

## Treatment of

# Drinking Water

## for Emergency Use



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## When Do You Need To Treat Drinking Water?

Normally your water is safe to drink, but it may need to be treated if your usual water supply is interrupted or becomes unsafe for drinking. Conditions that may require treatment of drinking water include:

- Disasters such as floods, earthquakes and power outages that interrupt your water supply;
- Water supply system disruption or loss of pressure because of line breaks or repairs;
- Special conditions under which your water system, local health department, or the State Department of Health informs you that the water should be boiled or treated before drinking.

## Preparing For Emergencies

The best way to ensure a safe supply of drinking water is to routinely store enough water to last through an emergency. Although most emergencies are unexpected, you may be able to anticipate situations by watching or listening to weather reports. You should also pay attention to notices from your water system about planned water disruptions or other conditions that could signal a problem with your water supply.

Whether or not you store supplies of water, keep on hand the following items used to treat water during an emergency:

- Fresh supply of liquid household bleach and kitchen measuring spoons or a medicine dropper (medicine droppers with both teaspoon and milliliter markings are available at drug stores),
- Equipment (propane or gas stoves, outdoor barbeque grills, etc.) needed to boil water (remember that your usual source of energy may not be available during an emergency).



## Storing Drinking Water For Emergencies

To be prepared for a drinking water emergency, the American Red Cross recommends storing one gallon of water per person per day (two quarts for drinking, two quarts for each person in your household for food preparation/



sanitation). Keep at least a three-day supply of water per person. Extremely warm temperatures and intense physical activity can double that amount; children, nursing mothers, and ill people will need more.

- Collect the water from a safe supply. If you are connected to a state-approved public water system, your water should be considered safe unless you have been notified otherwise. If you have your own supply, contact your local health department about how to have it tested.

- Use proper storage containers. Store the water in containers that are made for water storage, or glass and plastic jugs previously used for juice, milk, pop or bottled water. Clean containers thoroughly before using and make sure that the container has a tight fitting cap. *Never use containers that were previously used for pesticides, chemicals, solvents, anti-freeze, oils, etc.*

- Add liquid bleach to the water according to the tables provided at the end of this publication in order to keep it safe for drinking.
- Store in a cool place, safe from flooding, freezing and earthquakes. It is recommended that you use or discard the stored water and replace it with a fresh supply every two months.

See inside  
for liquid chlorine  
bleach solution  
chart



## Treating Water In Emergencies: Boil Or Add Bleach

If a safe supply of water is not available, it should be treated before being used for drinking, cooking or brushing teeth.

There are two primary ways of treating water: boiling or adding bleach. If the supply has been made unsafe because of untreated surface water (from floods, streams or lakes), boiling is the better treatment.

If the water is cloudy, it should be filtered before boiling or adding bleach. Filters designed for use when camping, coffee filters, towels (paper or cotton), cheesecloth, or a cotton plug in a funnel are effective ways to filter cloudy water.

### Boiling

Boiling is the best way to purify water that is unsafe because of the presence of protozoan parasites or bacteria.



Boiling should not be used when toxic metals, chemicals (pesticides, solvents, etc.), or nitrates have contaminated the water.

- Place the water in a clean metal or glass container and bring to a rolling boil for one minute.

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- Boiled water should be kept covered while cooling and should then be stored in the manner previously described under "Storing Drinking Water For Emergencies."

## Purifying By Adding Liquid Chlorine Bleach

If boiling is not possible, water can be made safe for drinking by treating with liquid household chlorine bleach, such as Clorox, Purex, etc. Household bleach is typically between 5% and 6% chlorine. Avoid using bleaches that contain perfumes, dyes or other additives. Be sure to read the label.

- Place the water (filtered if necessary) in a clean container. Add the amount of bleach according to the tables at the end of this advisory. Mix thoroughly and allow to stand for at least 30 minutes before using (60 minutes if the water is cloudy, or very cold).
- Purifying tablets or chemicals designed for use when camping or backpacking can also be an effective way to treat water. Always follow the directions on the package.

### Note:

Chlorine and other chemicals will not kill oocysts of the parasite *Cryptosporidium* ("Crypto"), which may be present in water supplies affected by untreated surface water. *Cryptosporidium* is an organism that can cause severe illness and even death in persons who have been weakened because of health problems. Boiling is the best water treatment if there is the possibility of contamination by Crypto.

### Caution

*The treatments described above work only in situations where the water is unsafe because of the presence of bacteria. If you suspect the water is unsafe because of chemicals, oils, poisonous substances, sewage, etc., do not use the water for drinking.*

Brochure Design Courtesy of Washington Department of Health

## Treating Water With a 5-6% Liquid Chlorine Bleach Solution

(Allow treated CLEAR water to stand 30 minutes before using; treated CLOUDY water should stand for 60 minutes)

Volume of Water To Be Treated	Treating Clear Water	Treating Cloudy, Very Cold or Surface Water
	Bleach Solution To Add	Bleach Solution To Add
1 quart/1 liter	3 drops	5 drops
1/2 gallon/2 quarts/2 liters	5 drops	10 drops OR 1/8 tsp
1 gallon	10 drops OR 1/8 tsp	20 drops OR 1/4 tsp
5 gallons	50 drops OR 2.5 mL OR 1/2 tsp	5 mL OR 1 tsp
10 gallons	5 mL OR 1 tsp	10 mL OR 2 tsp

tsp = teaspoon; Tbsp = tablespoon; mL = milliliter



## Treating Small Quantities of Water

For treating small amounts of water, you may find it easier to use a 1% bleach solution.

- Mix one part of 5-6% household bleach and four parts clean water by volume to yield a 1% bleach solution. For example, add **one cup of bleach to four cups water** to yield five cups of 1% bleach solution.
- Keep the bleach solution in a tightly capped container labeled as 1% bleach solution. Store in a cool place. Discard and make a fresh solution every two months.

## Treating Water With a 1% Liquid Chlorine Bleach Solution

(Allow treated CLEAR water to stand 30 minutes before using; treated CLOUDY water should stand for 60 minutes)

Volume of Water To Be Treated	Treating Clear Water	Treating Cloudy, Very Cold or Surface Water
	Bleach Solution To Add	Bleach Solution To Add
1 quart/1 liter	10 drops OR 1/8 tsp	20 drops OR 1/4 tsp
1/2 gallon/2 quarts/2 liters	20 drops OR 1/4 tsp	40 drops OR 2.5 mL OR 1/2 tsp
1 gallon	40 drops OR 2.5 mL OR 1/2 tsp	5 mL OR 1 tsp
5 gallons	12.5 mL OR 2.5 tsp	25 mL OR 5 tsp
10 gallons	25 mL OR 5 tsp	50 mL OR 10 tsp OR 3 Tbsp

tsp = teaspoon; Tbsp = tablespoon; mL = milliliter