Disinfecting Water in Emergencies

Boiling

The EPA, World Health Organization, FEMA, and others state that boiling is sufficient to kill pathogenic bacteria, viruses and protozoa. Here are their recommendations:

- If water is cloudy, let it settle and filter it through a clean cloth, paper towel, or coffee filter.
- Bring water to a rolling boil for at least one minute. At altitudes above 5,000 feet (1,000 meters), boil water for three minutes.
- Let water cool naturally and store it in clean containers with covers.
- To improve the flat taste of boiled water, add one pinch of salt to each quart or liter of water, or pour the water from one clean container to another several times.

Bleach

While bleach will also disinfect water, it is important to know that bleach loses its effectiveness over time and should not be used if it is over a year old. Use only fresh liquid chlorine bleach. Do not use scented, color safe, or bleaches with added cleaners.

- If water is cloudy, let it settle and filter it through a clean cloth, paper towel, or coffee filter.
- Use a clean medicine dropper and information from the table below to measure the amount of bleach to use. Double that amount if the water is cloudy, colored, or very cold.
- Mix and let it stand for 30 minutes. The water should have a slight chlorine odor. If not, repeat the dosage and let stand another 15 minutes.
- If the chlorine taste is too strong, pour the water back and forth between clean containers and let stand a few hours before use.

Volume of Water	Amount of 6% Bleach to Add*	Amount of 8.25% Bleach to Add*
1 quart/liter	2 drops	2 drops
1 gallon	8 drops	6 drops
2 gallons	16 drops (1/4 tsp)	12 drops (1/8 teaspoon)
4 gallons	1/3 teaspoon	1/4 teaspoon
8 gallons	2/3 teaspoon	1/2 teaspoon

Note: Bleach may contain 6% or 8.25% sodium hypochlorite.

Pool Shock or Granular Calcium Hypochlorite (This is our preferred way to disinfect water.)
When using pool shock for sanitizing water, be sure you do the following:

- Read the ingredients! The single active ingredient must be 68% or higher of calcium hypochlorite (known as HTH or High Test Hypochlorite) with no other active ingredients.
- HTH is a very powerful oxidant—don't breathe the fumes and store unused granules in airtight glass or plastic containers with nonmetal lids to avoid corrosion.

Instructions for use:

- Use the table below to determine the amount HTH needed for adding to water to make the *Base Solution*. The Base Solution is very concentrated, like pure bleach. You will use it in small amounts to disinfect water.

To make this amount of Base Solution:	**Use this amount of HTH granules:**	**Mixed in this amount of water:**
2 gallons	1 heaping teaspoon	2 gallons
1 gallon	Heaping ½ teaspoon	1 gallon
2 quarts	Heaping ¼ teaspoon	2 quarts
1 quart	Heaping 1/8 teaspoon	1 quart
1 pint	1/16 teaspoon or a Pinch	1 pint

- To disinfect water, use one part of the Base Solution to 100 parts of water. The table below provides information on the amount of Base Solution needed to disinfect various volumes of water.

Use this amount of Base Solution	**To disinfect this amount of water**
2 gallons	200 gallons
1 gallon	100 gallons
2 quarts	200 quarts or 50 gallons
1 quart	100 quarts or 25 gallons
1 pint	100 pints or 12.5 gallons
1 cup	100 cups or 6.25 gallons
½ cup	400 oz or 3.125 gallons
¼ cup	200 oz or about 1.5 gallons

This is the brand of pool shock we use. The active ingredient is 73% calcium hypochlorite. It is available on Amazon.