

ABUNDANT WATER GUIDE



**CRISIS STORAGE AND
PURIFICATION**

DISCLAIMER OF LIABILITY AND WARRANTY

This publication describes the author's opinions regarding the subject matter herein. The author and publisher are not rendering advice or services pertaining to specific individuals or situations. For specific advice, or if expert assistance is required, the services of a qualified professional should be obtained.

The author and publisher assume no responsibility whatsoever for the use of the information in this publication or for decisions made or actions taken based, in whole or in part, on the information in this publication. The author and publisher make no warranties, express or implied, regarding the information. Without limiting the foregoing, the author and publisher specifically disclaim and will not be responsible for any liability, loss, or risk incurred directly, indirectly or incidentally as a consequence of the use or misuse of any advice or information presented herein. Use this publication and information with good judgment and do the best you can in your particular situation.

You agree to indemnify and hold the author and publisher, and their respective officers, directors, agents, employees, contractors and suppliers, harmless from any claim or demand, including reasonable attorneys' fees, related to your use or misuse of this publication or the information contained therein. You further agree that you will cooperate fully in the defense of any such claims.

Notice: As the purchaser of this electronic document you are permitted to store it and print it for your own personal use only. Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of the copyright owner and publisher. It is illegal to make a copy of all or part of this publication for someone else, even if you do not charge for the copy. If you have purchased this report from anywhere other than www.PatriotCaller.com, including Ebay, please report it immediately.

Images

All images are courtesy of iStockphoto.

Table of Contents

Saving Rainwater Makes Sense	4
How Storing And Using Rainwater Benefits You	5
Creating a Storage System for Rainwater	6
First Flush Systems for the Cleanest Water	8
Rain Barrel Maintenance	9
How Much Can You Collect?	10
Uses for Stored Rainwater	10
Storage Options	12
Some Not SO Decorative Options	13
So What If I Need Drinking Water?	15
How Long Can I Store It?	16
Is Water In Opened Containers Safe?	17
Three Ways to Purify Water	17
Summary	19

Saving Rainwater Makes Sense

Those of us who live in developed countries are very complacent about water. We turn the faucet on several times a day and never give it a second thought. We take our household water supply for granted and expect it to always be there.

Hurricanes, tornadoes, floods, and winter storms are examples of natural disasters that can interrupt the supply of safe drinking water. None of these address the possibility of our water supplies being contaminated by a terrorist act, a chemical spill or just plain infrastructure failure. Interruptions can last only a short period of time, days or even months.



Water is the number one resource necessary for human survival. It's the one substance that we haven't been able to replace, supplement, or freeze-dry for easier storage. We must have it, and we must have it in its liquid form.

When safe drinking water is unavailable, it is more than just an inconvenience - it can become a health emergency. Every household should have an emergency water supply to meet its members' needs during these situations. You may be able to purchase bottled drinking or distilled water in the time leading up to the crisis or even early during it, but stores will definitely quickly sell out.

It is important to face the question: What happens if water becomes unavailable?

Should we flood our basements at every threatened water emergency? Fill all of the tubs in our homes? What if the water system in your community has already been shut off?

There is a solution that was followed for centuries and continues to be used in other countries today. A hundred years ago before the advent of 'city water' every household had one or more rain barrels. Back then, Americans recognized that water is one of our greatest natural resources. But in our time, when it rains, most of the water ends up in storm drain systems where it has to be treated to be recycled.

But you can actually create systems to store and use rainwater where it will do the most good. You can also save money and natural resources by following a rainwater usage plan for your household.

The most reasonable solution for long-term survival is to depend on the same source that most of mankind has depended on for millennia: Rain.

How Storing And Using Rainwater Benefits You

There are many reasons to store and use rainwater. It benefits both you and the environment around you. People have stored rainwater for thousands of years, so this isn't a new idea.

It's just become more popular in recent years as we've learned the benefits and become more concerned about survival and the environment. Once you understand these benefits it is not hard to see why gathering rainwater makes sense as one of your survival options.

First, storing rainwater actually reduces the flooding and erosion that can be caused by the downspout of your gutters. This can help keep your yard looking great and prevent water from ending up in storage drain systems.

When you store and use rainwater, you can also save money. Normally, you have to pay for the water that you use to water your lawn and garden or to wash your car. But with stored rainwater, this becomes a free resource for you.

When you use rainwater to water your plants, you'll actually provide them with better nutrition. Rainwater is naturally full of minerals that are good for plants. It's also free from the pollutants and chemicals present in tap water.

If you live in an area that can be prone to drought, storing rainwater can provide you with a water source during those dry times. City water sometimes becomes restricted during drought conditions, but if you stored rain water, it always will be available to you.

When it comes to the environment, freshwater is an extremely limited resource. Only 3% of the world's water supply is suitable for drinking and other home use.

Because water consumption is high in industrialized countries, natural sources of water are beginning to dry up. Capturing rainwater taps into a renewable resource and prevents water from entering storm drainage systems where it can become contaminated.

Creating a Storage System for Rainwater

Collecting rainwater has become a popular way to conserve water in recent years. The more popular it becomes, the more different systems and options become available for storing it.

The easiest way to collect water from your home is to place a barrel under one of your home's gutter downspouts. Many commercially available rain barrels are designed to be compatible with gutter downspouts, so the installation should be fairly easy.

You can also purchase commercial kits. These are easy to put together and are intended just for storing rainwater. Once you have a system in place, your



rainwater storage will fill every time it rains.

One consideration that may not pop in your head immediately is the fact that a quantity of water is an attractive nuisance to children. If there's water around, they will play in it. With a rain barrel, it's important to make sure you take some safety precautions. For example, it needs to have a child and pet proof cover that doesn't allow small ones to fall in.

You also need to have a filter at the top that prevents debris from going into the barrel along with the rainwater. If you find that this system works well for you, you can even add multiple barrels so that you don't have any overflow during a rainy season.

Rain barrels typically have a tap at the bottom for you to remove the water. Some of them allow you to attach a standard garden hose (similar to the drain in a water heater) so that you can use the water directly in your yard. With multiple barrels, you will never waste a drop.

Always make sure that any material you use for your rain barrel is food grade. This means it won't leach harmful chemicals into the water, and the water will be safe to use.

While rain barrels are the least expensive and simplest to install, there are more sophisticated systems if you'd like to have more water storage and can afford the extra cost.

A rain barrel typically holds around 50 gallons of water for use. You can have several barrels to hold more water. But if you're interested in storing much more, you'll need a different type of collection system. One choice is called the Rainwater Pillow.

The Rainwater Pillow is a system that holds up to 1,000 gallons of water using a fabric container. It is something like the idea of a waterbed but not designed for sleeping. The amount it holds will depend on the size that you purchase. For the average

household, 1,000 gallon size is sufficient but they are available in larger capacities.

You probably will not be surprised to learn these systems are pricey, costing thousands of dollars, but if you use a lot of water in your household for gardening or even farming this could be a valuable investment for you.

You can also invest in an underground system that catches rainwater and allows you to pump it out for use. You can purchase a system that will provide water for your lawn and garden; for an additional cost, it can also be used to provide water for your toilets.

This system is quite a bit more expensive than other options because of its size, underground placement, and materials. You know your circumstances and can weigh the fact it can pay for itself in the long run by replacing your dependence on other water supplies against the damage to your wallet.

In order to have this type of system, you'll want to look in your local area for a company that specializes in it. The cost will depend on your area and your specific needs.

First Flush Systems for the Cleanest Water

One concern people have when using a rainwater barrel system from the rooftop is that it can become polluted by materials on your rooftop as the rainwater heads to the gutters.

This is a real concern as debris from your roof can contaminate the water in your barrel. A great solution for this is to use a first flush system. The first rain that falls is usually the most polluted as it washes away debris. If you do much driving, you are aware of this because the first rain of the season produces an oily slippery road. It is the same idea.

With a first flush system, the first five or even 10 gallons of water are stored and set aside from the rest of your rain barrel storage. This is the water most likely to end up with sediments or chemicals.

For those of you who are familiar with RVing, you look at this separate water like grey water and use it exclusively for your lawn or washing your car. The rest of the water is fine for more contaminate sensitive purposes like your vegetable garden or household cleaning.

Rain Barrel Maintenance

Once you have a rain barrel, there are things you'll need to do to keep it in good condition so that you can make use of the water you've stored. The following easy steps will help you get the most of your system.

First, you should empty your barrel at least once a month. This keeps water from growing algae and developing an unpleasant smell. If you want to be able to allow water to sit longer, you can add a capful of chlorine bleach to the barrel. The details and reasoning for this are discussed thoroughly later in this report.

This will stop the development of algae, and this small concentration of bleach won't harm your plants. Proportions are crucial because if you use more than that, it could become harmful. You also want to avoid using an acid such as vinegar because it will harm your plants too.

When it comes to your gutters, you'll want to make sure that you clean them regularly or install a gutter screen that prevents leaves or debris from collecting in them. This will cut down on the debris and sediment that gets into your rain barrel in the first place.

If you notice that your barrel has developed a leak, you don't have to throw it out. In many cases you can use aquarium caulk made from silicone to seal up the hole. This is available in hardware stores and is inexpensive.

Another concern for rainwater barrels is the development of mosquito populations. Draining the barrel regularly is one way to prevent this. In addition, you can also add a larvae tablet to your barrel that can prevent mosquitoes from breeding. Adding this type of tablet won't harm your plants and will prevent problems such as West Nile virus that can be spread through contact with mosquitoes.

You also need to be careful if you live in an area with very cold winters. Freezing and thawing over and over again can weaken your rain barrel. Before it gets that cold, drain your barrel and disconnect it to prevent problems.

When you're storing your rain barrel for extended periods of time, it's best to store them upside down. This keeps them free from debris.

How Much Can You Collect?

You may think it will take a long time to collect water in your rain barrel. But you can actually collect thousands of gallons a year. It is easy to figure out approximately how much water you'll collect for every inch of rainfall.

First, you'll need to estimate the square footage of your roof. Then divide that number in half. The number you end up with is the number of gallons of water you can collect from one inch of rainfall.

The average house can collect over 400 gallons of water with a half inch of rain. As you can imagine, that adds up fast during rainy seasons. This is a great reason to have multiple barrels or larger systems.

Many residents in rural areas have little choice but to drill an expensive well or to live off of rainwater. And lots of these folks have realized that it's possible to operate off of rainwater alone.

Uses for Stored Rainwater

Rainwater isn't usually used for drinking (although it can be), but it can be used for many other purposes. It may surprise you to see how many different ways you can use stored rainwater.

The most obvious use for rainwater that you collect is watering your lawn and garden. It can be costly to water your during dry and hot summer months. In areas, prone to drought your city might even ban regular watering and threaten homeowners with fines. Having a rainwater storage system allows you to have access to free water without city restrictions.

It will also allow you to continue watering even if your water service has imposed restrictions due to drought. One of the easiest ways to use your barrel is to connect it to a soaker hose. You can use it to keep your lawn irrigated, and you can even use it to protect the foundation of your home.

One of the problems with gutters is the down spout usually dumps the water from the roof in very close proximity to the house. This can continuous wet spot over time can damage the foundation of your house.

While this isn't available everywhere, many cities allow residents to use rainwater to flush toilets. You can even set up a rainwater system where the water is automatically brought into your home for toilet flushing.

This can actually save you quite a bit of money on your water bill, especially if you have a large family or many toilets that are used frequently.

If you own an automobile, you can use rainwater to fill your radiator instead of the tap water you might normally use. Just remember, this still needs to be mixed with antifreeze.

You can also use rainwater to wash your car instead of hooking up the hose to the city water system. This will save money and conserve the water you would normally use.

When you need to clean your home, you can use rainwater instead of tap water to mop. Simply fill a bucket and bring it inside to clean your floors and other surfaces.

You can use rainwater for washing dishes and even for bathing if you have a filter system to make sure it is clean enough for use inside. It can also be used for laundry. Laundry actually makes up a large percentage of water use in households, so this can save quite a lot of money.

Having a supply of water stored in rain barrels can help you if you have a natural disaster or other emergency that keeps you from being able to use your typical water supply. You'll want to make sure that you have filtration and purification tools before using it.

For example, you may need to boil the water or add water purification tablets in order to drink the water. This is covered in more depth later.

You can even share the water you've collected with neighbors if you have more than you can use. This can serve as a great example and encourage others to install their own rain barrel systems.

You may not think that your small system of rain barrels makes a big difference in the larger scheme of things, but it can make a difference for your household. You might even create a ripple effect in your community.

Outfitting your home to run on rainwater alone isn't outrageously expensive by any means. But the key is to smart small...

Storage Options



The number of rainwater storage options has exploded in the last few years. You can now find everything from cheap, plastic rain barrels to high-end terra cotta "water urns" at your local Home Depot. But don't worry; there are rainwater options to fit any budget.

Even for beginners, we would recommend a container with a capacity of at least 50 gallons. You will be astonished how easy it is to fill a 50-gallon tank.

Aesthetic considerations are important to many homeowners, of course, so you may find it worth the money to select a terra cotta urn, or a handy rolling barrel that can be moved out of the way when rain isn't in the forecast.

Some Not SO Decorative Options

If you're a price conscious shopper, ugly is pretty... and bigger is most certainly better.



The most cost effective way to store rainwater is to pick up a few 55-gallon barrels on Craigslist. Search for the term "food grade" if there is a chance you may drink any of this water.

In arid climates, rain is infrequent and 55 gallons simply doesn't go very far. That's why the most efficient way to store water is in bulk, of course.

2,500-gallon potable water storage tanks are quite affordable, especially when compare to the costs associated with drilling a water

well. A variety of 2,500-gallon plastic storage tanks are available online for less than \$1,000.

Just like with smaller rain barrels, aesthetic value comes at a premium with large storage tanks. Still, many attractive storage options are available for much less than the cost of a well.

Operational Security

The only problem with large, exposed water tanks is that they can be very conspicuous. In a SHTF scenario, you may not want to advertise that you have excess water... or even that you have a functional water tank, as both may become targets for thieves.



The two most common solutions to this are to a.) Bury your holding tank underground, or b.) hide your storage tanks. But unless you are doing all the work yourself..you will still have outsiders privy to your preparations.

Burying your rainwater tanks is fairly self-explanatory, so let's focus on strategies for concealing these rather large tanks in a typical suburban home. First off, there are a number of commercially available "slim line" water tanks that can be stored in a garden shed or under a deck.



For example, the Rainwater HOG is literally designed to be built into decks and other landscaping structures.

Another very good option we mentioned before is what's called a "pillow tank." Instead of rigid, like most tanks, pillow tanks are designed to be flexible and low profile. Think: giant waterbed.

So What If I Need Drinking Water?

Rainwater is not optimal for drinking. But the following information shows how you can store and treat it for drinking in a pinch. Of course, no one can predict the kinds of things that can happen in a crisis. Your survival stores of water could be destroyed and your rainwater might be all that survives.

Be sure that the water you are treating is drinking-quality water to begin with. To treat water for storage, use liquid household chlorine bleach that contains 5.25 percent sodium hypochlorite. Forget the fancy new kinds of bleach with soaps or scents added.

Add the bleach according to the table below, using a clean, uncontaminated medicine dropper.

- 4 drops bleach per quart or liter container of water
- 8 drops bleach per 2-quart, 2-liter, or 1/2 gallon container of water
- 16 drops bleach, or 1/4 teaspoon, per gallon or 4-liter container of water

When treating larger quantities of water, use the following table to convert drops to standard measuring units.

- 8 drops = 1/8 teaspoon
- 16 drops = 1/4 teaspoon
- 32 drops = 1/2 teaspoon
- 64 drops = 1 teaspoon
- 192 drops = 1 Tablespoon
- 384 drops = 1/8 cup which is equal to 2 Tablespoons

Stir the water and allow it to stand for 30 minutes. Chlorine should be detectable by odor after the 30 minute waiting period. If the water does not smell like chlorine at that point, repeat the dose and let it stand another 15 minutes. Place caps on containers and attach labels describing the contents and when each was prepared.

Water stored in metal containers should not be treated, prior to storage, with chlorine since the chlorine compound is corrosive to most metals. Therefore, only very pure water should be stored in metal containers.

How Long Can I Store It?

Store containers in a cool, dry place away from direct sunlight. Because most plastic beverage containers degrade over time, store them away from heat and light to prevent leakage. Because hydrocarbon vapors can penetrate polyethylene plastics, store water in plastic containers away from gasoline, kerosene, pesticides, or similar substances.

Water weighs over 8 pounds per gallon. Make sure the shelves or area in which you store the water is strong enough to support the weight. For best quality, use the purified water within a month. To improve the taste of water stored for a long time, pour it from one clean container to another clean container several times, to put air back into it.

You can also store water for an extended period of time in the freezer. If you lose electricity, the frozen water will help keep foods in the freezer frozen until power is restored. (best case scenario; worst case scenario have a block BBQ) Leave 2 to 3 inches of air space in the top of containers before freezing, to keep the container from breaking as water expands during freezing. Some glass containers may break regardless of the air space provided.

Is Water In Opened Containers Safe?

Do not use water that is cloudy, or water that has any odor other than the chlorine you added. Once opened, sanitary measures are important when using the water to keep it safe and to control exposure to bacteria. To reduce the chance of water contamination, do not open more containers than are needed at the time. If electrical power is available, store opened containers in a refrigerator at or below 40 degrees Fahrenheit. If refrigeration is not available and containers are stored at room temperature, be extra careful to avoid introducing bacterial contamination into the bottled water. Use water in opened containers within one or two days.

If supplies run low, never ration drinking water. Drink the amount you need today, and try to find more for tomorrow. You can minimize the amount of water your body needs by reducing your activity level.

Three Ways to Purify Water



In addition to having a bad odor and taste, contaminated water can contain microorganisms that cause diseases such as dysentery, typhoid and hepatitis. You should purify all water of uncertain purity before using it for drinking, food preparation or hygiene.

There are many ways to purify water. None is perfect. Often the best solution is a combination of methods. Three easy purification methods are outlined below. These measures will kill most microbes, but will not remove other contaminants such as heavy metals, salts and most other chemicals. Before purifying, let any suspended particles settle to the bottom, or strain them through layers of paper towel, coffee filter, or clean cloth.

1. **Boiling** is the safest method of purifying water that you plan to use in the near term. Bring water to a rolling boil for 3-5 minutes, keeping in mind that some water will evaporate. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring the water back and forth between two clean containers. This will also improve the taste of stored water.

NOTE: This method is not recommended for water that you plan to place in storage. This is because the boiling method doesn't prevent many problems that can develop during storage. It can also concentrate contaminants present in the water through evaporation.

2. **Disinfection** uses household liquid bleach to kill microorganisms. Use only regular household liquid bleach that contains 5.25 percent sodium hypochlorite. Do not use scented bleaches, color-safe bleaches, or bleaches with added cleaners. Add 16 drops of bleach per gallon of water, stir and let stand for 30 minutes. If the water does not have a slight bleach odor, repeat the dosage and let stand another 15 minutes.

The only agent used to purify water should be household liquid bleach. Iodine, water treatment products sold in camping or surplus stores, and other chemicals that do not contain 5.25 percent sodium hypochlorite as the only active ingredient, are not recommended and should not be used.

While the two methods described above will kill most microbes in water, distillation will remove microbes that resist these methods, as well as heavy metals, salts and most other chemicals.

3. **Distillation** involves boiling water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt and other impurities. To distill, use a clean pot with a lid that has a knob-type handle in the center. Fill the pot halfway with water. Turn the pot's lid upside-down and tie a cup under the handle, so that the cup will hang right side-up (make sure the cup is not dangling into the water) and boil the water for 20 minutes. The water that drips from the lid into the cup is distilled.

The plastic mesh that covers hams, turkeys, and is used for bags for some root vegetables is useful for holding the cup level so it does not tip and spill.

Summary

As you can see, there's an option for every budget and every level of interest. The important thing is that you begin to make your water preparations today.

Every home should have a supply of water stored for at least three days of emergency use. Store one gallon per person per day, and one quart per small pet. The container used for storing water must be clean, and made for food and water use. Household bleach is the only disinfectant needed in the water for storage.

With only a small amount of effort and money, your family can be prepared with this most important necessity: A safe, adequate supply water during any natural disaster or power outage.