

# What To Do When The Power Goes Out Keeping Your Food Safe



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## Introduction

It may be fun to camp out in your home, eating by candlelight, but the romance wears off quickly when the power goes out and stays out. When you throw in cold weather, cold weather, no heat, possible storm damage to your home, and the potential of flooded basements and frozen pipes, the charm is very quickly destroyed.

If the grid power is interrupted, would you have the adventure... or would it be a personal disaster. Would you have a source of heat, a source of light? Would you have a basement full of water? Would you lose all of the food in your refrigerator and your freezer?

The frequency of power failures varies with different parts of the country. The authors live in Oklahoma – we have tornadoes, ice storms, heavy weather including both frequent tornadoes and thunderstorms and some snowstorms. We have some floods but volcanoes, hurricanes, and tsunamis are pretty rare in central United States. We spent the 1993 Mississippi flood together in Alton, Illinois, so we are quite familiar with what happens when flood waters rise and the power goes out at the same time. (Alton lost its water plant during that flood and we had to do without public water supplies to drink while we were trying to sandbag against rising waters...)

Power failures here are pretty common. The ice storm of 2007, and a smaller repeat in 2010 each put hundreds of thousands of people out of power for over 40 days. We've had plenty of experience ensuring that we are ready when the power goes out. Here's some of the research we've done about this subject. With a little planning, you too can reduce the potential disaster to an inconvenience. This ebook tells you what to do before, during, and after a power outage or flood to safeguard your food supply.

## Prior to the blackout:

**Have items on hand that don't require refrigeration and can be eaten cold or heated on the outdoor grill.**

- Shelf-stable food, boxed or canned milk, water and canned goods should be part of a planned emergency food supply.
- Make sure you have ready-to-use baby formula for infants and food for pets.

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- Remember to use these items and replace them from time to time. Be sure to keep a manual can opener for an emergency.
- If you have time and a flood is predicted, move all food stocks that you can to upper floors to decrease exposure to flood waters.

**Some coolers (such as the Yeti) have significantly more insulation than your refrigerator and when completely full may be more effective at keeping your food cool than an unpowered refrigerator. These will require ice cubes, ice packs, frozen water bottles, or frozen gel to keep the food cold. If you have warning, a cooler may be a good choice.**

**Check the temperature of your fridge and freezer. Are they cold enough?**

- **Set refrigerators at or below 4°C (40°F). Use a refrigerator thermometer to check the temperature.**
- **Keep freezers at or below -18°C (0°F). Use a freezer thermometer to check the temperature.**

**If you have warning** – like a pending ice storm, and your freezer is not full, fill it up with bottles of water. Purchase or make **ice cubes in advance** and store in the freezer for use in the refrigerator or in a cooler. Freeze **gel packs** ahead of time for use in coolers. If the power does go out you will have lots of stored up cooling power. Plus you will also have a supply of ice cold drinking water. The more cold mass in the fridge, the less power it needs to keep it cool, especially if the door gets opened a lot. In the event of a power outage, a fully stuffed freezer/fridge will stay cooler longer.

If you have two refrigerators – one in the garage – and the garage is not heated... you have a safe cold storage place that is insulated. If you power this with a generator for only a few hours a day, you can ensure that your refrigerated foods stay cold until power is restored. Needless to say, this is most effective only when power is out during an ice storm or other cold weather event.

## The Blackout has Happened!

### **How long does a refrigerator keep food cold without power?**

The CDC says:

- A **refrigerator** will keep food **cold for about 4 hours** if it is unopened.

The authors have found that food will remain chilled for four to six hours in a refrigerator without power. To keep temperatures cool longer, add bags of regular ice. Place the ice on upper shelves and pans to catch the melting ice on lower shelves. The more ice you use, the longer the temperature will stay cool. Open the door only to add ice. Place a thermometer in the area furthest from the ice.

Before the event, set the temperature on the refrigerator as low as it can go without freezing so that the temperature starts as low as possible when power goes off.

Check the refrigerator temperature when adding ice and as soon as the power returns to be sure that food has been kept below 40F.

### **How long does a freezer keep food frozen without power?**

It depends... and isn't really an easy question to answer. This depends on the freezer/refrigerator, how hot it is outside of the freezer (ambient temperature) and how full it is. Ice and insulation are your friends, and open air space is your enemy

The CDC says:

- A **full freezer** will keep the temperature for approximately **48 hours** (24 hours if it is half full) if the door remains closed.

This is a very simplistic answer from the CDC, as not all freezers (or refrigerators) are created equal. Once the power fails, the length of time food in a freezer will stay frozen depends on:

- The amount of food in the freezer. A full freezer, if not opened, will stay cold enough to keep food frozen for about two days, even in the summer. In a freezer that is half full, food will stay frozen for only one day (if all other things are equal.)
- The kind of food in the freezer. Foods which have a higher water content will stay frozen longer. For example, a freezer full of meat will not warm as quickly as a freezer full of bread. (Ice must be warmed an additional 32Kcal/kilo from 0C just to change into water.)

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- The temperature of the food before the power failure. The colder the temperature in the freezer, the longer the food will stay frozen. Keep your freezer set at 0F or lower.
- Freezer insulation. A well-insulated freezer will keep food frozen much longer than one with little insulation.
- Size of the freezer. The larger the freezer, the longer the food will stay frozen.
- The type of freezer – Horizontal, Vertical, or attached to a Refrigerator. Vertical freezers dump cold air every time they are opened. Attached refrigerator/freezer combinations often warm quicker than fully insulated freezer only appliances. The slowest to warm will be the old-fashioned chest refrigerator where cold air doesn't escape when the door is opened.

### ***Horizontal (chest) freezers:***

If packed dead full, in a cool location (basement) a horizontal freezer will probably last for 48 hours plus. If you don't open the lid, and pack blankets around them (unplug to avoid fire hazard upon startup), you could probably push that by another 24. You might sacrifice food quality by mild defrosting, but I don't think food safety would be compromised. Though I would keep a close eye on seafood for example.

If not packed full, 24 hours is the best you'll get. It helps a lot to consolidate the food at the bottom, drop in whatever ice you have, and pack a blanket in there (or even lots of sheets of newspaper); anything that's a barrier to air movement is helpful. I would spread out a blanket on top as well; hard to tell how much that helps, though it couldn't hurt.

### ***Vertical fridge/freezers:***

These are generally much worse at staying cold and it depends on how often you open the doors and whether they are separate or attached to a refrigerator. The freezers attached to a refrigerator are worst: 12 hours max. if it's packed full of hard-frozen blocks, and as little as 6 hours if it's small odds and ends. Completely separate freezers are much better and get better as you decrease opening times, because the cold air leaks out of the bottom of the freezer whenever you open the freezer. Ice to take up airspace and give more cooling reserves and blankets for more insulation (or crumpled newspaper I suppose) can stretch out the timeline.

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### Warning Signs

If you find that the freezer has thawed... stick a sign on it ...  
**"freezer has partially thawed, don't trust it."** If everything stayed at fridge temperatures, it can be cooked and eaten right away; but refreezing some items (pork, seafood) is asking for trouble. (See min/max under power check below). Look at the USDA table at the end of this article.

### Power Check

Get a min/max thermometer to record the MAXIMUM temperature that the freezer reaches for your best guess at the survivability of the food within. There are 'freezer monitors' available that can be set up to tell you what the temperature gets up to and for how long. Typically they are small battery powered units that either maintain a continuous log or start logging when a set temperature is reached. Most seem to have buzzers and/or small lights to give you quick status readings. The more complex ones will feed a detailed log to a computer.

These devices used to be high-end items that were prohibitively costly and used only in industrial plants and places like blood banks where temperature excursions were very costly or dangerous. Prices have come down, and the units have become much more user friendly.

The Cooper-Atkins unit is inexpensive, well reviewed, and has max/min temperature recording. We have one. The embedded link goes directly to Amazon:

[Cooper-Atkins 2560 Digital Refrigerator/Freezer Thermometer with Large Display, NSF Certified, -22/122°F Temperature Range](#)



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Slightly less expensive and completely analog (no electrical circuits) is the Taylor food service thermometer. This unit has no recording function, but accurately tells you the current temperature. It's used in restaurants and cafeterias around the country to accurately check refrigerator and freezer temperatures to ensure food safety.

### Taylor Food Service Classic Series Freezer-Refrigerator Thermometer, Large Dial



**A practical alternative to getting the min/max thermometer to monitor freezer temps is to simply place a handful of frozen ice cubes in a sealed plastic baggy or other covered container on top of your food.**

As long as the power remains on and the fridge/freezer is properly operational, the ice cubes will remain intact. If the power is lost or the fridge/freezer has a malfunction the ice cubes will start melting when their temp reaches 0°C or 32°F.

You can also make a reasonably educated guess as to how long the power was off by looking at the amount of melting of the ice cubes in instances where the power was offline for several hours and was subsequently restored, thus preventing all the ice cubes melting.

If you come back and find that the ice cubes melted and have the resultant liquid has been refrozen in the shape of the container, then you are reasonably sure that the food in the fridge/freezer may have issues and should be considered as suspect for consumption. If you know how long the power is out and it's a safe time, USE IT OR LOSE IT. If you don't know how long the power was out (you weren't there for instance), throw it out...

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### **How long to I have to run a generator to keep food frozen?**

Again, this depends on the freezer/refrigerator, how hot it is and how full it is. During the 2007 ice storm in Oklahoma, the authors kept food completely frozen in a garage freezer full of food (upright) with minimal door opening time for 7 days with 2 hours of power per day. We kept our refrigerated foods cold with 2 hours of power daily in a garage refrigerator. Temps in the refrigerator did not exceed 40° F at any time. (Clearly we weren't worried about the refrigerated foods, but the freezer concerned us. Average garage temperature hovered right about 32° F with somewhat colder at night and up to about 45° F during a few of the days.) These results do not apply to higher temperature areas, of course and additional hours of power would likely be required.

I would expect that 2 hours twice daily would be sufficient for a full freezer with little door opening time, but would want the temperature monitoring noted above for safety. Of course, for a chest freezer, safe times without power could be extended somewhat.

Check where the power connection for your refrigerator and your freezer are located and ensure that you can get the units where you can plug them into the generator power cables. (Sometimes you have to disconnect water supplies and drainage for icemakers.)

### **The Commercial Alternative:**

Call a freezer locker plant to see if it is operating and, if so, whether it has room for your food. If space is available, wrap the food in newspaper or blankets and rush it to the locker plant

### **How About Dry Ice:**

Dry ice is solid carbon dioxide gas that evaporates at minus 109°F. You will need to wear thick gloves while handling it. You will suffer a rapid freezing injury if dry ice contacts the skin.

Dry ice will keep a freezer near 0°F for about 36 hours. The CDC notes that fifty pounds of dry ice should hold an 18-cubic foot fully-stocked freezer cold for two days. The authors have not checked this technique out.

Dry ice manufacturing and storage requires electricity. It is likely to be unavailable during a significant and widespread power outage. If you are going to contemplate using it, be prepared to either drive a substantial distance or be first in line at the stores that carry it... that have power.



## After the Blackout Ends or the Flood Recedes Refrigerated Food: When to Save and When to Discard:

General rule: Discard any perishable food (such as meat, poultry, fish, eggs, and leftovers) that have been above 40 °F for 2 hours. 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 the proper temperature** to assure that any foodborne bacteria that may be present is destroyed. However, if at any point the food was above 40 °F for 2 hours or more — discard it. Keep in mind that perishable food such as meat, poultry, seafood, milk, and eggs that are **not kept adequately refrigerated or frozen** may cause illness if consumed, even when they are thoroughly cooked. If there is doubt, throw it out.

<b>MEAT, POULTRY, SEAFOOD</b> Raw or leftover cooked meat, poultry, fish, or seafood; soy meat substitutes	Discard
Thawing meat or poultry	Discard
Meat, tuna, shrimp, chicken, or egg salad	Discard
Gravy, stuffing, broth	Discard
Lunchmeats, hot dogs, bacon, sausage, dried beef	Discard
Pizza – with any topping	Discard
Canned hams labeled "Keep Refrigerated"	Discard
Canned meats and fish, opened	Discard
<b>CHEESE</b> Soft Cheeses: blue/bleu, Roquefort, Brie, Camembert, cottage, cream, Edam, Monterey Jack, ricotta,	Discard

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mozzarella, Muenster, Neufchatel, queso blanco, queso fresco	
Hard Cheeses: Cheddar, Colby, Swiss, Parmesan, provolone, Romano	Safe
Processed Cheeses	Safe
Shredded Cheeses	Discard
Low-fat Cheeses	Discard
Grated Parmesan, Romano, or combination (in can or jar)	Safe
<b>DAIRY</b> Milk, cream, sour cream, buttermilk, evaporated milk, yogurt, eggnog, soy milk	Discard
Butter, margarine	Safe
Baby formula, opened	Discard
<b>EGGS</b> Fresh eggs, hard-cooked in shell, egg dishes, egg products	Discard
Custards and puddings	Discard
<b>CASSEROLES, SOUPS, STEWS</b>	Discard
<b>FRUITS</b> Fresh fruits, cut	Discard
Fruit juices, opened	Safe
Canned fruits, opened	Safe
Fresh fruits, coconut, raisins, dried fruits, candied fruits, dates	Safe
<b>SAUCES, SPREADS, JAMS</b> Opened mayonnaise, tartar sauce, horseradish	Discard if above 50 °F for over 8

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	hrs.
Peanut butter	Safe
Jelly, relish, taco sauce, mustard, catsup, olives, pickles	Safe
Worcestershire, soy, barbecue, Hoisin sauces	Safe
Fish sauces (oyster sauce)	Discard
Opened vinegar-based dressings	Safe
Opened creamy-based dressings	Discard
Spaghetti sauce, opened jar	Discard
<b>BREAD, CAKES, COOKIES,PASTA, GRAINS</b> Bread, rolls, cakes, muffins, quick breads, tortillas	Safe
Refrigerator biscuits, rolls, cookie dough	Discard
Cooked pasta, rice, potatoes	Discard
Pasta salads with mayonnaise or vinaigrette	Discard
Fresh pasta	Discard
Cheesecake	Discard
Breakfast foods –waffles, pancakes, bagels	Safe
<b>PIES, PASTRY</b> Pastries, cream filled	Discard
Pies – custard,cheese filled, or chiffon; quiche	Discard
Pies, fruit	Safe
<b>VEGETABLES</b>	Safe

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Fresh mushrooms, herbs, spices	
Greens, pre-cut, pre-washed, packaged	Discard
Vegetables, raw	Safe
Vegetables, cooked; tofu	Discard
Vegetable juice, opened	Discard
Baked potatoes	Discard
Commercial garlic in oil	Discard
Potato Salad	Discard

Above information from:

[http://www.fsis.usda.gov/factsheets/keeping\\_food\\_safe\\_during\\_an\\_emergency/](http://www.fsis.usda.gov/factsheets/keeping_food_safe_during_an_emergency/)

## Frozen Food: When to Save and When to Discard

General Rule: If the food still contains ice crystals or is 40 °F or below, it is safe to refreeze. If there is doubt, throw it out,

<b>FOOD</b>	<b>Still contains ice crystals and feels as cold as if refrigerated</b>	<b>Thawed. Held above 40 °F for over 2 hours</b>
<b>MEAT, POULTRY, SEAFOOD</b> Beef, veal, lamb, pork, and ground meats	Refreeze	Discard
Poultry and ground poultry	Refreeze	Discard
Variety meats (liver, kidney, heart, chitterlings)	Refreeze	Discard
Casseroles, stews, soups	Refreeze	Discard
Fish, shellfish, breaded seafood	May refreeze.	Discard

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products	However, there will be some texture and flavor loss.	
<b>DAIRY</b> Milk	Refreeze. May lose some texture.	Discard
Eggs (out of shell) and egg products	Refreeze	Discard
Ice cream, frozen yogurt	Discard	Discard
Cheese (soft and semi-soft)	Refreeze. May lose some texture.	Discard
Hard cheeses	Refreeze	Refreeze
Shredded cheeses	Refreeze	Discard
Casseroles containing milk, cream, eggs, soft cheeses	Refreeze	Discard
Cheesecake	Refreeze	Discard
<b>FRUITS</b> Juices	Refreeze	Refreeze. Discard if mold, yeasty smell, or sliminess develops.
Home or commercially packaged	Refreeze. Will change texture and flavor.	Refreeze. Discard if mold, yeasty smell, or sliminess develops.
<b>VEGETABLES</b> Juices	Refreeze	Discard after held above 40 °F for 6 hours.
Home or commercially packaged	Refreeze.	Discard after

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or blanched	May suffer texture and flavor loss.	held above 40 °F for 6 hours.
<b>BREADS, PASTRIES</b> Breads, rolls, muffins, cakes (without custard fillings)	Refreeze	Refreeze
Cakes, pies, pastries with custard or cheese filling	Refreeze	Discard
Pie crusts, commercial and homemade bread dough	Refreeze. Some quality loss may occur.	Refreeze. Quality loss is considerable.
<b>OTHER</b> Casseroles – pasta, rice based	Refreeze	Discard
Flour, cornmeal, nuts	Refreeze	Refreeze
Breakfast items –waffles, pancakes, bagels	Refreeze	Refreeze
Frozen meal, entree, specialty items (pizza, sausage and biscuit, meat pie,convenience foods)	Refreeze	Refreeze

Above information from:

[http://www.fsis.usda.gov/factsheets/keeping\\_food\\_safe\\_during\\_an\\_emergency/](http://www.fsis.usda.gov/factsheets/keeping_food_safe_during_an_emergency/)

## Non-refrigerated Food: When to Save and When to Discard:

Where the enemy of refrigerated or frozen food is heat, the enemy of dry, canned, or preserved food is moisture.

### **Inspect Your Food Stocks**

- If feasible, all food stocks should be inspected and assessed for their safety. Check all food for openings in the container and physical hazards, such as glass, wood splinters and stones that may have been introduced. In areas that have been flooded, whatever intact foods remain should be moved to a dry place, preferably away from the walls and off

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the floor. Look for active insect infestations in bagged foods (it is frightfully common!) Look for evidence of rodent or other animal tampering or feeding... again quite common since the rodents and wild animals may have been forced from their native habitat by the waters.

- Discard canned foods with broken seams, serious dents, or leaks; and jars with cracks.

- Undamaged canned goods and commercial glass jars of food are likely to be safe. See decontamination instructions below.

- Mouldy food should not be consumed as it may contain toxic substances. The likelihood of mould growth on stored dried vegetables, fruits and cereals is greater in a humid environment and where food has become wet.

Don't forget to look at the garden: It may have been contaminated too. You need to know:

- What agricultural production has been adversely affected and what areas exist where food can still be harvested or where food has been safely stored after harvesting.

- What agricultural produce may be contaminated with microorganisms (from raw sewage or decaying organisms) and potentially hazardous chemicals.

- Standing water alone won't cause safety problems in garden vegetables if the plants' above-ground growth remains healthy. So long as it isn't cracked or soft, the fruit that develops after the flood water subsides is a safe harvest from such plants as the cucumber, sweet corn, pepper, squash and tomato.

- To err on the side of safety, discard all crops that may have been in contact with contaminated water – certainly any leafy vegetables, such as lettuce and spinach.

- Don't keep plants that rapidly yellow, either. That can signal exposure to contaminants, as well as a lack of oxygen.

### **Food Exposed to Flood Waters (The flood doesn't need to be from a river – it can just be a heavy thunderstorm!)**

If you are not sure if the food was directly exposed or not and you are not sure if the food is safe for consumption, it is safer to throw out the food: *"If in doubt, throw it out"* Spending the next 3 days puking and pooping is probably not going to improve your health or your mood.

Note that while it is sometimes possible to eliminate potentially hazardous microorganisms by thoroughly cooking or

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disinfecting the produce, such actions often do not completely remove chemical hazards.

Any food stocks found to be unfit for human consumption must be disposed of properly. Remember you don't want to find the wildlife in your garbage area.

Any of the following food items, exposed (or even possibly exposed or splashed with) flood waters, must not be consumed and should be **thrown out**:

- Food items in your refrigerator and freezer, including raw fruits and vegetables, meat, poultry, fish, eggs, cartons of milk. If the refrigerator or freezer got wet on the inside, consider everything inside to be contaminated.
- All foods in boxes, paper, foil or cloth, including cereal, juice, powdered milk
- Spices, seasonings, extracts
- All home canned foods, since the area under the seal of the jars and bottles cannot be properly disinfected.
- If you are sure that home-canned food was NOT completely immersed in floodwater, and the jar tops did not get wet, the jars may be washed, rinsed, and then sanitized with a strong household bleach solution (1 tablespoon/ quart room temperature water). This solution is stronger than that used to sanitize commercially canned foods since jars of home-canned foods cannot be washed as vigorously as commercial cans because the seals might be loosened.
- Any food and drinks in containers with screw-caps and crimped caps, including mayonnaise and salad dressing. Again, the screw top and crimped top containers cannot be adequately decontaminated.
- Soda and beer in pull-tab cans should probably be discarded as the pull-tab area is quite difficult to decontaminate and could contaminate the sealed beverage when you open the can.
- Opened containers and packages
- Flour, grain, sugar, coffee and other staples in canisters.  
Sealed tins can be decontaminated so #10 tins of flour, grain or coffee will be fine.

### **Decontamination of Food Containers**

All undamaged commercially prepared foods in metal cans and “retort pouches” (such as flexible, shelf-stable juice) must be thoroughly washed and disinfected. (



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- Throw out damaged cans, including those with large dents, leaks, swelling, punctures, fractures, or extensive deep rusting.
- Undamaged cans should be washed and disinfected as follows:
  - 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 min., 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.
  - Where labels are coming off or removed, use a magic marker to label with contents, expiration date if any, and date of inspection.
  - Food in reconditioned cans or retort pouches should be used as soon as possible thereafter.
- Any concentrated baby formula in disinfected, all-metal containers must be diluted with SAFE clean, drinking water.

## Cooking utensils and pans exposed to flood water

Remember that you are going to prepare your food with these items, so they need the same safety and care as your food itself.

- 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).

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- Discard wooden and plastic utensils, baby nipples, pacifiers and any other porous nonfood items that are used with food.
- Countertops can be washed and cleaned with soap and water or bleach solution.

## Preventive water safety measures in the aftermath of natural disasters

During and following natural disasters, particularly floods and tsunamis, food may become contaminated by surface water. At times, surface water may itself have been contaminated by pathogenic bacteria from sewage, wastewaters and dead animals or humans. The need for preventive measures should be immediately investigated, including:

- Water for drinking and food preparation should be treated as contaminated unless specifically confirmed as safe. Therefore, all water should be boiled or otherwise made safe before it is consumed or used as an ingredient in food.
- In addition to safe water for food preparation, safe water for washing hands and utensils will be needed.

## Questions and Answers

**Q. A snowstorm knocked down the power lines, can I put the food from the refrigerator and freezer out in the snow?**

**A. Never put unprotected food into a snowbank. Don't put unprotected food on porches or on snow.** Frozen food can thaw if it is exposed to the sun's rays even when the temperature is very cold. Refrigerated food may become too warm and foodborne bacteria could grow. The outside temperature could vary hour by hour and the temperature outside will not protect refrigerated and frozen food. Additionally, perishable items could be exposed to unsanitary conditions or to animals. Animals may harbor bacteria or disease; never consume food that has come in contact with an animal.

Rather than putting the food outside, consider taking advantage of the cold temperatures by making ice. Fill buckets, empty milk cartons or cans with water and leave them outside to freeze. Then put the homemade ice in your refrigerator, freezer, or coolers.

You could leave the refrigerated foods in a well-secured cooler in the snowbank, however. This would decrease heat transfer from food to atmosphere by increasing insulation and would mitigate changes in the ambient temperature.

**Q. Some of my food in the freezer started to thaw or had thawed when the power came back on. Is the food safe? How long will the food in the refrigerator be safe with the power off?**

**A. Never taste food to determine its safety!** You will have to evaluate each item separately. If an appliance thermometer was kept in the freezer, read the temperature when the power comes back on. If the appliance thermometer stored in the freezer reads 40 °F or below, the food is safe and may be refrozen. (If the ice cubes didn't thaw...) If a thermometer has not been kept in the freezer, check each package of food to determine the safety. Remember you can't rely on appearance or odor. If the food still contains ice crystals or is 40 °F or below, it is safe to refreeze. Look at the table above.

Refrigerated food should be safe as long as power is out no more than 4 hours. Keep the door closed as much as possible. Power on time with a generator for two hours can extend this time safely. Set the temperature on the refrigerator as low as it can go without freezing so

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that the temperature starts as low as possible when power goes off. Remember to reset the temperature after power returns.

**Q. May I refreeze the food in the freezer if it thawed or partially thawed?**

**A: Yes, the food may be safely refrozen if the food still contains ice crystals or is at 40 °F or below.** You will have to evaluate each item separately. Be sure to discard any items in either the freezer or the refrigerator that have come into contact with raw meat juices. Partial thawing and refreezing may reduce the quality of some food, but the food should be safe to eat. See the above charts for specific recommendations.

**Q. Are pop-top beverages safe to decontaminate (beer or soda)?**

**A: Maybe?** The Beverage is clearly sealed in but the pull-tab is a place that can harbor filth. The question is whether you feel safe with decontamination of filth around the pull-tab and attachment? You will have to evaluate each item separately. Clearly, you can immerse these cans in boiling water and clean with soap/water and bleach. Can you get ‘enough’ of the contamination contained in the pull-tab off so that the can of soda is safe to consume? Don’t know and authorities (believing in safe rather than sorry, of course) discourage it. You get to make your own choice here. We don’t drink beer... and we are not so fond of soda that we want to chance 2 days of puke/poop.

## Bottom line:

In all cases involving refrigeration or freezing: ice and insulation are your friends, and open air space is your enemy. **Again...Freeze containers of water** for ice to help keep food cold in the freezer, refrigerator, or coolers in case the power goes out, if you have any warning of the coming event. If your normal water supply is contaminated or unavailable, the melting ice in water bottles will also supply drinking water.

**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.

**Clump food together** in the freezer. This helps the food stay cold longer. If your freezer isn't full, wrap the food in old blankets for further insulation. Put those frozen containers of water into the blankets next to the food.

**Have coolers (and ice) on hand** to keep refrigerated food cold if the power will be out for more than 4 hours. Check out local sources to know where **dry ice and block ice** can be purchased, just in case.

**Protect your food from flood waters** – Moisture is the enemy of dry food storage. *"If in doubt, throw it out"* Spending the next 3 days puking and pooping is probably not going to improve your health or your mood and could cost you your life or the lives of your loved ones.

**As a general rule**, food that has been exposed to flood waters should not be salvaged unless it is in a container that protects it and is one which can be thoroughly cleaned with soap and water and sterilized with boiling water or chlorine. Since paper, cardboard, wood, and most plastic food containers are not waterproof, foods in such containers which have been under flood water should be destroyed.

## What To Do When The Power Goes Out – Keeping your food safe

### References:

Prevention of Foodborne Disease: The Five Keys to Safer Food  
[http://www.who.int/foodsafety/publications/consumer/flyer\\_keys\\_en.pdf?ua=1](http://www.who.int/foodsafety/publications/consumer/flyer_keys_en.pdf?ua=1)

FoodSafetyinDisasters.pdf  
[http://www.paho.org/disasters/index.php?option=com\\_docman&task=doc\\_download&gid=517&Itemid=](http://www.paho.org/disasters/index.php?option=com_docman&task=doc_download&gid=517&Itemid=)

Keeping Food Safe During an Emergency  
[http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/emergency-preparedness/keeping-food-safe-during-an-emergency/CT\\_Index](http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/emergency-preparedness/keeping-food-safe-during-an-emergency/CT_Index)

Safety Using Produce from Flooded Gardens:  
[www.foodsafety.wisc.edu/assets/factsheets/Safely%20Using%20Produce%20from%20Flooded%20Gardens.pdf](http://www.foodsafety.wisc.edu/assets/factsheets/Safely%20Using%20Produce%20from%20Flooded%20Gardens.pdf)

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<sup>i</sup> <http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm076881.htm>