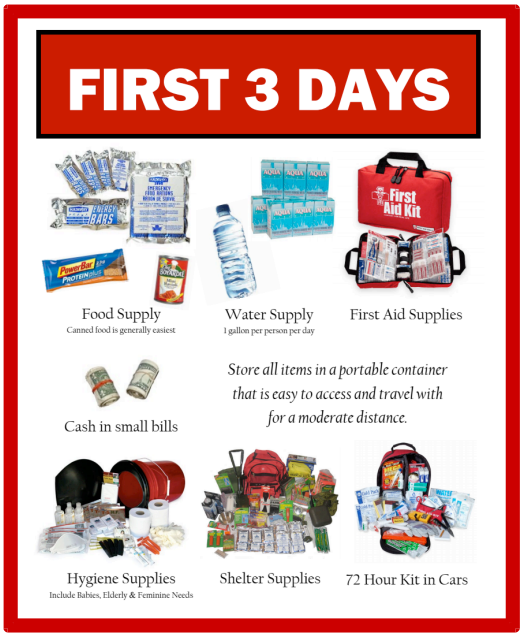
June 2022 | Volume 2 Issue 6

JUST ONE THING

THE EMERGENCY PREPAREDNESS NEWSLETTER FOR THE ORANGE CALIFORNIA STAKE



For a long time, I had a very simplistic view of water treatment; I thought you just needed to put a little bleach into water periodically and then you were good to go. I also didn't realize that bleach has a relatively short shelf-life, so you need to be rotating it, and I didn't realize that bleach didn't kill off everything bad in water. Just in case you are like me, this issue is going to explain some of the things I have learned about making sure water is safe to drink.

However, this is just a partial summary of some of what I have read. There's a lot to learn, so I strongly recommend that you take the time to read and/or watch the articles and videos I link to in this newsletter. The Provident Prepper site has very thorough explanations and videos that go into great detail about water storage and purification. Please take the time to read/watch them. It will be well worth your time.

Before we discuss water purification, it is important note that when you initially store water, you should be careful not to introduce contaminants into the water while you are filling your containers. I always thought that it was fine to use a regular garden hose to fill up big barrels of water. It turns out that that's not the best idea since there can be debris, bacteria, or lead in the hose that you don't want in your water. You should use a *potable water hose*, which is what is used for filling RVs and water tanks, and when you're done, you should store the hose with the ends connected to prevent contamination. I know many of us have used the hose and been just fine, but it's good to be as careful as possible. You should also make sure that you store your barrel siphon and/or water pump in their original packaging or in plastic wrap so you don't contaminate your water when you get it out of the barrel.

How to store water: https://theprovidentprepper.org/how-to-store-water-for-emergency-preparedness/
How to make water safe to drink: https://theprovidentprepper.org/making-water-safe-to-drink-7-disinfection-techniques/
How to choose a water filter: https://theprovidentprepper.org/emergency-water-filters-guiding-you-through-the-maze/

IF YOU ONLY HAVE TIME TO DO ONE THING THIS MONTH, DO THIS:

June's ONE Thing

Read about purifying water & gather the supplies to disinfect and filter water.

WATER PURIFICATION

Even if you have been diligently storing water, there may come a time when you run out of water or you're someplace where you only have contaminated drinking water. Contaminated drinking water can be more dangerous than the original disaster because you can get serious illnesses such as cholera, typhoid, hepatitis, or dysentery. You can have biological or chemical contaminants in your water. Biological contaminants are microorganisms such as protozoa, bacteria, and viruses. Chemical contaminants include heavy metals, salts, fuels, pesticides, pollutants, or other chemicals. Water purification is the process of removing contaminants and other solids to make water safe and nice to drink, and it's a three-step process: 1) Clarification, where you remove large particles/debris from the water; 2) Disinfection, where you kill off pathogens; 3) Filtration, where you remove contaminants. See *Time For More?* for information on how to disinfect water.

This is our second year of gradually preparing by going through The *Power of 3 Member Preparedness Plan*.
You can find *The Power of 3* plan at https://www.orangestakelinks.com/
See the "*Emergency Preparedness*" tab for previous issues of this newsletter and additional information.

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Time For More?

When you finish "Just One Thing" And Have Time to Do More

Purifying Water- Continued

Although there are three steps to purifying water, you don't necessarily have to do all three steps. For example, if the municipal water supply is contaminated, you don't have to worry about clarifying it, and boiling it is sufficient to kill off micro-organisms. So as long as there aren't chemical contaminants in it, just disinfecting the water is fine.

Step 1: Clarification This is basically making the water clear by removing things that are floating in it. So let's say you had some pond water with leaves and algae floating in it. You would pour the water through coffee filters, layers of paper towel,or a cloth to strain out the stuff floating in it.

Step 2: Disinfection This is the process of killing off or "deactivating" microscopic creatures. There are a variety of methods, but know that not every method is effective in killing off all the pathogens in the water. For example, protozoa, won't survive boiling, but they can survive bleach, so they'll need to be filtered out. See the links below as well as the attached infographic sheet to learn more about disinfection methods.

How to disinfect water:
https://theprovidentprepper.org/making-water-safe-to-drink-7-disinfection-techniques/

https://wwwnc.cdc.gov/travel/yellowbook/2020/preparing-international-travelers/water-disinfection

Step 3: Filtration Once your water is disinfected, you can run it through a filter which can screen out some of the larger microorganisms that weren't killed in the disinfection process, and it can get rid of some chemicals, which can improve the odor and taste of the water. Not all filters are created equal and there are a wide variety of filters to choose from, so do your research before you buy.

How to choose a water filter:
https://theprovidentprepper.org/emergency-water-filters-guiding-you-through-the-maze/

Recipe Corner

5% Chlorine Stock Solution

This is a very different type of "recipe" than other months. This is basically a recipe for how to make bleach. When I learned that bleach only has a 6 month shelf life, I wondered if there was something that lasted longer, and it turns out that there is something: It's 68% dry calcium hypochlorite.

This very potent chemical is used to shock pools. It comes in powered form in one pound bags and has a shelf life of about 10 years. You only need a ¼ teaspoon to disinfect a 55-gallon water barrel, so for smaller amounts of water you need to make a 5% solution and then use it as you would bleach. With the recipe below, you'll be able to whip up a fresh batch of full potency bleach whenever you need it and then use it as you would bleach.

It sounds wonderful, and it is, but you have to *be very careful when you handle and store it.* It is very corrosive to metals and it off-gasses, so please read the post below and watch the video to learn how to handle it properly.

How to disinfect water with calcium hypochlorite:
https://theprovidentprepper.org/disinfecting-water-using-calcium-hypochlorite/

5% Chlorine Stock Solution
Homemade Liquid Bleach

Water	68% Dry Calcium Hypochlorite
1 cup	1 ½ teaspoons
1 quart	2 Tablespoons
2 quarts	4 Tablespoons
1 gallon	8 Tablespoons

Use your homemade bleach to disinfect water as you would use normal bleach. (See chart.) Allow water to stand at least 30 minutes before consuming.

Household Bleach Water Disinfection Chart

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

Note: Chart info is from TheProvidentPrepper.org

Editor's Note: The "I" in this newsletter is Laurel Evans, the Stake Emergency Preparedness Specialist. This humble newsletter is my attempt to help myself and others get better prepared for life's emergencies, both big and small. Please join me on the journey and feel free to share this info with anyone and everyone.
If you have any questions, comments, suggestions, or corrections, please email me at OrangeStakePreparedness@gmail.com. Happy Preparing! *You can do this!*

Here is a great handout you can print out and keep with your emergency supplies. You can link to the original file at: https://www.cdc.gov/healthywater/emergency/pdf/make-water-safe-during-emergency-p.pdf

Accessible version: https://www.cdc.gov/healthywater/emergency/making-water-safe.html

Make Water Safe During an Emergency

Tap water may not be safe to drink during an emergency; listen to your local authorities. Use bottled water if possible. If not, use one of the methods below to make it safe. Boiling works best. Water contaminated with harmful chemicals or toxins cannot be made safe by boiling or disinfection.

BOIL

This method will kill bacteria, viruses, and parasites.

Boil your water for 1 minute.

At elevations above 6,500 feet, boil for 3 minutes. Let the water cool.

DISINFECT

This method will kill most viruses and bacteria.

Add 8 drops or a little less than 1/8 of a teaspoon of 5%-9% unscented household bleach to 1 gallon water.

For cloudy tap water, use 16 drops or ¼ teaspoon

Add bleach to water. Mix well. Wait at least 30 minutes before using.

FILTER

This method can remove parasites.

Most portable water filters do not remove bacteria or viruses.

Choose a water filter labeled to remove parasites, and follow manufacturer's instructions.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Learn more:
https://www.cdc.gov/healthywater/emergency/making-water-safe.html

CS316855-A

Here is another handout with great information. https://www.epa.gov/sites/default/files/2017-09/documents/emergency_disinfection_of_drinking_water_sept2017.pdf

EPA United States Environmental Protection Agency

EMERGENCY DISINFECTION OF DRINKING WATER

In an emergency situation where regular water service has been interrupted – like a hurricane, flood, or water pipe breakage – local authorities may recommend using only bottled water, boiled water, or disinfected water until regular water service is restored. The instructions below show you how to boil and disinfect water to kill most disease-causing microorganisms that may be present in the water. However, boiling or disinfection will not destroy other contaminants, such as heavy metals, salts, and most other chemicals.

ONLY USE WATER THAT HAS BEEN PROPERLY DISINFECTED FOR DRINKING, COOKING, MAKING ANY PREPARED DRINK, WASHING DISHES, AND FOR BRUSHING TEETH.

- ❑ Use **bottled water** or water you have properly prepared and stored as an emergency water supply.
- ❑ **Boil water**, if you do not have bottled water. Boiling is sufficient to kill pathogenic bacteria, viruses and protozoa (WHO, 2015).
  - 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.

- ❑ **Disinfect water using household bleach**, if you can't boil water. Only use regular, unscented chlorine bleach products that are suitable for disinfection and sanitization as indicated on the label. The label may say that the active ingredient contains 6 or 8.25% of sodium hypochlorite. 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.
  - Locate a clean dropper from your medicine cabinet or emergency supply kit.
  - Locate a fresh liquid chlorine bleach or liquid chlorine bleach that is stored at room temperatures for less than one year.
  - Use the table on the next page as a guide to decide how much bleach you should add to the water, for example, add 8 drops of 6 % bleach or 6 drops of 8.25% bleach to each gallon of water. Double the amount of bleach if the water is cloudy, colored, or very cold.
  - Stir and let stand for 30 minutes. The water should have a slight chlorine odor. If it doesn't, repeat the dosage and let stand for another 15 minutes before use.
  - If the chlorine taste is too strong, pour the water from one clean container to another and let it stand for 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 tsp)
4 gallons	1/3 tsp	1/4 tsp
8 gallons	2/3 tsp	1/2 tsp

† Bleach may contain 6 or 8.25% sodium hypochlorite

ADDITIONAL WATER GUIDANCE FOR EMERGENCIES

Prepare and store an emergency water supply. Visit the Federal Emergency Management Agency (FEMA) website www.ready.gov/managing-water for additional guidance on preparing and storing an emergency water supply.

Look for other sources of water in and around your home. Although bottled water is your best choice, you may be able to find other sources of water by melting ice cubes or draining your hot water tank or pipes.

You can also use river or lake water. It is generally better to use flowing water than still, stagnant water. However, do not use water with floating material in it or water that has a dark color or questionable odor.

Regardless of the source, treat the water by following the instructions on the previous page.

If you have a well on your property that has been flooded, make sure to disinfect and test the well water after the flood. Contact your state or local health department for advice or go to water.epa.gov/drink/info/well/whatdo.cfm.

Consider how the water looks and how to filter it if needed. Disinfection does not work as well when water is cloudy or colored. If water is cloudy, let it settle. Then filter the water through a clean cloth, paper towel, or coffee filter. Store the settled and filtered water in clean containers with covers.

OTHER DISINFECTION METHODS

If you don't have liquid bleach, you can use one of the other disinfection methods described below.

- **Granular calcium hypochlorite**. The first step is to make a chlorine solution that you will use to disinfect your water. For your safety, do it in a ventilated area and wear eye protection. Add one heaping teaspoon (approximately ¼ ounce) of high-test granular calcium hypochlorite (HTH) to two gallons of water and stir until the particles have dissolved. The mixture will produce a chlorine solution of approximately 500 milligrams per liter. To disinfect water, add one part of the chlorine solution to each 100 parts of water you are treating. This is about the same as adding 1 pint (16 ounces) of the chlorine solution to 12.5 gallons of water. If the chlorine taste is too strong, pour the water from one clean container to another and let it stand for a few hours before use. CAUTION: HTH is a very powerful oxidant. Follow the instructions on the label for safe handling and storage of this chemical.
- **Common household iodine (or "tincture of iodine")**. You may have iodine in your medicine cabinet or first aid kit. Add five drops of 2% tincture of iodine to each quart or liter of water that you are disinfecting. If the water is cloudy or colored, add 10 drops of iodine. Stir and let the water stand for at least 30 minutes before use.
- **Water disinfection tablets**. You can disinfect water with tablets that contain chlorine, iodine, chlorine dioxide, or other disinfecting agents. These tablets are available online or at pharmacies and sporting goods stores. Follow the instructions on the product label as each product may have a different strength.

MORE INFORMATION

World Health Organization (WHO), 2015. *Technical Briefing on Boil Water*.

Safe Drinking Water Hotline 1-800-426-4791
water.epa.gov/drink/hotline

OFFICE OF WATER 4606-M EPA 816-F-15-003 SEPTEMBER 2017