



Meal Preparation and Food Safety after a Flood

Flood-Contaminated Foods

Contaminated foods may be a problem following any storm involving flooding.

Flood waters may carry silt, raw sewage, oil or chemical wastes. Filth and bacteria in flood water will contaminate food, making it unsafe to eat.

Thoroughly inspect any food left in the house after a flood. Flood water may have covered it, dripped on it or seeped into it. Even though some foods (see "Food to Keep" later in this document) are protected by their containers, if you are in doubt about the safety of a food throw it out rather than risk disease.

Use the following guidelines when deciding which foods to discard and which to save.



Food to Discard

Do not attempt to save the following foods:

- Opened containers and packages which have come in contact with flood waters.
- Unopened jars and bottles with paper waxy seals such as those containing mayonnaise or salad dressing.
- Containers of spices, seasonings and flavorings.
- Flour, grains, sugars and coffee in canisters or bags.
- Paper, cloth, fiber or cardboard boxes, even if the contents seem dry. This includes salt, cereals, pasta products, rice and any "sealed" packages of crackers, cookies or mixes within a larger paper box.
- Dented seams, bulging, rusty or leaking tin cans, or cans which have been tossed about and are found far from their normal storage spot. Seams on these cans may have been weakened or

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“Destroy containers that cannot be put where no one will use the foods until they are checked; they may be dangerous.”

their seals may have broken, causing contamination or spoilage.

- Jam or jelly sealed with paraffin.
- Containers with non-sealed, fitted lids, such as cocoa or baking powder.
- Commercially-bottled carbonated beverages. If the cap is crusted with silt, don't attempt to wash, since pressure in bottles may cause an explosion.
- Foil or cellophane packages.
- All fresh vegetables and fruits, such as leafy vegetables, which do not have a peel, shell or coating which can be removed before use.
- Fresh meat, fish and poultry which have been in contact with flood waters.
- Home-canned foods, even if the jar seems tightly sealed (However, in some cases, tightly sealed home-canned foods may be safe, depending on the flood conditions. If supply of canned food is extensive, contact a food preservation specialist, who can advise you after learning specific facts about flood conditions.).

Other Packaged Foods

Carefully examine sealed metal drums, metal-linked casks or cases and wooden barrels such as those used for liquids. If leaks are found, put aside for health teams to check. Destroy containers that cannot be put where no one will use the foods until they are checked; they may be dangerous.

Examine sealed foil or cellophane containers carefully for leaks or breaks and discard any damaged containers. If the food in these containers is normally finely divided (powdered or granulated) but is now caked or not free-flowing, discard. Discard sound foil packages which show stain on the inner paper wrapper. Unbroken packages with evidence of outer water contamination may be wiped dry and used.

Food to Keep

The following foods are safe if you wash and sanitize food and containers and cook foods before use. Do not eat raw fruit even if it has been sanitized.

- Undamaged tin cans. Be sure to wash and sanitize the outside of the container before opening the can. For added safety, boil food before using.
- Potatoes. Wash, sanitize, dry, peel and cook before using.
- Citrus fruits. Wash well, sanitize, peel and heat to 160°F for 10 minutes before using.
- Apples and other fruits which can be sanitized, peeled and cooked before eating.



Disinfecting Cans and Commercial Glass Jars

All cans and commercial glass jars free of rust or dents must be washed and sanitized before they are opened.

- ① Inspect cans and destroy any which bulge or leak (indications of spoilage).
- ② Remove labels and wash in a strong detergent solution with a scrub brush. Remove all silt.
- ③ Immerse scrubbed containers for 15 minutes in cold (60 to 70°F) chlorine solution. Household bleaches contain from 2 percent to 6 percent chlorine. The amount of bleach to add to water would depend on the percent chlorine it contains (see Table 1 for strength of chlorine).
- ④ Remove containers from solution, rinse in clean water and air-dry before opening. Re-label if possible. Use as soon as possible, since containers may rust. Store containers where they will not be re-contaminated.

Table 1. How much bleach to use for purifying water.

Amount of chlorine in bleach	Volume of bleach to add to one quart of water	Volume of bleach to add to one gallon of water
2%	2 tsp	2 Tb plus 2 tsp
4%	1 tsp	1 Tb plus 1 tsp
5%	3/4 tsp	1 Tb
6%	1/2 tsp	2 tsp

There are two alternative methods of disinfecting cans and commercial glass jars. They are:

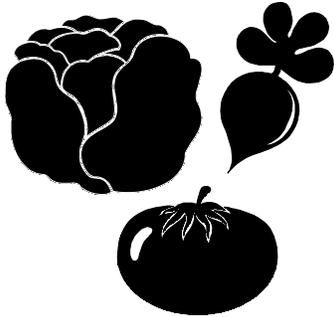
- Immersion in some other sterilizing solution if recommended by local authorities. Rinse in clean water.

- Placing of containers in boiling water and boiling vigorously for at least 10 minutes. Dry cans to prevent rusting. Re-label cans.

Note: Chlorine and most other sterilizing solutions are poisonous. Take precautions that the chemicals will not be swallowed by members of the family, pets or livestock.

Flooded Garden Produce

If flood waters have covered a garden, some produce will be unsafe to eat. The safety of unharvested fruits and vegetables will depend on:



- Kind of produce
- Maturity of produce at the time of flooding
- Time of year flooding occurred (possible recurrence of flood in the same week)
- Severity of flooding (depth of water and silt)
- Duration of flooding
- Bacterial content of flood water
- Likelihood of contamination from sewage or other bacterial contaminants

Immature Produce

In general, fruits and vegetables which were more than two weeks immature at the time of flooding should be safe to eat by the time they are ready for harvest. For additional safety, disinfect produce (see “Produce Disinfecting Measures” below) and cook it before eating.

Mature Produce

Unless flooding was light and there is no danger of bacterial contamination from flood water, avoid using fruits and vegetables that were ready for harvest at the time of flooding, unless they can be disinfected, peeled and thoroughly cooked. Some fruits and vegetables are more susceptible than others to bacterial contamination.

Leafy vegetables such as lettuce, cabbage, mustard, kale, collards, spinach, Swiss chard, celery and fleshy vegetables, and berry fruits such as tomatoes, cucumbers, summer squash, strawberries and peppers would be highly susceptible to bacterial contamination.

Don't pick contaminated strawberries unless there was a quick recession of flood waters and a lot of immature fruit at time of flooding (two weeks before ripening). Silt and other contaminants might be embedded in the leaves, petioles, stems or other natural openings of fleshy structures and could be difficult to remove.

Root, bulb and tuber crops such as beets, carrots, radishes, turnips, onions and potatoes would be less susceptible to bacterial contamination. Disinfect these vegetables, and peel and cook them thoroughly before eating.

Produce with a protected fruit or impervious outer skin such as peas, melons, eggplant or winter squash should be washed and disinfected before outer shell, skin or husk is removed. Then shell, peel or husk the produce and cook it. Covered sweet corn will mold and should be discarded.

Produce Disinfecting Measures

Thoroughly wash, disinfect and cook any produce before eating.

- ① Wash in strong detergent solution with a clean scrub brush. Remove all silt.
- ② Immerse produce for 15 to 20 minutes in a chlorine solution. Household bleaches contain from 2% to 6% chlorine. The amount of bleach to add to water depends on the percentage chlorine it contains (see Table 1 for strength of chlorine).
- ③ Rinse thoroughly with safe drinking water.
- ④ Peel, if possible, and cook thoroughly before eating.

Refer any specific questions to health authorities or your County Extension Agent.