

RECOVERY AFTER THE FLOOD

FOOD WATER HYGIENE

VOLUME 2

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Food/Water/Hygiene

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FOOD SAFETY

FOOD/WATER/HYGIENE

As a rule of thumb, do not eat any food that has come in contact with floodwater.

IF THE SAFETY OF ANY FOOD OR BEVERAGE IS QUESTIONABLE FOLLOW THE SIMPLE RULE - AWHEN IN DOUBT THROW IT OUT.

If you are unsure of a food product's safety, call your local health department or the U.S. Department of Agriculture, food safety hotline 1-800-535-4555 between 10 a.m. and 4 p.m. (Eastern time, Monday through Friday)

or

the Ohio Department of Agriculture (614-466-2732 or 1-800-282-7606).

CANNED FOOD

Carefully examine all canned and bottled goods that have been submerged or come in contact with floodwater. Some cans or bottles may be safe to use after a good cleaning. Follow these guidelines:

- ! After being under water, containers with cork-lined lids or caps, screw tops or pop tops are nearly impossible to clean thoroughly around the opening. Any major temperature changes can actually cause contaminants to be sucked into such containers. They should be discarded.
- ! If they appear undamaged, tin cans are usually safe. Wash in bleach water (liquid -unscented laundry bleach with sodium hypochlorite of 5.25%- 1 tablespoon per 1 gallon of cold water) for one minute, then dry to prevent rusting.
- ! If cans have pitted rust spots that cannot be buffed off with a soft cloth, contamination may have entered through corroded holes in the walls of the can. Discard these cans.
- ! A can with ends that bulge or spring in and out when pressed should be discarded immediately. This usually means bacteria are growing inside and producing gas that expands the can.

Do not taste the contents of such cans.

- ! If a can is crushed, dented or creased, the contents may not be safe to consume. ***Do not taste.***

- ! Generally, home canned foods should not be used. While exposure to floodwater is not, by itself, a safety problem, floodwater can contain bacteria. Since there is no way to tell whether seals have remained intact, it is not possible to tell if food in jars covered by floodwater is contaminated. The contents of such jars should be considered unsafe and discarded. If jar tops were not exposed to floodwater, the jar can be sanitized with a strong household bleach solution (1 tablespoon per quart of hot water).

- ! Destroy any foods in paper or cardboard containers that have come in contact with floodwater.

FRESH FOOD

- ! Root and garden vegetables that have come in contact with floodwater should be discarded.

- ! Citrus fruits should be washed well, sanitized in a chlorine solution and peeled before eating. Apples and other fruits should be sanitized, peeled and cooked before eating. Do not eat these fruits raw, even if they have been sanitized.

PREPARING FOOD DURING A POWER FAILURE

In all likelihoods, a flood will mean a disruption in electrical and gas service and in the availability of potable water. This, in turn, will affect the way you prepare food. These guidelines can help you cope:

- ! If heat for cooking is limited, choose casseroles and other one-dish meals that cook quickly or use no-cook foods. Avoid frozen foods since they require longer cooking times. To avoid storing leftovers, open only what will be eaten at one meal at a time.

- ! Do not serve food that spoils easily. Ground meats, creamed foods, hash, custards, meat pies and any food containing mayonnaise are all potential sources of botulism poisoning.

- ! Try an alternative cooking method. If dry wood is handy, you may want to cook in your fireplace. Many foods can easily be skewered,

grilled or cooked in foil over a fire. If your home still has electricity, electric skillets, hot plates, etc., can provide an alternative cooking method.

REMEMBER, DO NOT USE FUEL-BURNING CAMP STOVES OR CHARCOAL BURNERS INSIDE YOUR HOME. THE FUMES CAN BE DEADLY.

- ! If potable water is in short supply, save liquids from canned vegetables and fruits and use them in cooking.

WHAT TO DO WHEN YOUR REFRIGERATOR FAILS ?

When power goes off in the refrigerator, you can normally expect food inside to stay safely cold for four to six hours, depending on how warm your kitchen is.

- ! Add block ice to the refrigerator if the electricity is off longer than four to six hours. As this ice melts, the water may saturate food packages. Be sure to keep packages out of the water as it drains.
- ! High-protein foods (dairy products, meat, fish, poultry) should be consumed as soon as possible if power is not restored immediately. They cannot be stored safely at room temperature.
- ! Fruits and vegetables can be kept safely at room temperature until there are obvious signs of spoilage (slime, mold, wilt). In fact, with good ventilation, vegetables will last longer at room temperature. Remove them from the refrigerator if electrical service many not resume soon.

WHAT TO DO WHEN YOUR FREEZER FAILS ?

When the electricity is off, a fully stocked freezer will keep food frozen two days if the door remains closed. A half-full freezer can keep foods frozen about one day. What can you do if electric service will not be reconnected within one or two days?

- ! Keep the freezer door closed.
- ! If your friends have electricity, divide your frozen foods among their freezers.
- ! Seek freezer space in a store, church, school, or commercial meat

locker or freezer that has electrical service.

- ! Know where you can buy dry and block ice. Dry ice freezes everything it touches; 25 pounds of it will keep a 10-cubic-foot freezer below freezing for three to four days. When using dry ice, though, be sure to take several precautions. ***Never touch dry ice with bare hands!*** Also, do not stick your head into a freezer that contains dry ice. It gives off carbon dioxide, which replaces oxygen, so leave the door open a short time before examining food.

MILK SAFETY

Be sure that the milk you drink is properly pasteurized. If pasteurized milk is not available, raw milk should be heated to the boiling point (but not boiled) before drinking. Canned or powdered milk may be substituted for fresh milk. Canned milk will keep safely for a few hours after the can is opened. If mixing powdered milk, be sure that you use boiled or disinfected water. Powdered milk should be used immediately.

FISH

The Ohio Department of Health, the Bureau of Environmental Health and Toxicology, Fish Contaminant Monitoring Program (614-466-5599) offers a set of general guidelines about eating fish caught from floodwaters. Because of untreated sewage and/or decaying carcasses, there are likely to be pathological microorganisms in floodwaters that can present a small, but real, potential for human infection through fish. Consuming uncooked or undercooked fish carries the possibility of diseases from salmonella, hepatitis, giardia and crypto sporidia.

- ! As a general rule, do not take fish from bodies of water in which raw sewage or animal carcasses are evident. However, any fish with an unusual odor or whose flesh is an unusual color, should not be eaten. Fish behaving in an unusual manner, in obvious distress, with cuts or sores, or which have not been caught live, should be avoided. If in doubt, it is best to release the fish, discard the carcass in a sanitary landfill or bury the carcass to prevent it from becoming a source of disease.
- ! Avoid handling fish if you have cuts or abrasions on your hands.
- ! If knives, cutting boards, tables, etc., are used to clean and prepare fish, thoroughly clean and sanitize this equipment with diluted bleach before using for other food preparation.

! Some species of fish in flooded rivers are already listed on consumption advisories due to chemical contamination unrelated to flooding. Flooding may stir up additional contaminants in river sediments or flooded land but, because of the large amount of water and the short time frame involved, this is not likely to immediately increase contamination levels in river fish.

POTABLE WATER

A person requires 2 gallon of water or other fluids each day. Meeting this requirement can be difficult during a flood, however, when many public and private water supplies may be contaminated. The safest course is to consider all water unsafe after a flood. Listen for public announcements on the safety of your area's water supply and follow the instructions of local authorities.

If you have a private water well you should open your cold water tap and run the water to waste for approximately thirty (30) minutes to allow the well to recharge naturally. Then have the well disinfected and tested before drinking or using for cooking. If you need assistance in having your well water analyzed, contact the local health department in your area for information or the Bureau of Local Services, Ohio Department of Health.

The safest approach is to drink and cook with bottled water or water previously stored in the refrigerator. If you have to use tap water, boil it vigorously for at least three minutes. If you cannot boil it, add five drops of household bleach to each gallon of water. Mix thoroughly and allow to stand for 30 minutes. This method should be used only with water that is clean in appearance and free of odor.

Caution should be used in the storage and handling of bottled water. It should not be stored where it will be exposed to sunlight, and it should not be placed in areas where the temperature is elevated (e.g., on asphalt that has been in the sun).

Two sources of water within the home that can be used for some purposes are the hot water heater and the top tank (not the bowl) of the toilet. Hot water heaters generally hold up to 30 gallons. If water from either of these sources is used for drinking or cooking, it should be boiled first.

Remember, do not use contaminated water to make ice, coffee, brush your teeth or wash dishes. If there is a shortage of safe drinking water, use clean disposable eating utensils, plates and napkins.

WELL DISINFECTION

DRILLED WELLS

- ! Using the following table, determine the amount of water in the well by multiplying the gallons per foot by the depth of the well in feet. For example, a well with a 6-inch diameter contains 1.5 gallons of water per foot. To determine the number of gallons in a well that is 120 feet deep, multiply by 120 (1.5 X 120 = 180).
- ! For each 100 gallons of water in the well, use the amount of chlorine (liquid or granules) indicated. For example, 180 gallons of water x 2 ounces of chlorine granules (per 100 gallons of water) = 3.6 ounces of granules (use 4 ounces). Mix the total amount of chlorine in about 10 gallons of water. Be sure dry granules or tablets are completely dissolved before adding them to the well.
- ! Pour the solution into the top of the well before the seal is installed.
- ! Connect a hose from a faucet on the discharge side of the pressure tank to the well casing top. Start the pump. Spray the water back into the well and wash the inside of the casing for at least 15 minutes.
- ! After you have let the water stand, operate the pump, discharging water from all outlets (turning on ALL faucets) until all odor of chlorine disappears. Adjust the flow of water from faucets.

Amount of disinfectant required for each 100 gallons of water

Laundry bleach (5.25% chlorine). 3 cups*
 Hypochlorite granules (70% chlorine 2 ounces**

1 cup = 8-ounce measuring cup
 1 ounce = 2 heaping tablespoons of granules

DUG OR BORED WELLS

- ! The amount of water in the well determines how much disinfectant (bleach or granules) is required. Use the table below to make your calculations.
- ! To determine the exact amount of chlorine liquid or granules to use, multiply the amount of disinfectant indicated (according to the diameter of the well) by the depth of the well. If you plan to use liquid chlorine, for example, a well 5 feet in diameter would require 42 cups of bleach per foot of water. If the well is 30 feet deep, multiply 42 by 30 to determine the total cups of bleach required (4

$1/2 \times 30 = 135$); 135 cups = 8.44 gallons (16 cups = 1 gallon). Use 82 gallons. Here is an example, using granules: A well 6 feet in diameter requires 4 ounces of chlorine granules or powder per foot of water. If the well is 40 feet deep, multiply 4 (ounces) by 40 (feet). This well would require 160 ounces of granules or powder, or 10 pounds.

- ! Add this total amount of liquid or dry bleach to about 10 gallons of water. Splash the mixture around the lining or wall of the well. Be certain the bleach solution contacts all parts of the well.
- ! Seal the well top.
- ! Open all faucets and pump water until a strong odor of chlorine is noticeable at each faucet. Then stop the pump and allow the solution to remain in the well overnight.
- ! After it stands overnight, operate the pump, discharging water from all outlets (turning on ALL faucets) until the chlorine odor disappears. Adjust the flow of water faucets or fixtures that discharge to septic tank systems to low flow to avoid overloading the disposal system.

How to Disinfect a Dug or Bored Well

Diameter of Well (in feet)	Amount 5.25% Laundry Bleach Per Foot of Water	Amount 70% Chlorine Granules Per Foot of Water
3	12 cups	1 ounce
4	3 cups	2 ounces
5	42 cups	3 ounces
6	6 cups	4 ounces
7	9 cups	6 ounces
8	12 cups	8 ounces
10	18 cups	12 ounces

DRIVEN WELLS

All that is necessary to restore a driven or sand-point well is to pump it out thoroughly. If the well has a pit, pump out any accumulated water.

SEPTIC SYSTEMS AND SOLID WASTE DISPOSAL

Septic tank systems that have been flooded should not be used until after

floodwaters recede. Once waters have gone down, the system should be checked for broken lines or sewage surfacing. Any problems should be corrected before the system is returned to service. Outdoor toilets that have been flooded should be scrubbed thoroughly with a solution of 2 cup of laundry bleach per gallon of water. In the aftermath of a flood, most communities will provide portable toilets, but these may be limited.

If no toilet facilities are available, deposit body waste in a water-tight receptacle used for that purpose only. Place a small amount of water in the receptacle before it is used to make emptying easier. Dig a trench or pit and empty the contents of the receptacle into this pit as soon as possible after each use. Cover the waste in the trench after each use with a thin layer of dirt, ashes or lime. Also, empty the water used to wash the receptacle into the pit or trench. When closing the trench, cover it with at least 12 inches of earth.

PERSONAL HYGIENE

Following a flood, it can be difficult to maintain good hygiene and cleanliness. Doing so is imperative, however, if the risk of disease is to be minimized.

One of the most important things you can do to prevent the spread of waterborne disease is to always wash your hands with plenty of soap and clean, warm running water. This is particularly important -

- ! before preparing or eating food, handling a baby, smoking or any other activity that involves touching something that may enter a person's mouth (adults should make sure that children do the same);
- ! after using the toilet; and
- ! after handling articles contaminated with floodwater or sewage.

When no regular safe water supply is available, use bottled, boiled or chemically disinfected water for washing hands (and brushing teeth).

Keep wash cloths and dish towels clean. Bacteria can remain on towels and cloths, so wash linen often with clean water and soap. Parents need to take special care that their children follow these precautions. Do not allow children to play in floodwater areas, wash their hands frequently (especially before meals), and do not allow them to play with floodwater-contaminated toys that have not been disinfected in a solution of 1 ounce of bleach (1/8 cup) in 2 gallons of water.

RETAIL FOOD ESTABLISHMENTS

During periods of flooding, retail food establishments may be directly or indirectly affected. In those instances where floodwater has entered the premises of a restaurant or a retail food store, there are guidelines that govern the whether food products can be salvaged. Establishments that have been flooded must be inspected by the local health department (if applicable) or by staff from one of the Department's regional offices before reopening.

If power is interrupted, the resultant loss of mechanical refrigeration can adversely affect the quality and wholesomeness of food. The Ohio Department of Health has several guidelines:

- ! Frozen foods that are still frozen (solid) may be sold.
- ! Food intended to be sold in a frozen state, but at internal temperatures of less than 45 degrees F and not frozen, may be immediately sold as thawed, salvaged food items. Ice cream, frozen novelties and other frozen items that lose product characteristics once thawed should be destroyed.
- ! Potentially hazardous food items (those with manufacturer directions to keep at refrigerated temperatures) with internal temperatures above 50 degrees F for more than one hour should be destroyed. If it is not possible to determine how long a product has been at an internal temperature of greater than 45 degrees F, the product should be destroyed.

If floodwater has entered the premises, the following products must be destroyed:

- ! All fresh produce, wrapped or unwrapped
- ! All food items in paper bags that do not have a protective sealed interior plastic or laminated liner
- ! All alcoholic beverages that have cork closures or are enclosed in a porous container (e.g., wood barrel)
- ! All dairy products, both frozen and refrigerated (not canned)

- ! Nuts (both those in their shells and shelled) in burlap or paper bags, self-service bulk containers, barrels or open to the air in some other manner
- ! Eggs, fresh or frozen
- ! Meat and poultry may be salvageable under Ohio Department of Agriculture salvage regulations, (call 614-728-6260).
- ! All containers with a screw-type, crimped, press-on or pull-tab closure including food and beverage items such as mayonnaise, soft drinks, wine and similar articles (does not include cans with key-type openings such as canned ham, sardines etc.)
- ! All infant formulas and rubber or plastic items that are food contact surfaces (e.g., nipples, plastic bottles, plates, flatware, cups, etc.)
- ! All food items contained in a laminated or flexible plastic, cellophane or similar container

If you have a question about whether to keep or discard food, call your local health department or the U.S. Department of Agriculture's food safety hotline, 1-800-535-4555, between 10 a.m. and 4 p.m. (Eastern time), Monday through Friday.

If flooding causes an interruption of water service or the issuance of a boil order, a retail food service establishment should follow certain rules. To continue operating under "boil water" orders or when water service from municipal water supplies is interrupted, all retail food service establishments must secure and use potable water from an approved source (e.g., tank trucks or bottled potable water) for all water usage, including C

- ! coffee, tea and other beverages made in the food establishment;
- ! direct-feed coffee urns plumbed directly into the water system;

- ! post-mix soda or beverage machines;
- ! ice machines that manufacture ice on site;
- ! washing produce or thawing frozen foods;
- ! employee hand washing;
- ! washing all dishes and cooking utensils;
- ! all water used in three-compartment sinks;
- ! all water for sanitizing solutions; and
- ! water for mechanical dishwashers.

Retail food establishments may want to consider alternative procedures to minimize water usage:

- ! Substitute commercially packaged ice for that made on site.
- ! Substitute single-service items or disposable utensils for reusable dishes and utensils.
- ! Use pre-prepared foods from approved sources in place of complex preparations on site.
- ! Restrict menu choices or hours of operation.
- ! Make portable toilets available for sanitary purposes.

After the boil water order is lifted or water service is restored, these precautionary measures must be followed:

- ! Flush the building's water lines and clean faucet screens, water line strainers on mechanical dishwashing machines and similar equipment.

- ! Purge all water-using fixtures and appliances of standing water (e.g., ice machines, beverage makers, hot water heaters, etc.).

- ! Clean and sanitize all fixtures, sinks and equipment connected to waterlines.