

Key Food Handling Behaviors to Prevent Foodborne Illness

- Practice Good Personal Hygiene.
- Cook Food Adequately.
- Avoid Cross Contamination.
- Keep Food at Safe Temperatures.
- Avoid Food From Unsafe Source.

Food Safety During and After a Typhoon

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Food Safety During and After a Typhoon



*Protect
yourself and
your family
From foodborne illness*



University of Guam
Cooperative Extension Service



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This table “What should be discarded after a power outage?” is adopted from the article “Help! The power is out” from the American Red Cross.

What Should Be Discarded After A Power Outage?



As soon as the power returns, **check temperatures**. If the food in the freezer has ice crystals and is not above 40 degrees you can refreeze. Perishable foods in the refrigerator should not be above **40 degrees F** for more than two hours. **Use this chart** to see what has to be discarded and what can be kept.

Frozen Foods

	Still Contains Ice Crystals. Not Above 40° F	Thawed, Held Above 40° F For Over 2 Hours
Meat and Mixed Dishes:		
Beef, veal, lamb, pork, poultry, ground meat and poultry	REFREEZE	DISCARD
Casseroles with meat, pasta, rice, egg or cheese base, stews, soups, convenience foods, pizza	REFREEZE	DISCARD
Fish, shellfish, breaded seafood products	REFREEZE. MAY BE SOME TEXTURE & FLAVOR LOSS	DISCARD
Dairy:		
Milk	REFREEZE. MAY LOSE SOME QUALITY	DISCARD
Eggs (out of shell), egg products	REFREEZE	DISCARD
Ice cream, frozen yogurt	DISCARD	DISCARD
Cheese (soft and semi soft), cream cheese, ricotta	REFREEZE. MAY LOSE SOME TEXTURE	DISCARD
Hard cheese (Cheddar, Swiss, Parmesan)	REFREEZE	REFREEZE
Fruits/Vegetables:		
Fruit juices	REFREEZE	REFREEZE. DISCARD IF MOLD, YEASTY SMELL OR SLIMINESS DEVELOPS.
Home or commercially packaged fruit	REFREEZE. WILL CHANGE TEXTURE & FLAVOR	REFREEZE. DISCARD IF MOLD, YEASTY SMELL OR SLIMINESS DEVELOPS.
Vegetable juices	REFREEZE	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Home or commercially packaged or blanched vegetables	REFREEZE. WILL CHANGE TEXTURE & FLAVOR	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Baked Goods/Baking Ingredients:		
Flour, cornmeal, nuts	REFREEZE	REFREEZE
Pie crusts, breads, rolls, muffins, cakes (no custard fillings)	REFREEZE	REFREEZE
Cakes, pies, pastries with custard or cheese filling, cheesecake	REFREEZE	DISCARD
Commercial and homemade bread dough	REFREEZE. MAY LOSE SOME QUALITY	REFREEZE. CONSIDERABLE QUALITY LOSS

Refrigerator Foods

	Food Still Cold, Held At 40° F Or Above Under 2 Hours	Held Above 40° F For Over 2 Hours
Dairy/Eggs/Cheese:		
Milk, cream, sour cream, buttermilk, evaporated milk, yogurt	KEEP	DISCARD
Butter, margarine	KEEP	KEEP
Baby formula, opened	KEEP	DISCARD
Eggs, egg dishes, custards, puddings	KEEP	DISCARD
Hard & processed cheeses	KEEP	KEEP
Soft cheeses, cottage cheese	KEEP	DISCARD
Fruits/Vegetables:		
Fruit juices, opened; canned fruits, opened; fresh fruits	KEEP	KEEP
Vegetables, cooked; vegetable juice, opened	KEEP	DISCARD AFTER 6 HOURS
Baked potatoes	KEEP	DISCARD
Fresh mushrooms, herbs, spices	KEEP	KEEP
Garlic, chopped in oil or butter	KEEP	DISCARD
Meat/Poultry/Seafood:		
Fresh or leftover meat, poultry, fish or seafood	KEEP	DISCARD
Lunchmeats, hot dogs, bacon, sausage, dried beef	KEEP	DISCARD
Canned meats (NOT labeled "Keep Refrigerated" but refrigerated after opening)	KEEP	DISCARD
Canned hams labeled "Keep Refrigerated"	KEEP	DISCARD
Mixed Dishes/Side Dishes:		
Casseroles, soups, stews, pizza with meat	KEEP	DISCARD
Meat, tuna, shrimp, chicken, egg salad	KEEP	DISCARD
Cooked pasta, pasta salads with mayonnaise or vinegar base	KEEP	DISCARD
Gravy stuffing	KEEP	DISCARD
Pies/Breads:		
Cream- or cheese-filled pastries and pies	KEEP	DISCARD
Fruit pies	KEEP	KEEP
Breads, rolls, cakes, muffins, quick breads	KEEP	KEEP
Refrigerator biscuits, rolls, cookie dough	KEEP	DISCARD
Sauces/Spreads/Jams:		
Mayonnaise, tartar sauce, horseradish	KEEP	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Opened salad dressing, jelly, relish, taco and barbecue sauce, mustard, catsup, olives	KEEP	KEEP

Food Safety Challenges During a Typhoon

Guam and the islands of the Western Pacific are at high risk from typhoons and tropical storms. Super typhoons can devastate Guam and cause long-term water and power outages across the island. Incidents of foodborne illness increase significantly during the recovery period following a typhoon.

Because of the devastating effects from typhoons such as power outages, water shortages, flooding and house damage, special food safety challenges arise. The challenges include:

- (1) keeping food at a safe temperature;
- (2) practicing good personal hygiene;
- (3) cooking foods adequately;
- (4) avoiding unsafe water and foods.

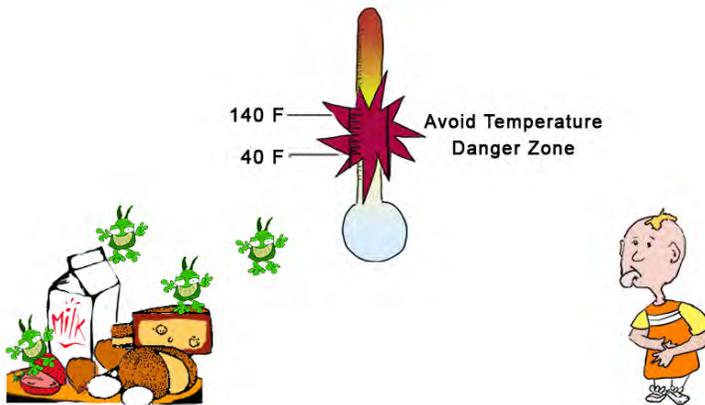
This brochure provides you with basic food safety principles and special guidelines to keep your family safe during and after a typhoon disaster.



Food Safety Basics

Foodborne illness results from eating foods contaminated with harmful bacteria, viruses, toxins or parasites. The symptoms of foodborne illness include nausea, abdominal pain, vomiting, diarrhea, fever, headache and tiredness. Some foodborne illnesses can develop into severe complications such as temporary anemia, profuse bleeding, kidney failure, and even death. Special precautions should be taken when preparing food for the very young, elderly, pregnant, seriously ill, or those with weakened immune systems.

Disease-causing bacteria, viruses and parasites exist in soil, animals, humans and contaminated water. These microorganisms can grow rapidly and progressively at temperatures between 40° and 140°F, which is called the temperature danger zone. Some foods including meat, poultry, fish, milk, cut melon, raw sprouts, garlic-and-oil mixtures and soy-protein are potentially hazardous because they support the growth or toxin production of harmful microorganisms.



When Power is Restored

- Use a thermometer to evaluate the safety of food. Never taste food or rely on appearance or odor of the food to determine its safety.
- If the food in the freezer still contains ice crystals or is not above 40°F, it is safe to refreeze or cook.
- Potentially hazardous foods in the refrigerator should not be above 40°F for more than 2 hours. Discard food (such as meat, poultry, fish eggs or leftovers) that has been above 40°F for 2 hours.
- Refrigerated food should be safe as long as the power is out for not more than 4 hours.
- If you are not sure that your tap water is safe, boil water for 3 minutes before use.



When your house is damaged

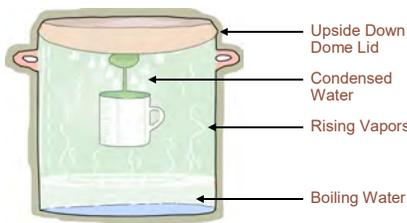
- Pests and insects can spread disease and damage food.
- If windows, doors, roofs, or walls of your house are damaged, store non-perishable foods in a closed environment where pests and insects cannot reach them.
- Cover or wrap all ready-to-eat foods in your kitchen and dining room to protect them from contamination by pests and insects.



Water disinfection

Contaminated water can contain disease-causing germs, bacteria and viruses. All water of uncertain quality should be disinfected before drinking, food preparation, or using for hygiene purposes. Before treating, let suspended particles settle to the bottom, or strain the particles through layers of paper towel, clean cloth, or coffee filters.

- **Boiling:** bring water in a pot to a rolling boil for 3 minutes
- **Chlorination:** use regular household bleach that contains 5.25 percent sodium hypochlorite. Add sixteen drops (1/8 teaspoon) per gallon of water. Stir thoroughly and let it stand for 30 minutes. Water should have a slight bleach odor, if not, repeat the dosage and let it stand for another 15 minutes. Do not use scented bleaches, color safe bleaches, or bleaches with added cleaners.
- **Distillation:** boiling water and collecting the vapor that condenses back to water. To distill water, fill a pot half-way with water. Tie a cup to the handle on the pot's lid. Turn the lid upside down so the cup hangs in the middle of pot. Boil the water for 20 minutes. The water that drips from the lid into the cup is distilled.



Pot

Effectiveness of various water treatments

	Boiling	Chlorination	Distillation
Kill microorganisms	Yes	Yes	Yes
Remove heavy metals, salts, and other chemicals	No	No	No

Food Safety Basics

Improper handling of foods increases the risk of foodborne illness. To prevent foodborne illness, you should:

- Promptly refrigerate potentially hazardous foods below 40°F;
- Wash your hands and food contact surfaces with soap and warm water;
- Separate potentially hazardous foods from ready-to-eat food both during handling and storage;
- Cook foods to the minimum safe temperature required to kill pathogens;
- Avoid unsafe food sources such as unpasteurized milk and juice, raw seafood and partially cooked meat;
- Never taste a food to determine if it is safe. If in doubt, throw it away.

Minimum Safe Food Temperatures holding for 15 seconds



180°F: Chicken & turkey whole birds, legs, thighs wings



170°F: Chicken & turkey breasts



165°F: Ground turkey & chicken, stuffing & casseroles; leftovers



160°F: Ground beef, pork, veal & lamb; pork chops, ribs & roasts; egg dishes



145°F: Beef, lamb & veal steaks, medium rare (medium—160°F)

Before a Typhoon

Prepare water and have shelf-stable food on hand

- Having an ample supply of clean water is a top priority in an emergency.
- Prepare drinking water for at least three days (one gallon per person per day).
- Store as much water as you can for food preparation and hygiene.
- Store at least a three-day supply of non-perishable and nutritious food, which requires no refrigeration, special preparation, cooking, or water.
- Purchase ready-to-use baby formula or bottled water to prepare baby formula for infants.

Assemble an Emergency Food Supply

Bread, cereal, rice, pasta and grain	Ready-to-eat cereal; instant hot cereal; minute rice; crackers; canned spaghetti; canned soup containing noodles or rice (6-11 servings per person per day)
Vegetables	Canned vegetables; canned vegetable juice (3-5 servings per person per day)
Fruits	Canned fruit; canned juice; dried fruit (2-4 servings per person per day)
Milk	Evaporated canned milk; powdered milk (2-3 cups reconstituted milk per person per day)
Meat and beans	Canned meat, poultry, and fish; canned meat mixtures; canned or dried beans; dried meat (beef jerky); peanut butter; nuts; canned soup containing meat or beans (2-3 servings per person per day)
Fat, oils and sweets Other supplies	According to family practices Prescriptions, over-the-counter medications; baby formula, baby food; coffee, tea, cocoa, powdered beverages, soft drinks

Hidden water in your home

- Hidden safe water in your home includes water in the hot-water tank, pipes and ice cubes.
- Do not use water from toilet tanks or bowls, radiators, waterbeds, or swimming pools.
- To protect the hidden safe water from contamination, shut off the main valve of incoming water.
- To use the water in pipes, let air into the plumbing by turning on the faucet at the highest level, then obtain water from the lowest faucet in your home.
- To use the water in your hot-water tank, turn off the electricity or gas. Open the drain at the bottom of the tank. To start the water flow, turn off the water intake valve at the tank and turn on the hot-water faucet at the sink.

Emergency outdoor water sources

- In rare emergency situations, if you need to find water outside your home, emergency outdoor water sources include:
 - Rainwater
 - Streams, river and other moving bodies of water
 - Ponds, lakes, and natural springs
- Avoid water with floating material, an odor, or dark color. Use saltwater only if you distill it first. Do not drink flood water.
- Before using outdoor water sources, you must treat the water (see the instructions on the next page).

When Experiencing a Water Shortage

Avoid unsafe water source

- All water used for drinking, cooking and washing utensils, hands and body must be safe.
- Flooding can contaminate the public water supply. Water in the typhoon-affected area may not be safe to drink. Boil tap water for 3 minutes before use.
- Drink bottled water or safe stored water.
- Use prepared canned baby formula or bottled water to prepare concentrated or powdered formulas for infants.
- Liquids or juices from canned vegetables or fruits can be used for cooking or drinking.
- Wash fruits and vegetables thoroughly with water from a safe source before eating.

Personal hygiene

- It is best to use soap and warm water to wash your hands.
- If water is not available, use an alcohol based sanitizer to wash your hands. Apply sanitizer to the palm of one hand and rub hands together to cover all surfaces of hands and fingers until your hands are dry.
- Always use clean water to wash any parts of the body exposed to flood waters.
- Use safe water to clean kitchen surfaces.



Hand Sanitizer
Kills Germs

Store foods safely

- Group refrigerated foods together and freeze them.
- Prepare coolers, purchase ice, freeze gel packs or water to keep the food cold.
- Store food on shelves to protect from water that may enter your house during the typhoon.
- Keep food in a dry, cool and dark area.

Prepare items for sanitizing, cooking and dieting

- Un-scented liquid household chlorine bleach for sanitizing food contact surfaces.
- Alcohol-based hand rubs or gels for hand washing and sanitizing.
- Thermometers for determining if foods, refrigerator and freezer are at a safe temperature.
- A manual can opener.
- Disposable plates and utensils.
- Portable stove (gas or charcoal) or grill.



When the Power Goes Out

Temperature Control

- Keep the refrigerator and freezer doors closed as much as possible. An unopened refrigerator will keep food at a safe temperature for about 4 hours, a full freezer for about 2 days, and a half full freezer for about 1 day.
- Use dry or block ice to keep the refrigerator and freezer below 4°C. Each cubic foot of space needs 2.5 to 3 pounds dry ice. Fifty pounds of dry ice can keep an 18-cubic foot full freezer at a safe temperature for two days.

Cooking

- Use portable stoves (gas or charcoal) or grills as alternatives to electronic stoves for cooking. Never use them indoors because of the risk of poisonous gases and fires.
- Cook refrigerated or frozen meat, poultry, fish or eggs thoroughly to the minimum safe temperature before eating them.
- Cook foods at every meal if refrigeration is not available. Don't cook one meal for the whole day. Keep cooked food hot by using candle warmers, chafing dishes or fondue pots.



Sanitation

- Soak dishes & utensils for 5-10 minutes in a solution of 1 tablespoon of chlorine bleach per gallon of water. Drain and air dry.
- Spray or wipe cutting boards and surfaces with a solution of 1 tablespoon of bleach per a quart of water. Leave the bleach solution on for at least 2 minutes. Rinse and air dry.

Avoid unsafe food sources

- Use a thermometer to check the temperature and determine the safety of the food.
- If the temperature of refrigerated foods is above 40°F for more than 2 hours, throw them away.
- If frozen foods thaw completely and warm to temperatures above 40°F for less than 2 hours, cook foods immediately. After cooking, items can be refrozen.
- Discard all stuffed poultry.
- Do not refreeze frozen dinners that have thawed.
- Avoid eating any raw foods such as fruits and vegetables that have come into contact with flood water.
- Destroy foods covered by flood waters, such as foods in paper cartons, cardboard or bags and foods in crown-capped bottles, glass jars or containers with pull-tops, corks or screw caps.
- Foods in sealed cans not tainted by industrial waste may be safe to eat. Before opening them, clean and disinfect the cans with a solution of 1 tablespoons of chlorine bleach per gallon of water or boil cans under water for 10 minutes.