely.

Amount of 5.25 percent bleach to add to treat different amounts of clear and cloudy water.:

Amount of Bleach

Amount of Water	Clear Water	Cloudy Water
2 liters	4 drops	1/8 teaspoon
1 gallon	1/8 teaspoon	1/4 teaspoon
5 gallons	1/2 teaspoon	1 teaspoon

Let the water stand for 30 minutes. The water should have a slight chlorine odor. If it doesn't, add the same amount of bleach again and let the water stand for 15 minutes more.

A special note about chlorine: because of publicity, people may be concerned about potentially harmful effects of chlorine in drinking water. But until other effective, economically feasible treatment options are available, many water-quality professionals agree the benefits of chlorine in eliminating life-threatening drinking water problems far outweigh the shortcomings, in emergency as well as nonemergency situations.

Purification Tablets

These tablets are iodine based and are specifically made to purify water. They're available at camping and sporting goods stores, military surplus stores, and some large department or drug stores. Carefully follow directions on the package. Purification tablets are for emergency use only, not everyday use. Unopened tablets have a shelf life of several years. Some tablet kits include something to help the off-taste and color created by iodine.

Iodine

In an emergency, iodine in a medicine kit will purify water. Use 2 percent U.S.P.-strength iodine (read the label). Using a medicine dropper, add 20 drops per gallon to clear water and 40 drops per gallon to cloudy water. Mix completely by stirring or shaking in a clean container. Let the water stand at least 30 minutes before using. Iodine is an antiseptic and is poisonous, so use and store it safely.

Will I Ever Need To Retreat Stored Water?

Stored water should be safe unless it comes in contact with flood water or other contaminant sources. Clean and sanitize with household bleach (as described earlier) any container that comes in contact with contaminants. If the water itself is or might be contaminated, purify it again before using for drinking, cooking, brushing teeth, or washing dishes. If your private well goes under water during a flood, disinfect the well itself to protect against bacteria and other contaminants. For information on disinfecting a well, see Extension Publication 1865 Protecting Your Well by Shock Chlorination.

Emergency Sources of Water

Although not likely, it is possible in an extreme emergency that drinking water might not be available at all. If drinking water is not available from other sources, you can get emergency water from ice cubes, frozen containers of water, a hot water heater, or even the toilet tank (the tank on the back of the toilet, not the bowl) if a chemical disinfectant has not been added to the tank.

Until the emergency has passed, keep the water coming into your home shut off to keep out contaminants. To get a free flow of water from the hot water tank, open the valve at the top of the tank as well as the faucet at the bottom of the tank. Increase the water flow by turning on any hot water faucet before draining water from the hot water tank. Be sure to turn off gas or electricity to the tank before draining water for emergency use.

By **Dr. Jimmy A. Bonner**, Associate Extension Professor, Agricultural and Biological Engineering.
This publication is adapted in part from publications by the University of Idaho and the University of Missouri. This project is based on work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under special project number 98-EWQI-1-0369.

Publication 2243
Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture in furtherance of Acts of Congress, May 8 and June 30, 1914. VANCE H. WATSON, Interim Director (POD-6-06)