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Better than Bleach: Use Calcium Hypochlorite to Disinfect Water

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Gets past the bleach storage problem

Many outdoorsmen, survivalists, and households preparing for emergency disasters rely upon common household bleach as a disinfecting agent to make water safe to drink.

Bleach will destroy most (but NOT all!) disease causing organisms ([boiling water to make it safe to drink](#) is always the best method).

What is not well known is Calcium Hypochlorite is far better for chemically disinfecting water.

Old Way: Using Bleach to Disinfect Water

Those of us who have [emergency preparedness](#) stocks of [survival food](#) and [survival gear](#) often keep a gallon or two of unscented household bleach on hand for making safe drinking water in large quantities. Bleach is often the chemical of choice because it is commonly available and frequently mentioned when discussing the how-to's of drinking water.

I cringe to think how many people have expired bleach in their disaster emergency kits that will be used for treating polluted water.



calcium hypochlorite - bleach

Typical fresh household chlorine bleach has about 5.35% chlorine content (be sure to read the label). To use household bleach for disinfecting water:

Add two drops of bleach per quart or liter of water.

Stir it well.

Let the mixture stand for a half hour before drinking.

If the water is cloudy with suspended particles:

First filter the water as best you can.

Double the amount of bleach you add to the water.

Why Using Bleach to Disinfect Contaminated Water is a Problem

A little known problem with long term storage of bleach in your disaster emergency supply cache is that it degrades over time. Consulting a Chlorox bleach representative produced this statement:

"We recommend storing our bleach at room temperatures. It can be stored for about 6 months at temperatures

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between 50 and 70 degrees Fahrenheit. After this time, bleach will begin to degrade at a rate of 20% each year until totally degraded to salt and water. Storing at temperatures much higher than 70 degrees Fahrenheit could cause the bleach to lose its effectiveness and degrade more rapidly. However, if you require 6% sodium hypochlorite, you should change your supply every 3 months."

I cringe to think how many people have expired bleach in their disaster emergency kits that will be used for treating polluted water. Even what are considered reliable sources of information such as the EPA and the Federal Emergency Management Agency FEMA will show you how to use bleach to disinfect water but will leave out this exceedingly important piece of information.

This is why I created [Survival Topics](#) – to give you the real information you need to survive.

So if bleach is unreliable for long term storage in emergency preparedness kits then what other commonly available chemical methods of disinfecting water are there? As it turns out a better solution is easily available.

Use Calcium Hypochlorite for Disinfect Water

Calcium hypochlorite is one of the best chemical disinfectants for [water](#), better than household bleach by far. It destroys a variety of disease causing organisms including bacteria, yeast, fungus, spores, and viruses.

A 1-pound pag of calcium hypochlorite in granular form will treat up to 10,000 gallons of drinking water

Calcium Hypochlorite is widely available for use as swimming pool chlorine tablets or white powder that is much more stable than chlorine. This is often known as "pool shock".

How to Disinfect Water Using Calcium Hypochlorite

Using granular calcium hypochlorite to disinfect water is a two step process.

1. To make a stock of chlorine solution (do not drink this!) dissolve 1 heaping teaspoon (about one-quarter of an ounce) of high-test (78%) granular calcium hypochlorite for each two gallons (eight liters) of water.
2. To disinfect water add one part of the chlorine solution to 100 parts water to be treated.
3. Let the mixture sit for at least one-half hour before drinking.

Be sure to obtain the dry granular calcium hypochlorite since once it is made into a liquid solution it will begin to degrade and eventually become useless as a disinfecting agent. This also means you should make your treated drinking water in small batches, for example enough for a few weeks at a time at most.

Another plus for using calcium hypochlorite to disinfect water for emergency use is that a little goes a very long way. A 1-pound pag of calcium hypochlorite in granular form typically costs only a few \$US dollars and can be obtained in any swimming pool supply section of your hardware store or online. This amount will treat up to 10,000 gallons of drinking water, which is enough for a family of four for some six or seven years at a gallon per day per person!

Calcium hypochlorite will store for a long period of time and remain effective as a chemical drinking water treatment. So get rid of the household bleach and buy a can of Calcium hypochlorite for your disaster emergency water disinfection needs. It lasts far longer and treats far more water than the traditional chlorine bleach water disinfection treatment.

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Submit Comment

Jason

I prefer to just boil water instead of using chemical purification. Boiling always works and is safer.

**Eric
LA**

So Calcium Hypochlorite is a more effective disinfectant than Sodium Hypochlorite? Changing the cation makes that much of a difference?

**Kneverenough Knives
Bethlehem, PA**

Excellent pointers, I'm going to hit my local pool shop during my next resupply. Thank you!!

**Mike
Utah**

I would just point out that calcium hypochlorite is a hazardous chemical and the fact that it reacts strongly with ammonia and other common household chemicals to produce even more toxic substances.

Once mixed into a solution, make sure no child is able to access it, i.e. very tight lid or child-proof container because even a small dose of the chlorine solution can be harmful or fatal to a child.

**Victor
San Diego**

Calcium Hypochlorite is very effective, it is easy to transport and mix. The military uses it to make water safe to drink and hold the chlorine residual for storage. And if you add too much the chemical will dissipate over time; all you have to do is wait.

**dugglas
Salem, VA**

Just discovered this site. It seems much more informative than the average survival site. What about using this method for backpacking? Which would be better:

1. Putting a tiny amount of crystals (how much) in each water bottle to be treated. I carry one liter size bottles.
2. Or create a concentrated solution to be carried in a small nalgene bottle, to be added when needed to water bottles with an eye dropper?

Wasn't there a kit in the 1970's containing calcium hypochlorite to treat water, and peroxide added post treatment to kill the chlorine residue?

Thanks for this survival article! I had no idea bleach broke down so quickly.

Survival Topics - I prefer to create a concentrated solution at home which I then use for other purposes too. At intervals I replace the solution made from calcium hypochlorite with a fresh batch. Carry a small amount of the solution to use outdoors for the treatment of drinking water.

Many survival enthusiasts and survivalists have long term disaster preparedness caches. This is where calcium hypochlorite is at its best since it stores well if certain guidelines discussed in the Survival Topic are followed.

Still, the [best way to make water safe to drink](#) is to bring it to a boil.

Sheilah
Anchorage

Jason I think your right. I like to use tiny to small amounts of bleach for cleaning especially in cold and flu season. But I'd rather not depend on swimming pool water for survival. Boiling works for me too.

Sergeant Major
Minneapolis MN

While the tradition is to boil water if you get it to a temperature of 145 degrees Fahrenheit and hold it there 6 to 10 minutes it is pasturized. Water pasteurization indicators (WPI) show when that temperature has been reached, then simply time it. This results in fuel saving if fuel is scarce. This temperature can also be attained using solar energy. I will have to figure out how to use calcium hypochlorite in my water Filter.

Bob
LA

Yes, hydrogen peroxide will react with calcium/sodium hypochlorite to form calcium/sodium chloride (salt). So, you can treat water pretty heavily with either and then after the appropriate period of time add peroxide to kill the chlorine. If you're using 3% peroxide, you'll need to add twice as much peroxide solution as 5% bleach solution.

Mike
Denver

Your water treatment method depends on the situation: If I was "out in the woods", I would rough filter my water and then bring it to a boil before drinking it. In the event I couldn't build a fire, I would want a small eye-dropper of 2% tincture of iodine in my emergency kit.

For long term storage of large quantities of potable water, I use prescribed quantities of liquid bleach to keep my keep my water supply from growing bacteria. I would like to thank the authors of this article for pointing out an alternative to liquid bleach that I can store for an indefinite period of time. Now I can mix up small batches of bleach whenever I need them and won't have to worry about the potency of my bleach solution.

Wretha
On a mountain, in the high desert, of far west Texas

My question is about liquid bleach degrading, does this happen only AFTER the bottle is opened or does it happen even in sealed, unopened bottles? Before we moved off grid, we stocked up on 6 large jugs of Chlorox bleach. We have barely used 2 bottles, the rest of the jugs have been sitting in a temperature controlled environment since December of last year. This bleach is well over 6 months old but haven't been opened, I just wonder if these have lost effectiveness. At any rate, I will be stocking up on the powdered calcium Hypochlorite. Thanks for the information!

Survival Topics - Yes, bleach begins degrading as soon as it is manufactured. You are far better off storing dry calcium Hypochlorite for your long term needs.

Steve
Eastern Canada

All I could find was a 65% Calcium hypochlorite mix. Would I just take the appropriate percentage or use the exact same step 1 and step 2 listed?

Survival Topics - I would add about 1/5th more Calcium Hypochlorite to make up the difference.

Roni
Philippines

Ca(OCl)₂ granular is not fully soluble in water, I believe the remaining 30% (from 70% purity) is chalk or other material. so if you are going to use this make sure to let the stock solution settle first and drain before using. We prefer the sodium hypo because it does not clog our dosing pump.

Rich
Wyoming

Having the extra option for making water safe to drink is great, I also use iodine crystals made into solution. Solar Water Disinfection, also known as **SODIS**, is another good method. I also carry a 4 quart presure cooker in my **bug out bag**.

GreyOne

I have seen information that at least some brands of pool shock have additives that may contain heavy metals or other toxic ingredients. Has anyone any information on what would be the best brand choices ?

Joel the K
Patriots Cave

Thanks. You probably just saved a few lives. I'm switching to calcium hypochlorite right away.

Ken
Texas

Can you give the brand name of the calcium hypochlorite used in your example and does the 78% figure mean the amount of actual calcium hypochlorite in the powder?

Chris
Peru

This is a comment to Eric from LA. It is not the cation that makes the difference. Sodium Hypochlorite is sold in the liquid for known as bleach, Calcium Hypochlorite is sold in solid form. The point of the article is that once either Sodium or Calcium Hypochlorite is mixed with water, the resulting mixture starts to lose its ability to disinfect, so its best to have solid (dry) chlorine instead of liquid.

You are welcome to share this Survival Topic with others. I only request that you use a short blurb (not the entire survival content) and this code to link to the original:

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