

## Food and Water Safety During Hurricanes, Floods and Power Outages

Food may not be safe to eat during and after an emergency. Safe water for drinking, cooking, and personal hygiene includes bottled, boiled, or treated water. Your state or local health department can make specific recommendations for boiling or treating water in your area.

*Emergencies can happen.* When they do, the best strategy is to already have a plan in place. This includes knowing the proper food and water safety precautions to take if hurricanes — or other flooding/power outages — do occur.



### Before the Emergency

#### Food Safety

- Freeze containers of water for ice to help keep food cold in the freezer, refrigerator, or coolers in case the power goes out. If your normal water supply is contaminated or unavailable, the melting ice will also supply drinking water.
- Freeze gel packs ahead of time for use in coolers.
- Group food together in the freezer. This helps the food stay cold longer.
- Have coolers on hand to keep refrigerated food cold if the power will be out for more than 4 hours.
- Make sure you have *appliance thermometers in your refrigerator and freezer*.
  - Check to ensure that the freezer temperature is at or below **0 °F**, and the refrigerator is at or below **40 °F**.
  - In case of a power outage, the appliance thermometers will indicate the temperatures in the refrigerator and freezer to help you determine if the food is safe.
- Store food on shelves that will be safely out of the way of contaminated water in case of flooding.
- Use and store food carefully to prevent food-borne illness when power outages make refrigeration unavailable.
- Make sure to have a *supply of bottled water* stored where it will be as safe as possible from flooding.
- Purchase or make ice cubes in advance and store in the freezer for use in the refrigerator or in a cooler.
  - Use blocks or bags of ice to save refrigerator foods. Blocks will take longer to melt.



### If time before the emergency hits

- 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.
- Check out local sources to know where dry ice can be purchased, then if time, purchase immediately and store in an ice chest. Fifty pounds of dry ice should hold an 18 cubic foot, fully-stocked freezer cold for two days.



### During and After the Emergency

- Add block ice or dry ice to your refrigerator and freezer if the electricity is expected to be off longer than 4 hours. Wear heavy gloves when handling ice.
- Keep the *refrigerator and freezer doors closed* as much as possible to maintain the cold temperature.
- Your refrigerator's freezer will keep food frozen for up to a day.
  - A separate fully-loaded freezer will keep food frozen for two days (24 hours if it is half full) if the door remains closed.
  - The refrigerator will keep food cold for about 4 hours if it is unopened.
  - Chest freezers will stay cooler longer than uprights.
  - Refrigerators with freezer drawers on the bottom, will keep the freezer cooler longer.
- Discard any food that is not in a waterproof container if there is any chance that it has come into contact with flood water.
  - Food containers that are not waterproof include those with screw-caps, snap lids, pull tops, and crimped caps.
  - Also discard cardboard juice/milk/baby formula boxes and home canned foods if they have come in contact with flood water, because they cannot be effectively cleaned and sanitized.
- Do not eat any food that may have come into contact with flood water.
- Use foods first that can spoil most rapidly
- Wash fruits and vegetables with water from a safe source before eating.
- **If in doubt, throw it out.** Throw out meat, seafood, dairy products and cooked food that does not feel cold.
- If you plan to eat refrigerated or frozen meat, poultry, fish or eggs while it is still at safe temperatures, it's important that each item is *thoroughly cooked to its proper temperature* to assure that any foodborne bacteria that may be present are destroyed. However, if at any point the food was above 40 °F for 2 hours or more — discard it.
- Never taste suspect food. Even if food looks and smells fine, illness-causing bacteria may be present.
- Thoroughly wash countertops with soap and water, using hot water if available. Rinse, and then sanitize by applying a solution of 1 tablespoon of unscented, liquid chlorine bleach per gallon of drinking water (or the cleanest, clearest water available). Allow to air dry.
- Thoroughly wash metal pans, ceramic dishes, and utensils (including can openers) with soap and water, using hot water if available. Rinse, and then sanitize them by boiling in clean water or immersing them for 15 minutes in a solution of 1 tablespoon of unscented, liquid chlorine bleach per gallon of drinking water (or the cleanest, clearest water available).
- Undamaged, commercially prepared foods in all-metal cans and “retort pouches” (like flexible, shelf-stable juice or seafood pouches) can be saved if you follow this procedure:

## Food and Water Safety During Emergencies - continued

- Remove the labels, if they are the removable kind, since they can harbor dirt and bacteria.
- Brush or wipe away any dirt or silt.
- Thoroughly wash the cans or retort pouches with soap and water, using hot water if it is available. Rinse the cans or retort pouches with water that is safe for drinking, if available, since dirt or residual soap will reduce the effectiveness of chlorine sanitation.
- Sanitize cans and retort pouches by immersion in one of the two following ways:
  - Place in water and allow the water to come to a boil and continue boiling for 2 minutes, or
  - Place in a freshly-made solution consisting of 1 tablespoon of unscented liquid chlorine bleach per gallon of drinking water (or the cleanest, clearest water available) for 15 minutes.
  - Air dry cans or retort pouches for a minimum of 1 hour before opening or storing.
  - If the labels were removable, then re-label your cans or retort pouches, including the expiration date (if available), with a marking pen.
  - Food in reconditioned cans or retort pouches should be used as soon as possible thereafter.
  - Any concentrated baby formula in reconditioned, all-metal containers must be diluted with clean drinking water
- Use caution if storing food outside during winter to keep it cold. The outside temperature varies, especially in the sun. Frozen food may thaw and refrigerator food may become warm enough to grow bacteria. Food stored outside must be secured from contamination by animals.
- *Feeding Infants and Young Children*
  - Breastfed infants should continue breastfeeding. For formula-fed infants, use ready-to-feed formula
  - if possible. If using ready-to-feed formula is not possible, it is best to use bottled water to prepare
  - powdered or concentrated formula. If bottled water is not available, use boiled water. Use treated
  - water to prepare formula only if you do not have bottled or boiled water.
  - If you prepare formula with boiled water, let the formula cool sufficiently before giving it to
  - an infant.
    - Clean feeding bottles and nipples with bottled, boiled, or treated water before each use.
    - Wash your hands before preparing formula and before feeding an infant. You can use
    - alcohol-based hand sanitizer for washing your hands if the water supply is limited.



### Related Food Safety Resources:

USDA Meat and Poultry Hotline: 1-888-MPHotline. Available for consumers questions and concerns about food safety.  
USDA Alert: Keeping Food Safe During Flooding and Power Outages (<http://www.usda.gov/2005/08/0340.xml>)  
USDA Food Safety Information related to Hurricane Katrina Hand Hygiene in Emergency Situations (<http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp>)  
Keeping Food Safe in an Emergency, U.S. Department of Agriculture General fact sheet and FAQs on food and water safety including guidance on when to discard perishable foods ([http://www.fsis.usda.gov/Fact\\_Sheets/keeping\\_food\\_Safe\\_during\\_an\\_emergency/index.asp](http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp))

## Food and Water Safety During Emergencies - continued

Consumer Advice: Disaster Assistance with Food (<http://www.foodsafety.gov/%7Efsg/fsgdisas.html>) Provides resources on food safety related to fires, floods, hurricanes, power outages, etc.

Food Safety Information for Hurricane Aftermath, FDA Tips to help people protect their health & food supply (<http://www.cfsan.fda.gov/~dms/fdisas.html>)

Food Safety Office, CDC Comprehensive food safety information (<http://www.cdc.gov/foodsafety/>)

Being Prepared, American Red Cross Comprehensive site on preparing for emergencies including power outages (<http://www.redcross.org/services/disaster/beprepared/>)



## Water Safety

- Listen to and follow public announcements. Local authorities will tell you if tap water is safe to drink or to use for cooking or bathing. If the water is not safe to use, follow local instructions to use bottled water or to boil or disinfect water for cooking, cleaning, or bathing.
- Use only bottled, boiled, or treated water for drinking, cooking or preparing food, washing dishes, cleaning, brushing your teeth, washing your hands, making ice, and bathing until your water supply is tested and found safe. If your water supply is limited, you can use alcohol-based hand sanitizer for washing your hands.
- Use *bottled water* that has not been exposed to flood waters if it is available.
- If you use bottled water, be sure it came from a safe source. If you do not know that the water came from a safe source, you should boil or treat it before you use it.
- If you must disinfect water and it is cloudy be sure to filter it through clean cloths, or allow it to settle and then draw off the clear water for boiling or disinfecting.
- If you don't have pre-bottled water, you can disinfect it by boiling it. Boiling water will kill most types of disease-causing organisms that may be present.
  - Boil the water for one minute, let it cool, and store it in clean containers with covers.
  - If you can't boil water or don't have pre-bottled water, you can disinfect it using unscented household bleach. Bleach will kill some, but not all, types of disease-causing organisms that may be in the water. Use chlorine tablets, iodine tablets, or unscented household chlorine bleach (5.25% sodium hypochlorite). If you use chlorine tablets or iodine tablets, follow the directions that come with the tablets.
  - If you use household chlorine bleach, add 1/8 teaspoon (~0.75 milliliter [mL]) of bleach per gallon of water if the water is clear. For cloudy water, add 1/4 teaspoon (~1.50 mL) of bleach per gallon. Mix the solution thoroughly and let it stand for about 30 minutes before using it.
  - Treating water with chlorine tablets, iodine tablets, or liquid bleach will not kill many parasitic organisms.
  - Store disinfected water in clean containers with covers.
  - Do not rely on water disinfection methods or devices that have not been recommended or approved by local health authorities. Contact your local health department for advice about water treatment products that are being advertised.

## Food and Water Safety During Emergencies - continued

- Practice basic hygiene. Wash your hands with soap and bottled water or water that has been boiled or disinfected. Wash your hands before preparing food or eating, after toilet use, after participating
- in clean-up activities, and after handling articles contaminated with floodwater or sewage. Use an alcohol-based hand sanitizer to wash your hands if you have a limited supply of clean water.
- Use water storage tanks and other types of containers with caution. For example, fire truck storage tanks and previously used cans or bottles may be contaminated with microbes or chemicals. Water containers should be thoroughly cleaned, then rinsed with a bleach solution before use.
  - Mix soap and clean water in container. Shake or stir to clean inside of container, then rinse.
  - For gallon- or liter-sized containers, add approximately 1 teaspoon (4.9 mL) household bleach (5.25%) with 1 cup (240 mL) water to make a bleach solution.
  - Cover the container and shake the bleach solution thoroughly, allowing it to contact all inside surfaces. Cover and let stand for 30 minutes, then rinse with clean water.
- Flooded, private water wells will need to be tested and disinfected after flood waters recede. If you suspect that your well may be contaminated, contact your local or state health department or agriculture extension agent for specific advice. See *Disinfecting Wells After an Emergency* (<http://www.bt.cdc.gov/disasters/wellsdisinfect.asp>) for general instructions.

### Related Water Safety Resources

Cleaning and Sanitizing With Bleach After an Emergency (<http://www.bt.cdc.gov/disasters/bleach.asp>)

Disinfecting Wells After an Emergency (<http://www.bt.cdc.gov/disasters/wellsdisinfect.asp>)

Floods (<http://www.bt.cdc.gov/disasters/floods/>)

Guidelines for the Management of Acute Diarrhea (for Healthcare Providers) Increased incidence of acute diarrhea may occur in post-disaster situations where access to electricity, clean water, & sanitary facilities are limited (<http://www.bt.cdc.gov/disasters/hurricanes/dguidelines.asp>)

Hand Hygiene in Emergency Situations (<http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp>)



### Using Generators Safely

- Generators should be operated in well ventilated locations outdoors away from all doors, windows and vent openings.
- Never use a generator in an attached garage, even with the door open.
- Place generators so that exhaust fumes can't enter the home through windows, doors or other openings in the building.
- Make sure to install carbon monoxide (CO) alarms in your home. Follow manufacturer's instructions for correct placement and mounting height.
- Turn off generators and let them cool down before refueling. Never refuel a generator while it is running.
- Store fuel for the generator in a container that is intended for the purpose and is correctly labeled as such. Store the containers outside of living areas.
- When using a portable generator, connect the equipment you want to power directly to the outlets on the generator. Do not connect a portable generator to a home's electrical system.

- If you are considering getting a generator, get advice from a professional, such as an electrician. Make sure that the generator you purchase is rated for the power that you think you will need.

**Caution: Carbon Monoxide Kills**

- Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawlspace or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors.
- The primary hazards to avoid when using alternate sources for electricity, heating or cooking are carbon monoxide poisoning, electric shock and fire.

**Generator Resources**

Oh No! The Power is Out – Now What?

[http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/oh\\_no\\_the\\_power\\_is\\_out\\_now\\_what\\_new\\_site.pdf](http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/oh_no_the_power_is_out_now_what_new_site.pdf)

Crisis Cooling-How To Keep Your Milk, Meat and Medicines Cool In A Power Outage (large download)

<http://www.thepreparednessguru.com/uploads/CrisisCooling.pdf>

Emergency Lighting and Heating, Etc. Resources

[http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/emergency\\_lighting\\_and\\_heating\\_etc\\_resources\\_new\\_site.pdf](http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/emergency_lighting_and_heating_etc_resources_new_site.pdf)

Portable Generator Safety Tips

[http://www.nsc.org/news\\_resources/Resources/Documents/Portable\\_Generator\\_Safety\\_Tips.pdf](http://www.nsc.org/news_resources/Resources/Documents/Portable_Generator_Safety_Tips.pdf)

Generator Safety for the Home

[http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/generator\\_safety\\_for\\_the\\_home-generator-alleghepowercom.pdf](http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/generator_safety_for_the_home-generator-alleghepowercom.pdf)

Energy Usage Estimations

[http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/energy\\_usage\\_estimations\\_new\\_site.pdf](http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/energy_usage_estimations_new_site.pdf)

Fuels and Fuel Storage, the Short and Long of It

[http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/fuels\\_and\\_fuel\\_storage\\_the\\_short\\_and\\_long\\_of\\_it\\_new\\_site.pdf](http://formerlynmurbanhomesteader.weebly.com/uploads/2/2/5/0/22509786/fuels_and_fuel_storage_the_short_and_long_of_it_new_site.pdf)



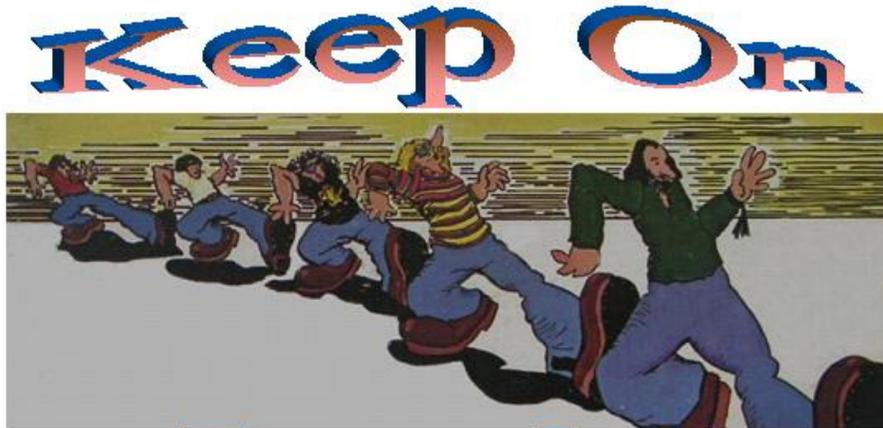
**Candle Safety**

- Flashlights, camping lanterns and battery-powered lighting are preferred for use during a power outage.
- Blow out all candles when you leave the room or go to bed. Avoid the use of candles in the bedroom and other areas where people may fall asleep.
- Keep candles at least 12 inches away from anything that can burn.
- Use candle holders that are sturdy, and won't tip over easily.
- Put candle holders on a sturdy, uncluttered surface.
- Light candles carefully. Keep your hair and any loose clothing away from the flame.
- Don't burn a candle all the way down — put it out before it gets too close to the holder or container.
- Never use a candle if oxygen is used in the home.
- Never leave a child alone in a room with a burning candle. Keep matches and lighters up high and out of children's reach, in a locked cabinet.
- If you must use candles

## Food and Water Safety During Emergencies - continued

- Get some candle hurricane holders. This will not only protect you and yours from possible fires, but will assist in reducing any wind effects on the candle flame.
- Use a self-contained backpacker candle in a can.

TNT



Prepin'

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