

# WATER IN A DISASTER

## EMERGENCY PREPAREDNESS TOPIC



Humans are made up of 65% water and need water after 3 days or we will perish. Water flows through the blood, carrying oxygen and nutrients to cells and flushing wastes out of our bodies. It cushions our joints and soft tissues. Without water as a routine part of our intake, we cannot digest or absorb food.

<http://www.livescience.com/32320-how-long-can-a-person-survive-without-water.html>

### Quantity and Quality need to be addressed in an emergency

Quantity	Quality															
<p>1 Gallon of water per day per person</p> <ul style="list-style-type: none"> <li>• Drinking</li> <li>• Hygiene</li> <li>• Cooking</li> <li>• First Aid</li> </ul> <p>1 Gallon of water per day per pet (varies on pet)</p>	<p>Untreated water can make you sick. It may contain toxic chemicals, heavy metals, and viruses/bacteria that cause diseases.</p> <p>Water often can be made safe to drink by boiling, adding disinfectants, or filtering.</p>															
<p>Water can be stored ahead of time*</p> <ul style="list-style-type: none"> <li>• Use metal bottles</li> <li>• Use BPA-free plastic containers</li> <li>• Use Lexan containers</li> <li>• Glass containers break easily and are not recommended</li> <li>• Do NOT use milk jugs or similar type plastic containers</li> </ul>	<p><b>Filter:</b> mechanically removes contaminants. Most filters, depending on the filter pore size, can remove everything but viruses. Carefully read the manufacturer instructions to learn about capability.</p> <p><b>Purify:</b> chemically kills viruses and some (but not all) bacteria. Does not remove bad taste or debris.</p>															
<p>Water can be found in your hot water heater. If you hear of broken water or sewage lines, turn off the intake valve to prevent contamination of your water.</p>	<table border="1"> <thead> <tr> <th></th> <th>Purify</th> <th>Filter</th> </tr> </thead> <tbody> <tr> <td>Boil</td> <td>X</td> <td></td> </tr> <tr> <td>Disinfectant</td> <td>X</td> <td></td> </tr> <tr> <td>Filter devices</td> <td></td> <td>X</td> </tr> <tr> <td>Filter + disinfectant</td> <td>X</td> <td>X</td> </tr> </tbody> </table>		Purify	Filter	Boil	X		Disinfectant	X		Filter devices		X	Filter + disinfectant	X	X
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<p>Water can also be found in melted ice cube trays and in cans of fruits and vegetables.</p> <p>*If you use your own containers for storing water, make sure to sanitize them first.</p> <ul style="list-style-type: none"> <li>• Wash containers with dishwashing soap and rinse well with water.</li> <li>• Sanitize by swishing a solution of 1 teaspoon of liquid household chlorine bleach to a quart of water on all interior surfaces of the container.</li> <li>• Rinse thoroughly with clean water before use.</li> </ul>	<p><b>IMPORTANT:</b> Water contaminated with fuel or toxic chemicals will not be made safe by boiling or disinfection. Use a different source of water if you know or suspect that water might be contaminated with fuel or toxic chemicals.</p>															



**For the recommended 14 days of preparation you need to store 14 gallons:**

- 14 1-Gallon bottles (Do not use milk containers due to the rapid degradation of the plastic) OR
- 27 2-Liter Bottles (Soda bottles work great) OR
- 53 1-Liter Bottles OR
- 5 flats of 16.9oz water bottles

**For proper water storage:**

- Label container as "drinking water" and include storage date.
- Replace stored water that is not commercially bottled every six months.
- Keep stored water in a place with a fairly constant cool temperature.
- Do not store water containers in direct sunlight.
- Do not store water containers in areas where toxic substances such as gasoline or pesticides are present.

**Boiling:**

- Boiling is the surest method to make water safer to drink by killing disease-causing organisms, including viruses, bacteria, and parasites.
- Bring the clear water to a rolling boil for one minute (at elevations above 6,500 feet, boil for three minutes).
- Let the boiled water cool.
- Store the boiled water in clean sanitized containers with tight covers.

**Bleach disinfection:**

Typical unscented household liquid chlorine bleach will be 5.25%, 6%, or 8.25% sodium hypochlorite. Add the following amount of bleach (see table below)

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

Amount of Water	% Sodium Hypochlorite	Amount of Bleach to Add to Water
1 quart or liter	1%	10 drops
1 gallon		40 drops
2 quarts or liters	4-6%	4 drops
1 gallon or 4 liters		8 drops or 1/8 teaspoon
2.5 gallons		3/8 teaspoon
5 gallons		3/4 teaspoon
7 gallons		1 teaspoon
15 gallons		2 teaspoons
55 gallons		1/8 cup
1 quart or liter	7-10%	1 drop
1 gallon		4 drops
1 quart or liter	Unknown	10 drops
1 gallon		40 drops

Note: If the water is cloudy, murky, colored, or very cold, DOUBLE the amount of bleach added.

**MORE INFORMATION**

- [CDC Personal Preparation and Storage of Safe Water](#)
- [CDC Drinking Water Treatment Methods for Backcountry and Travel Use \(pdf\)](#)
- [Water Filtration for Emergency Preparedness](#)
- [Disaster Survival Guide: Emergency Water Storage](#)
- [How to Drain a Water Heater](#)

If electronic copy (with clickable links) is needed, e-mail your request to [Michael.Bamberger@oregonstate.edu](mailto:Michael.Bamberger@oregonstate.edu).