

# Emergency



# Food and Water Supplies

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**S**afe food and water supplies are a major concern following a natural disaster such as a tornado, flood, hurricane or blizzard. Texas families who live in disaster-prone areas may benefit from being prepared in the event of disaster. Knowing how to safely handle food and water in the immediate few days after the disaster can reduce stress, worry and inconvenience.

A 3- to 5-day supply of food and water can be stored in a relatively small area to provide some security in case of disaster and the subsequent loss of water, gas and electricity. Storage and shelter areas should be easily accessible following a disaster. Prior to an emergency and to ensure food safety at all times, equip refrigerators and freezers with thermometers to monitor the temperature.

Areas of concern in the case of disaster include the following.

- ✓ Water Supply Storage
- ✓ Water Purification
- ✓ Refrigerated Foods
- ✓ Frozen Foods
- ✓ Special Considerations for Food After a Flood
- ✓ Special Considerations for Food After a Fire

- ✓ Cleaning and Sanitizing Equipment After Any Disaster
- ✓ Emergency Food Preparation Equipment Needs
- ✓ Assembling an Emergency Food Supply

## Water Supply Storage

Disaster victims can survive for several days without food, but only for a short time without water. Water from streams, lakes and local water systems can become contaminated; therefore, it is best to store a supply of water in the shelter area.

The average person engaged in sedentary activity requires a minimum of 1 gallon of water per day for drinking and food preparation purposes, and 1 1/2 to 2 1/2 gallons for bathing, brushing teeth and minimal dish washing. Part of the liquid can be consumed in the form of canned fruit juices, soft drinks, and juices from canned fruits and vegetables.

Store water reserves in clean containers with tight-fitting or screw top lids. Lightweight, shatter proof plastic containers are best. If glass jugs or bottles are used, protect them to prevent breakage by placing newspapers or other packing materials between them. Metal containers tend to give water an unpleasant taste and can rust.

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Water drained from home hot water tanks can be used if necessary, but the possibility of contamination exists and this water should be purified before drinking.

## Water Purification

Water can be purified in a number of ways. Boiling is one of the surest and simplest methods. Filter the water and boil vigorously for 3 minutes. The flavor of boiled water can be improved by aeration by pouring the water from one clean container to another several times. The use of this purification method is limited, however, because heat often is not available in the disaster area.

Water can be purified easily by using a household bleach containing sodium hypochlorite, a chlorine compound, as its only active ingredient. Do not use bleach that contains soap or is scented. Add the bleach to filtered water in any clean container in which the water can be thoroughly mixed by stirring or shaking. This procedure will purify water, but will not preserve water for long-term storage.

Use an eye dropper to add the bleach according to the proportions shown in the following table. Proportions are based on bleach containing 5.25 percent sodium hypochlorite. Let the mixture stand for 20 minutes. The water should still have the slight taste or smell of chlorine.

If the slight taste or smell of chlorine is not present, another dose of bleach should be added to the water, mixed thoroughly and allowed to stand for an additional 15 minutes. Again, the taste or smell of chlorine in the water is a sign of safety. If it is not detectable after these procedures, the water should not be used.

The table gives the ratio of chlorine bleach to be added to clear and cloudy water to provide 3 and 6 ppm (parts per million) chlorine concentration, respectively.

Amount of water	Amount of bleach (based on 5.25% sodium hypochlorite)	
	to clear water	to cloudy water
1 quart (4 cups)	2 drops	4 drops
1 gallon	8 drops	16 drops
5 gallons	1/2teaspoon	1 teaspoon

Ordinary household 2 percent tincture of iodine can be used to purify small quantities of

water. Five drops should be added to each quart of cloudy water. As with chlorine, the iodine and water should be mixed thoroughly. Water purification tablets, available at most sporting goods stores and drugstores, can be used safely to purify water. Follow the package directions.

## Refrigerated Foods

After a power outage, use perishable food from the refrigerator first. Usually, food in a refrigerator is safe after a power outage if the power is out for no more than 4 to 6 hours (depending on the kitchen temperature) and if the inside refrigerator temperature does not exceed 40 degrees F for more than 2 hours. An appliance thermometer can help monitor the inside temperature of the refrigerator. To retain cold temperature, open the refrigerator door only as necessary. Be especially wary, however, of using meat, poultry and foods containing milk, cream, sour cream, or soft cheese that have been in a refrigerator without power.

In an emergency, the following refrigerated foods can be kept at room temperature for a few days. However, quality will deteriorate rapidly.

- Butter, margarine
- Fresh fruits and vegetables
- Dried fruits, coconut and nuts
- Opened jars of salad dressing, peanut butter, jelly, relish, taco sauce, barbecue sauce, mustard, catsup, olives
- Hard and processed cheese
- Fruit juices
- Fresh herbs and spices
- Flour
- Fruit pies
- Breads, rolls, cakes (except with cream frosting or filling), muffins

Discard the following if left at temperatures above 40 degrees F for more than 2 hours.

- Raw or cooked meat, poultry and seafood
- Milk/cream, yogurt, soft cheese
- Cooked pasta, pasta salads
- Custard, chiffon or cheese pies
- Fresh eggs, egg substitutes
- Meat-topped pizza, lunch meats
- Casseroles, stews, or soups
- Refrigerator cookie dough
- Cream-filled pastries

Throw away refrigerated items that are moldy or have unusual odor or appearance. Do not taste suspect foods.

## Frozen Foods

After a power outage, a full, well-functioning freezer should keep foods frozen for 2 days, if the freezer temperature was at 0 degrees F or below. A half-full freezer should keep things frozen about 1 day. An appliance thermometer can help monitor the inside freezer temperature.

**Use of dry ice.** Dry ice can be used to help maintain adequate freezer temperature if the power is out for more than one day. Use these precautions when using dry ice. Use 3 pounds dry ice per cubic foot of freezer space. Avoid direct contact of dry ice with skin. Dry ice will burn skin and is not for consumption. Wrap dry ice in brown paper for longer storage and separate it from food with a piece of cardboard. Provide adequate ventilation for carbon dioxide in areas where dry ice is used. Do not cover air vent openings of the freezer.

**Additional Tips.** If the freezer isn't full when the outage occurs, group packages together to ensure cold temperature. Group meat and poultry to one side on a tray, so their juices won't contaminate other foods if they begin to thaw. Open the freezer unit only as often as necessary and work quickly when open.

Check food for evidence of thawing before refreezing. Foods that still contain ice crystals can be refrozen. Thawed foods that do not contain ice crystals but have been kept at 40 degrees F or below 2 days or less, may be cooked, then refrozen or canned.

Be especially wary of using meats, poultry and foods containing dairy products.

After a power outage, don't rely on odor or appearance to determine safety of refrigerated and frozen foods. Discard perishable food if it has been or is suspected to have been at room temperature for more than 2 hours.

## Special Considerations for Food After a Flood

If you live in an area subject to floods, be ready to elevate refrigerators or freezers off the

floor by putting cement blocks under their corners. Canned goods should be moved to higher shelves or storage areas.

Foods contaminated by flood waters need special attention. Flood waters carry filth and disease bacteria that contaminate food and water and make it unsafe to consume.

After a flood, inspect food carefully. Discard the following if it has been in contact with flood waters.

- Meat, poultry, fish, and eggs
- Fresh produce
- Unopened jars with waxed cardboard seals such as mayonnaise or salad dressing
- All foods packed in foil, cardboard boxes, cellophane, paper or cloth
- Home canned foods
- Flour, sugar, coffee, cereals and other staples in canisters
- Opened containers and packages
- Cans dented, leaking, bulging, or rusted

Commercially canned foods exposed to flood water, which have sealed, airtight metal lids, are safe to use after being thoroughly cleaned and sanitized.

All cans, free of rust or dents, must be washed and sanitized before they are opened. Wash containers in a detergent solution using a scrub brush. Rinse in clean water, if available. Sanitize by immersing containers for 15 minutes in a solution of 2 teaspoons of chlorine bleach per quart of water at room temperature. Inspect cans and destroy any that bulge or leak. After sanitizing, remove containers from the solution and air-dry. Relabel the cans and use the contents as soon as possible because containers might rust. Store containers where they will not be recontaminated. When cooking, empty the contents from the can and boil for 10 minutes before eating.

*Note: Fresh fruits and vegetables and other garden produce exposed to flood water are not safe to eat. Throw them away. For information on future crop or garden production after a flood, contact a local county Extension agent.*

If there is a power outage accompanying the flood, follow the previous recommendations regarding refrigerated and frozen foods.

## Special Considerations for Food After a Fire

Foods that have been exposed to fire can be compromised by three factors — heat of the fire, smoke fumes and chemicals used to treat the fire.

Foods in cans or jars may appear to be undamaged, but the heat from the fire may have activated food spoilage bacteria. Discard all these items.

Toxic fumes can contaminate food. Discard any type of food in permeable packaging such as cardboard, plastic wrap, paper, etc. Discard any raw foods (such as potatoes and fruit) stored outside the refrigerator. Foods stored in a refrigerator or freezer also can become contaminated from fumes if the appliance seal is not airtight. Throw away any foods that have an off-flavor or odor before or after preparation.

Treat any foods exposed to fire-fighting water the same as you would treat foods exposed to flood waters.

Foods exposed to fire-treating chemicals should be discarded, including those stored at room temperature, as well as those in permeable storage or packaging containers and screw-topped jars and bottles. Treat any canned goods and cookware exposed to chemicals the same as flooded foods.

## Cleaning and Sanitizing Equipment After Any Disaster

Pots and pans, glasses, dishes and utensils should be washed in detergent and rinsed in clean, sanitized water, if available, then soaked for 15 minutes in a solution of 2 teaspoons of chlorine bleach per quart of water at room temperature. Use 2 teaspoons of chlorine bleach in 1 quart of water to clean food preparation surfaces and equipment and the inside of refrigerators and freezers.

## Emergency Food Preparation Equipment Needs

Have the following equipment on hand for food preparation and service in an emergency.

- Manual can openers

- Emergency cooking equipment such as hibachi, chafing dishes. Food that tastes better when warm can be heated with candle warmers, chafing dishes or fondue pots. However, raw foods that need to be thoroughly cooked, such as meat, poultry and eggs, must be cooked on a grill or cooking stove that provides a more intense heat source.
- Matches and other necessary supplies for use with emergency cooking equipment
- Disposable food preparation and serving supplies (plates, utensils, cookware)
- Bleach
- Plastic dish pans or washing buckets
- Canned heat source
- Food thermometer

## Assembling An Emergency Food Supply

The amount and kind of foods to store for an emergency depend on several factors: ages and special food needs of family members (i.e., special needs for infants, pregnant women, elderly); number of family members; food preferences; special health and diet needs; ability and equipment to prepare food; space for storage.

Short-term food supplies generally need to meet needs for liquid intake, energy and special diets. Longer-term priorities include nutritionally balanced daily diets. If needed, supplement diets with a daily multivitamin/mineral.

Canned goods are the best choice for an emergency food supply. Glass containers might break. Canned foods that are good supply choices include the following.

- Meat, meat products, fish or beans
- Fruits and fruit juices
- Vegetables
- Soups, broths and stews
- Milk
- Bottled water

Canned foods can be kept almost indefinitely as long as they are not damaged or leaking or bulging. For optimum quality, however, replace canned goods within 12 to 18 months. Be sure to store emergency supplies where they will be safe from insects and rodent pests as well as flooding.



Other recommended items that can contribute to an emergency food supply include the following.

- Smoked or dried meats like beef jerky
- Juices that are powdered, crystallized, or shelf-stable
- Bouillon cubes, dried "soups in a cup," or canned soups
- Powdered or canned milk
- Staples like sugar, salt, pepper
- Crackers, Melba toast
- High energy foods like peanut butter, jelly, crackers, nuts, trail mix, dried fruits, granola bars
- Stress foods like sugar cookies, hard candy, sweetened cereals
- Vitamins

Dried products, such as instant cereals, puddings, juice, rice and potatoes, will require an additional water supply for rehydration.

## Other Tips

- When putting together the emergency food supply, choose foods the family normally eats, plus some favorite treats. However, avoid too many high salt foods because they increase thirst.
- Choose foods high in nutrient value.
- Plan food supplies to include at least one balanced meal for each day.
- Select foods that require little or no cooking.

- Think in terms of one-meal servings. Leftovers may be hard or impossible to safely save for later use.
- Don't forget canned or nonperishable pet foods.

## Reviewers

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## References

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