Disaster Information Resources

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Keeping Food and Water Safe

Before, During and After a Disaster

Emergency Water Supply

Having an ample supply of clean water is a top priority in an emergency. A normally active person needs to drink at least two quarts (half gallon) of water each day. People in hot environments, children, nursing mothers and ill people will require even more. You will also need water for food preparation and hygiene. Store at least one gallon per person and pet per day for drinking, cooking and personal hygiene. Consider storing at least a two-week supply of water for each member of your family. If you are unable to store this quantity, store as much as you can. If supplies run low, never ration 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 activity and staying cool.

Emergency Supply of Water

To prepare the safest and most reliable emergency supply of water, it is recommended that you purchase commercially bottled water. Keep bottled water in its original container, and do not open it until you need to use it.

If you are preparing your own containers of water, use food-grade water storage containers obtained from a variety of sources, including surplus or camping supplies stores for water storage. If you decide to re-use storage containers, choose two-liter plastic soft drink bottles – not plastic jugs or cardboard containers that have had milk or fruit juice in them. The reason is that milk protein and fruit sugars cannot be adequately removed from these containers and provide an environment for bacterial growth when water is stored in them. Cardboard containers leak easily and are not designed for long-term storage of liquids. Also, do not use glass containers, because they are heavy and may break.

Thoroughly clean the bottles with dishwashing soap and water, and rinse completely so there is no residual soap.

Additionally, for plastic soft drink bottles, sanitize the bottles by adding a solution of 1 teaspoon of non-scented liquid household chlorine bleach to a quart (1/4 gallon) of water. Swish the sanitizing solution in the bottle so that it touches all surfaces. After sanitizing the bottle and cap, thoroughly rinse out the sanitizing solution with clean water.

Fill the bottle to the top with regular tap water. (If your water company treats your tap water with chlorine or other sanitizer, you do not need to add anything else to the water to keep it safe.) If the water you are using comes from a well or water source that is not treated with chlorine, add two drops of non-scented liquid household chlorine bleach to each gallon of water.

Tightly close the container using the original cap. Be careful not to contaminate the cap by touching the inside of it with your fingers. Write the date on the outside of the container so that you know when you filled it. Store in a cool, dark place.

Replace the water every six months if not using commercially bottled water.

Your Three-day Emergency Food Supply

During and after a disaster, it is vital that you maintain your strength. It's important that you take in enough calories to enable you to function well and do any necessary work.

Most disaster checklists include a recommendation for a three-day food supply for each occupant of the household. A three-day food supply should be non-perishable and require no refrigeration, minimal or no preparation or cooking, and little or no water. For ease in managing your supply, select food items that are compact and lightweight.

Sample menu for a three-day food supply

This will give you an idea of what a three-day supply of shelf-stable foods (for one person) may look like. It is based on amounts and serving sizes of foods using USDA's MyPyramid and Food Guide Pyramid. You may substitute foods in the same food group: http://www.mypyramid.gov/pyramid/index.html

Grains (Bread, Cereal, Rice and Pasta Group)		
Quantity	Item	Servings
3	single-serving packages ready-to-eat cereal	3
1	9-oz. box wheat crackers	9
1	4.2 oz bag mini rice cakes	6
1	1.5-oz. granola bar	1
Total # Servings (one person, three days)		19

Fruits		
Quantity	Item	Servings
1	6-oz. can orange juice	1
2	4-oz. can mixed fruit	2
1	.75-oz. fruit roll	1
2	1.5-oz. box raisins	2
2	8.45-oz. box apple juice	2
2	4-oz. cups apple sauce	2
Total # Servings *(one person, three days)*		10

Vegetables		
Quantity	Item	Servings
1	11.5-oz. can vegetable juice	2
1	8.5-oz can peas*	2
1	8.5-oz. can carrots*	2
1	8.75-oz. can cream style corn*	2
1	8-oz. can cut green beans*	2
Total # Servings *(one person, three days)*		10
*Eat 2 servings at one meal after opening can. Leftovers must be refrigerated or kept cold on ice.		

Meat & Beans (Meat, Poultry, Fish, Dry Beans, Eggs & Nuts)		
Quantity	Item	Servings
1	15-ounces canned beans*	2
1	2-oz. can chicken (3-oz)	1
1	3.25-oz. can tuna	1
1	12-oz. jar peanut butter	6
Total # Servings (one person, three days)		10
* Leftovers must be refrigerated or kept cold on ice.		

Milk (Milk, Yogurt & Cheese)		
Quantity	Item	Servings
6	8-oz. boxes of shelf-stable milk or enriched soy milk	6
1	8.75-oz. box shelf-stable processed cheese	3
Total # Servings *(one person, three days)*		9

Other		
Quantity	Item	Servings
3	gallons potable water (preferably commercially bottled)	Includes washing
1	Bag hard candy (optional)	varies

Here are some things to keep in mind when you're choosing these foods.

- Choose nonperishable foods that require little or no cooking and no refrigeration.
- Can or jar sizes should be appropriate for one meal with no leftovers. Once opened or prepared, many foods lose their shelf-stable character and will go bad.
- Select food you like and normally eat. You may need to improve the packaging.
- If you plan to heat food, also pack a grill, camping cook stove and fuel for use during a power outage. Cook food outdoors in a well-ventilated area.
- Don't forget baby food, special dietary requirements and food for your pets.
- Make sure you have a way of opening your food packages (examples: hand-crank can opener, scissors or knife) and disposable plates, cups and utensils. Pack all these items in plastic bags to keep them dry and as airtight as possible.
- Keep a list of dates when food items need to be inspected and possibly rotated (used and then replaced with newly purchased items).
- As you assemble your food and other disaster supplies, keep them in a central location – above potential flood level.
- Store food in the coolest cabinets or pantry away from appliances that produce heat.
- Store food that comes in cardboard boxes, thin plastic or paper in metal or rigid plastic containers to avoid insect and rodent damage.
- Plan to have on hand one gallon of water per day, per person and pet, for drinking, cooking and personal hygiene.
- Rotate and use food and water every six to 12 months or as recommended on the food labels.

Shelf-stable Foods and MyPyramid

Grains (Bread, Cereal, Rice and Pasta)

- 18-33 servings for 3 days (6-11 servings or 6-ounce equivalents daily)
- Crackers, dry bread sticks, pretzels, Melba toast, read-to-eat cereal, granola bars, rice cakes, popcorn cakes.
- If you can boil water, include instant cereal, instant rice and cup-a-noodles.

Vegetables

- 9-15 servings for 3 days (3-5 servings or 2.5 cups daily)
- Canned vegetables, canned vegetable soups.
- If you can boil water, include instant vegetable soups and instant potatoes.

Fruits

- 6-12 servings for 3 days (2-4 servings daily or 2 cups daily)
- Canned fruit, fruit leather (roll-ups), applesauce, dried fruits (raisins, prunes, apricots), canned or bottled fruit juice.
- If you can boil water, include powdered fruit drinks.

Meat & Beans

- 6-9 servings for 3 days (2-3 servings or 5.5 ounces daily)
- Canned tuna, canned chicken/turkey, canned meat, canned soup with meat, canned chili (meat or bean), sardines, canned beans, canned ravioli/spaghetti, canned ham/pork, canned stew, nuts, commercially prepared turkey or beef jerky.
- If you can boil water, include instant soup (meat or bean).

Milk

- 9 servings for 3 days (2-3 servings or 3 cups daily)
- Canned evaporated milk, canned pudding, boxed (shelf-stable) milk or soymilk.
- If you can boil water, include powdered milk.
- Plan to have on hand one gallon of water per day, per person and pet, for drinking, cooking and personal hygiene.

Emergency Foods – Special Needs – Low-Sodium Foods

Considering special food needs is important when assembling emergency foods for hurricane season. Most experts advise preparing a three-day emergency food supply to feed yourself and family members.

If you're on a low-sodium diet, following the DASH eating pattern, or just trying to reduce the amount of sodium you eat, you probably have seen that many of the foods that are listed on typical emergency food lists are high in sodium. Items such as canned meats, canned soups, canned vegetables, peanut butter, crackers, chips and other packaged products are usually considered standard fare.

Many grocery stores offer salt-free or lower-sodium items; to locate them, check the ingredients and Nutrition Facts information on the food label or ask your grocer for assistance. The Dietary Guidelines recommend that healthy Americans 2 years of age and older eat no more than 2,300 mg sodium (about a teaspoon of salt) each day. The recommendation for middle-aged adults, African-Americans and those with hypertension is to eat no more than 1,500 mg sodium daily.

Suggested lower sodium items for your emergency food supply include:

- **Vegetables:** Canned vegetables often have salt added and are high in sodium. Choose low-salt or sodium-free canned vegetables
- **Fruits:** Regular canned fruits and juices don't have added salt; to reduce calories, choose those canned in water or juice without added sugar. Raisins and dried fruit are naturally low in sodium and are great for snacks or dessert.
- **Legumes:** Canned beans are a good source of protein and are very low in fat. They don't need cooking and can be mixed with other foods. Choose from varieties (red, kidney, black, navy, etc.) canned without added salt.
- **Nuts and seeds:** Choose unsalted nuts and seeds (almonds, mixed nuts, peanuts, walnuts, sunflower seeds, etc.) for snacks or toppings. Select low-sodium peanut butter instead of regular peanut butter with added salt.
- **Meat, poultry, and fish:** Most canned meats, fish and poultry have added salt; check labels to find those lowest in sodium. Some brands offer no-salt added products such as tuna, salmon and sardines. In addition, these foods often may be canned in water rather than oil.
- **Dairy foods:** Choose low-fat canned milk or other shelf-stable milk. Dairy products contain some sodium naturally but salt usually isn't added to canned dairy products.
- **Soups:** If you have facilities to heat foods, low-salt or low-sodium canned soups are a tasty option.
- **Grains:** Most single-serving cereals and instant or mix and eat varieties are high in sodium. Ready-to-eat cereals that are practically sodium free include plain shredded wheat, puffed rice and puffed wheat. Choose low-sodium crackers and Melba toast.
- **Snacks:** Canned and dried fruit and unsalted nuts and seeds are healthy snack options. If you're hungry for chips, choose low-salt varieties. Make a healthy trail mix by combining plain spoon size shredded wheat minis, unsalted nuts and/or seeds and dried fruit.

Protect What's in Your Refrigerator/ freezer Before a Storm or Power Outage

Power outages often accompany summer storms, but there are steps you can take before a storm to give the food in your refrigerator or freezer a little more time.

After a disaster, electrical power may be disrupted for hours, sometimes days. There are things you can do to prepare for an outage which may extend the life of foods in your refrigerator or freezer.

A refrigerator ordinarily will keep food cold for about four hours if it is unopened. A freezer full of food will usually keep about two days if the door is kept shut; a half-full freezer will last about a daydur-ing an outage.

You can buy dry or block ice to keep your freezer as cold as possible if the power is going to be out for a prolonged period of time. Fifty pounds of dry ice should hold an 18-cubic-foot full freezer for two days.

Other tips about actions you can take now – or anytime before the power goes out – to help protect food:

- Keep an appliance thermometer in the refrigerator and freezer. An appliance thermometer will indicate the temperature in the refrigerator and freezer in case of a power outage and help determine the safety of the food.
- Make sure the freezer is set so it keeps the temperature at or below 0 degrees Fahrenheit while it's running and that the refrigerator is at or below 40 degrees F.

- Freeze containers (such as milk cartons or plastic jugs) of water for ice to help keep food cold in the freezer, refrigerator or coolers after the power is out.
- Freeze refrigerated items such as leftovers, milk and fresh meat and poultry that you may not need immediately. This helps keep them at a safe temperature longer if the power goes out.
- Group food together in the freezer. This helps the food stay cold longer.
- Separate raw meat and poultry items from other foods. Place them on the bottom shelf of the freezer. If raw meat and poultry begin to thaw, this will prevent their juices from getting onto other foods.
- Plan ahead and know where dry ice and block ice can be purchased.
- Have coolers on hand to keep food from your refrigerator cold if the power will be out for more than four hours. Purchase or make ice cubes and store in the freezer for use in the refrigerator or in a cooler. Freeze gel packs or containers of water ahead of time for use in coolers.
- It's also a good idea to use coolers to keep the items you are likely to need and to leave your refrigerator and freezer closed for as long as possible once the power is out. The more you open the refrigerator or freezer during an outage means less time your food will stay cold or frozen.

Food Safety During and When the Power Goes Out

Perishable food such as meat, poultry, seafood, milk and eggs that are not properly refrigerated or frozen may cause illness if consumed, even if it is thoroughly cooked.

NEVER taste a food to determine its safety! Some foods may appear fine, but harmful bacteria and or toxins, which can be tasteless and odorless, might be present.

Here's what consumers can do at home to keep their food safe if the power is off :

- Keep the refrigerator and freezer doors closed as much as possible to maintain the cold temperature.
- The refrigerator will keep food cold for about four hours if it is unopened. A full freezer will keep the temperature for approximately 48 hours (24 hours if it is half full) if the door remains closed.
- Use dry or block ice to keep your refrigerator and freezer as cold as possible if the power is going to be out for a prolonged period of time. Fifty pounds of dry ice should hold an 18-cubic foot full freezer for 2 days.
- If you will be eating your refrigerated or frozen meat, poultry, fish or eggs while they are still at safe temperatures, be sure they are thoroughly cooked to the proper temperature to assure that any foodborne bacteria that may be present is destroyed.

Once the power is restored

Evaluate the safety of the food. If an appliance thermometer was kept in the freezer, read the temperature when the power comes back on. If the thermometer stored in the freezer reads 40 degrees F or below the food is safe and may be refrozen.

If a thermometer has not been kept in the freezer, check each package of food to determine the safety. If the food in your freezer still contains ice crystals or is as cold as if it were in a refrigerator (40 °F or below), then the food is SAFE to refreeze or use. It's not necessary to cook raw foods before refreezing.

Discard freezer foods that have been warmer than 40 °F for more than two hours. Discard any foods that have been contaminated by raw meat juices. Dispose of soft or melted ice cream for quality's sake.

Refrigerated food should be safe as long as the power is out for no more than four hours. Keep the door closed as much as possible. DISCARD any perishable food (such as meat, poultry, fish eggs or leftovers) that has been above 40 degrees F for two hours and after four hours without power.

When in Doubt, Throw it Out!

Handling Food and Water After a Storm or Flood

After a major storm or flood, you must assume that all water sources are contaminated until proved safe. Food that has been contaminated by

floodwaters should also be handled carefully. Purify all water used for drinking, cooking and washing eating and cooking utensils. Also purify the water used for washing hands, body and kitchen and bathroom surfaces.

Do not try to purify water that has a dark color or odor or contains floating material.

To disinfect water, use one of the following methods:

- Boil at a rolling boil for one minute. To lessen the flat taste of boiled water, pour the water back and forth several times between two clean, sanitized containers.
- Add 1/8 teaspoon of unscented liquid chlorine bleach per gallon of water. Make sure the bleach contains 5.25 to 6 percent sodium hypochlorite as its only active ingredient. Thoroughly mix the purifying agent in the water and let it stand for at least 30 minutes before using.

If you are unable to boil water or use chlorine bleach, water purification tablets, such as chlorine dioxide, may be helpful. Use according to manufacturer's directions on the package.

Store water in clean, sanitized containers.

Always use clean or purified water to wash any parts of the body that have come in contact with surfaces contaminated by floodwaters.

Wash fruits and vegetables with water from a safe source before eating.

For infants, if possible, use prepared canned baby formula that requires no added water. When using concentrated or powdered formulas prepare with bottled water if the local water source is potentially contaminated.

Flooded foods that should be discarded:

- Meat, poultry, fish and eggs
- Fresh produce
- Preserves sealed with paraffin
- Unopened jars with waxed cardboard seals, such as mayonnaise and salad dressing
- All foods in cardboard boxes, paper, foil, cellophane or cloth
- Spices, seasonings and extracts
- Home-canned foods opened containers and packages
- Flour, sugar, grain, coffee and other staples in canisters
- Cans dented, leaking, bulging or rusted
- Wooden spoons, plastic utensils, baby bottle nipples and pacifiers

Flooded foods safe to use:

- Inspect canned foods and discard cans that show signs of swelling, leakage, punctures, holes, fractures, extensive deep rusting or crushing/denting severe enough to prevent normal stacking or opening with a manual, wheel-type can opener.
- Undamaged canned goods and commercial glass jars of food are safe if you sanitize the containers.
- Mark contents on can or jar lid with indelible ink. Remove labels. Wash outside of jars and cans in a strong detergent solution with a scrub brush. Immerse these containers for 15 minutes in a solution of onetablespoon of chlorine bleach per gallon of room temperature water. Air dry before opening.
- Sanitize metal pans, ceramic dishes, utensils (including can openers), dishes and glassware the same way after washing and rinsing.

Removing Odors from Refrigerators and Freezers

Refrigerators and freezers are two of the most important pieces of equipment in the kitchen for keeping food safe. We are instantly reminded of their importance when the power goes off, flooding occurs or the unit fails, causing food to become unsafe and spoil. The odors that develop when food spoils can be difficult to remove. Use this information to learn how to remove odors from units or how to safely discard an affected unit.

If food has spoiled in a refrigerator or freezer and odors from the food remain, then they can be difficult to remove.

The following procedures may help, but may have to be repeated several times.

- Dispose of any spoiled or questionable food.
- Remove shelves, crispers and ice trays.
- Wash them thoroughly with hot water and detergent. Then rinse with a sanitizing solution (one teaspoon chlorine bleach per quart of water).
- Wash the interior of the refrigerator, including the door and gasket, with hot water and baking soda. Rinse with sanitizing solution as above.
- Leave the door open for about 15 minutes to allow free air circulation.
- If odor remains, try any or all of the following:
- Wipe inside of unit with equal parts vinegar and water. Vinegar provides acid which destroys mildew. Leave the door open and allow to air out for several days.
- Stuff both the refrigerator and freezer with rolled newspapers. Close the door and leave for several days. Remove paper and clean with vinegar and water.
- Sprinkle fresh coffee grounds or baking soda loosely in a large, shallow container in the bottom of the unit. Place a cotton swab soaked with vanilla inside the freezer. Close door for 24 hours. Check for odors.
- Use a commercial product available at hardware and housewares stores. Follow the manufacturers' instructions.

If Odors Remain

If odors cannot be removed, then the refrigerator or freezer may need to be discarded. If you need to discard the refrigerator or freezer then discard in a safe manner. Childproof old refrigerators so children do not get trapped inside. The surest way is to take the door off.

If the door will not come off, chain and padlock the door permanently and close tightly, or remove or disable the latch completely so the door will no longer lock when closed.

It is unlawful in many jurisdictions to discard old refrigerators without first removing the door.

Depending on where you live, your appliance will be picked up by your solid waste provider, a recycler, a retailer (if you buy a new unit) or program sponsored by local or regional utilities.

For additional information, call the USDA Meat and Poultry Hotline at 1-888-MPHotline (1-888-674-6854) TTY 1-800-256-7072, or visit the website,www.fsis.usda.gov

Resources and References

For more information on emergency preparedness and a variety of other topics related to health and nutrition, visit www.lsuagcenter.com.

USDA:

http://www.fsis.usda.gov/factsheets/keeping_food_Safe_during_an_emergency/index.asp

http://origin-www.fsis.usda.gov/Fact_Sheets/Severe_Storms_and_Hurricanes_Guide/index.asp

CDC:

http://www.cdc.gov/healthywater/emergency/safe_water/personal.html

FEMA:

http://www.fema.gov/plan/prepare/watermanage.shtm#chlorination

Red Cross:

http://oregonpacific.redcross.org/media/Food_Water_Safety.pdf

(www.fsis.usda.gov/fact_sheets/Emergency_Preparedness_Fact_Sheets/index.asp),

(www.fsis.usda.gov/PDF/Kitchen_Companion.pdf),

(www.fsis.usda.gov/Fact_Sheets/Cooking_For_Groups_Index/index.asp) (www.fsis.usda.gov/Fact_Sheets/Foodborne_Illness_What_Consumers_Need_to_Know/index.asp)

http://www.ext.colostate.edu/pubs/emergency/3day.html

www.fsis.usda.gov/OA/pubs/pofeature.htm.

http://www.extension.iastate.edu/Publications/PM1552-6DX.pdf

http://extension.missouri.edu/extensioninfonet/article.asp?id=3102

http://www.monroecounty-fl.gov/pages/MonroeCoFL_Emergency/food_supply.pdf

Author:
Beth Reames
PhD, RD, LDN
Professor and Extension Specialist

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Louisiana State University Agricultural Center, William B. Richardson, Chancellor
Louisiana Agricultural Experiment Station, David J. Boethel, Vice Chancellor and Director
Louisiana Cooperative Extension Service, Paul D. Coreil, Vice Chancellor and Director

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