



## Preparing for a Flood

Flood waters can contain rotting food, feces, chemicals, and disease-causing organisms which can contaminate your food establishment and easily cause **foodborne illnesses**. Consider flood waters to be sewage. Flooding may also result in the loss of power, the loss of a safe water supply, and/or cause sewer backups that create the potential for an imminent health hazard.

***The following information will assist you in developing a plan to prepare for and respond to flooding in your establishment. While not required for an Emergency Preparedness Plan accepted by the Houston Health Department Bureau of Consumer Health Services (BCHS), it is recommended that your establishment have procedures in place for a flooding event.***

### PLAN AND ACT NOW

- Protect electrical, natural gas, and refrigeration equipment. Know how to properly turn off equipment, the outside main gas valve, electricity at the main breaker, and the main water valve when flooding is likely. Ensure managers and persons in charge know where to find them.
- Develop a plan for monitoring and maintaining sump pumps, downspouts, plumbing, grease traps, exterior surface grading, storm drains, and other facilities that can contribute to flooding.
- Install sewer backflow valves.
  - Flooding can cause sewage from sanitary sewer lines to back up into your establishment through plumbing drainpipes. Sewer backflow valves are designed to block drainpipes temporarily and prevent the reverse flow of sewage in the lines.
  - Sewer backflow valves should be installed by a licensed master plumber with a permit, if required, to ensure the work is done correctly according to City of Houston codes.
- Identify who will enter the facility after the flooding event to evaluate the impact of the flooding.
- Obtain Personal Protective Equipment (PPE), equipment, and supplies for cleaning up after the flood.  
**OR**  
Make arrangements for a professional service with expertise in cleaning food establishments exposed to flooding or sewage backups.

### PREPARE YOUR ESTABLISHMENT WHEN FLOODING IS PREDICTED

#### Protect Your Inventory

- Cancel incoming food supplies.
- Take an inventory of food and other items immediately before flooding is expected to begin. (Consider recording the inventory through photos or cell phone video.) Discard old or unnecessary items.
- Move food items and packaging materials to the highest shelving possible or to an alternate commercial location. (No food storage at home.)
- Tie down loose items that can float to prevent them from being carried away by flood waters.
- Store chemicals above possible flood levels in sealed containers. Chemicals should never be stored

above food products.

## Stockpile Additional Supplies

- Dry ice, ice, plastic tarps, signs, tape, additional thermometers, etc.
- Single-service articles - disposable plates, utensils, cups, etc
- Cleaning – tools, cleaners, hand soap, disinfectants, gloves, personal protective clothing, etc.
- Pest control – bait boxes, glue boards, etc.

## WHEN FLOOD WATERS ENTER YOUR ESTABLISHMENT

**\*\*\*There may be health and safety risks inside your establishment.\*\*\***

### First Steps – Get Help

- Determine that the building is safe to enter.
- Call utility companies to determine the safety of gas and electrical lines.
- Do not conduct any food-related operations such as food preparation, food handling, and equipment/utensil cleaning if the entire establishment is flooded.**
- You may continue operations in an area of your establishment that is unaffected by flooding or structural damage as long as all food safety requirements can be met.
- Notify the Houston Health Department Bureau of Consumer Health Services (BCHS) of your establishment's operating status (open, partially open, closed) at [www.houstonconsumer.org](http://www.houstonconsumer.org), [chs@houstontx.gov](mailto:chs@houstontx.gov), or (832) 393-5100.
- Contact the Houston Permitting Center at (832) 394-8810; 1002 Washington, Houston, 77002; 8 AM - 4:30 PM when replacing large floor-mounted equipment, repairing or replacing interior surfaces, or repairing, replacing, or remodeling the facility's structure. Refer to Recovering from Flood and/or Structural Damage. Consider hiring professionals to remove health threats caused by mold, asbestos, harmful vapors, disease-causing organisms, chemicals, and other hazardous materials or a professional water-damage restoration company for widespread damage.
- If employees are involved in the cleanup, ensure employees:
  - Are provided PPE
  - Are trained in cleanup procedures
  - Know which food and non-food items can be saved and which items must be thrown away
- If cleanup begins before a BCHS health officer arrives, document the type and pounds of food to be discarded and the method of disposal. Keep the records for health inspection and insurance purposes.
- Ensure a food establishment manager or person in charge is responsible for consistent compliance with food safety requirements.

### Rid Your Physical Facility of Heavy Filth, Water, and Damaged Items

- Remove all sewage, mud, silt, or other solids first.
- Remove any excess water including standing water located beneath floors where refrigeration or electrical conduits are located.

- Remove and replace:
  - Wall board that has been water damaged. Cement and concrete walls that have mold damage may be able to be reconditioned.
  - Water-damaged ventilation systems that cannot be thoroughly cleaned and disinfected
  - All ventilation air filters
- Discard:
  - All refrigerated display cases, storage cases, or other refrigerator equipment if the insulation, door gaskets, hoses, etc. were damaged by flood or liquefied food items
  - Soft, porous materials such as plastic, rubber, or wood items saturated by flood water since they cannot be safely cleaned and disinfected. This includes wooden cutting boards, plastic utensils and storage containers, disposable silverware or plastic utensils, cracked dishware.
  - Food equipment such as toasters, filters, purifiers, and beverage cartridges attached to equipment
  - All food and packaging materials that have been in direct contact with flood water and anything that cannot be washed and disinfected
  - All contaminated and temperature-abused products from refrigerated display and storage cases

***Refer to the Food and Equipment Salvage Chart and Proper Disposal of Contaminated Food to determine what food, equipment, utensils, furnishings, and single-service articles must be discarded and what may be kept and how to properly dispose of contaminated and unsafe items.***

## Prepare to Disinfect

***EPA-Registered Disinfectants for Norovirus should be used to disinfect surfaces contaminated by flood water or sewage. It is extremely important that the following safety precautions are followed when using disinfectants.***

- Know what disinfectant you are using and follow the manufacturer's safety precautions (Safety Data Sheet or SDS) and instructions for use. Some disinfectant solutions can be toxic and can be harmful to the eyes, skin, and airways.
- Do not use disinfectant solution on food-contact surfaces unless the surfaces have been contaminated with flood water or sewage.
- Ensure disinfected food-contact surfaces are rinsed thoroughly of the disinfectant solution and then sanitized with an approved sanitizer (chlorine, iodine or quaternary ammonia).
- Chlorine and quaternary ammonia may be used for both disinfection and sanitization but the chemical concentration for disinfection is much higher than that used for sanitization.
- Do not use the disinfectant solution to sanitize if using the same chemical. Make a separate sanitizing solution.
- Contact times on the manufacturer's label must be followed for disinfection and sanitization to be effective.

### **Bleach Guidance (5-6%) for Disinfecting After a Flood\***

- Use chlorine bleach in a well-ventilated area and wear Personal Protective Equipment (PPE) such as

goggles, masks, gloves, and a covering for all exposed skin. Do not mix chlorine bleach with ammonia.

- Wash surfaces with hot soapy water and rinse before disinfection.
- Then sanitize any food-contact surfaces with a sanitizing solution (50-100 ppm chlorine) as indicated below.

Purpose	PPM	Dilution	Contact Time	Final Step after Disinfection
Disinfection - Nonfood Contact Surfaces	<b>2400</b>	¾ cup regular chlorine bleach/1 gallon water	5 minutes	Rinse thoroughly then air dry
Disinfection - Food-Contact Surfaces	<b>2400</b>	¾ cup regular chlorine bleach/1 gallon water	5 minutes	Rinse thoroughly then sanitize
Sanitization - Food-Contact Surface After Disinfection	<b>50-100</b>	1 tbsp chlorine bleach/1 gallon water	10 seconds	Air dry

\*For concentrated (8.25%) chlorine bleach, use 1/2 cup bleach/1 gallon water for disinfection and 2 tsp bleach/1 gallon water for sanitization.

- Use only regular chlorine bleach with a sodium hypochlorite concentration of 5-6% or 8.25%. Do not use expired, scented, or splashless bleach.
- Steam cleaning may be preferable for carpets and upholstery. Chlorine bleach may permanently stain some surfaces.
- Other [EPA-registered disinfectants for Norovirus](#), following manufacturer's directions, may be used.

## Clean, Repair, and Disinfect Affected Equipment and Hard Surfaces

***Do not clean the facility and equipment if the water supply is not potable (safe), the wastewater system is not functioning, and/or electricity is unavailable for heating water and providing enough lighting for cleaning.***

- Determine whether the water, wastewater, and electrical systems are operational.
- Use a permitted transporter to service a flooded grease trap.
- Clean, repair, and disinfect floors, walls, piping, ceilings, HVAC/ventilation systems, and other areas affected by flood waters or other damage from the storm to prevent mold growth.
- Clean all hard surfaces (cabinets, counters, and side walls of large equipment) with hot water and detergent. Rinse with water, disinfect, then air dry. ***Cabinets and other surfaces must be cleaned and disinfected before food, dishes, or cooking utensils can be stored in them.***
- Thoroughly wash the inside and outside of refrigerated storage and display cases with a hot detergent solution, rinse free of detergents and residues, disinfect, then air dry.
  - Special attention should be given to lighting, drainage areas, ventilation vents, corners, cracks and crevices, door handles, and door gaskets.
- Refer to [Walk-In Cooler Restoration After a Flood](#) for information on cleaning and repairing walk-in refrigeration units.

- Thoroughly clean and disinfect stove units and have them checked by an authorized service representative prior to use.
- Consult professional service technicians as needed.
- Use fans, dehumidifiers, or air conditioners to speed the drying process.

## Clean and Disinfect All Affected Cookware, Tableware, and Utensils

- Remove detachable parts to affected pots, pans, and utensils such as blades, plastic or wooden handles, and screens prior to cleaning.
- Boil silverware, metal utensils, and pots and pans in water for at least 10 minutes or use a heat-sanitizing dish machine. Chlorine bleach should not be used because it reacts with many metals and causes them to darken.
  - Ensure mechanical dishwashing machines provide a final sanitizing rinse of at least 180°F.
  - A maximum registering thermometer or temperature sensitive tape should be available to check that hot water reaches 180°F or the utensil surface reaches a temperature of 165°F.
- Clean iron pots, pans, and utensils by:
  - Washing with soap and water, using a stiff brush, scouring powder, or steel wool
  - Wiping items with an oil-saturated cloth or a commercial rust remover if rust remains. If using a commercial rust remover, be sure to follow the label instructions.
  - Washing again in hot, soapy water followed by rinsing and disinfecting using an - EPA Registered Disinfectant for Norovirus acceptable for iron cookware
  - Rinsing thoroughly after disinfecting
  - Sanitizing with an approved sanitizer, then air drying
  - Re-seasoning when dry
- Clean all other affected cookware and tableware with hot water and detergent. Rinse with water then disinfect with an approved disinfectant appropriate for the surface. Rinse thoroughly after disinfecting, sanitize and then air dry.

## Use This Checklist for Water-Use Equipment

***If the following equipment is still usable after being affected by flood waters, follow the manufacturer's or service technician's advice for disinfection and sanitization.***

***If the following equipment has not been contaminated by flood waters, clean and sanitize according to the information below.***

- Dishwashers:
  - Run the empty dishwasher through the wash-rinse-sanitize cycle three times to flush the water lines and ensure that the dishwasher is cleaned and sanitized internally before it is used to wash equipment and utensils.
- Sinks:
  - Thoroughly clean and sanitize all sinks before resuming use.
- Water Filter Systems - including autofill equipment:
  - Clean and sanitize the water filter housings.
  - Remove and replace all filters prior to the startup of the equipment if not designed to be cleaned in place. If designed to be cleaned in place, follow the cleaning and sanitization

- procedures recommended by the water filter manufacturer or equipment service representative.
- Fit systems with a new water filter cartridge before being placed back into service.
- Ice Makers:
  - Run three complete ice-making cycles and discard all ice made during those cycles.
  - Clean and sanitize icemaker bins.
- Commercial Produce Mistlers:
  - Remove all produce from the bins under the mistlers.
  - Flush water through the mistlers for at least 10-15 minutes.
  - If removable, disconnect, clean, and sanitize the misting nozzles.
  - Clean and sanitize the produce bins prior to restocking.
- Fountain Dispensers:
  - Run each beverage valve on each dispenser for at least five minutes.
  - Remove, clean, and sanitize dispensing nozzles and associated removable parts.
  - Clean and sanitize any ice bins.
- Frozen Beverage Dispensers:
  - Discard all products in the dispenser(s).
  - Call for service or follow equipment manufacturer's recommendations for cleaning and sanitization.
- Juice Machines:
  - Flush water through the unit for at least five minutes on first flavor.
  - Flush water through any additional flavors on same unit for at least one minute.
  - Call for service and/or follow equipment manufacturer's recommendations for cleaning and sanitization.
- Coffee Makers /Tea Brewers:
  - Brew and discard at least four pots of hot water per unit.

## Clean the Cleaning Tools

- Discard contaminated linens and clothing affected by flood water or used during cleanup.  
**OR**  
Use a commercial laundry service that can properly disinfect the items.
- Discard mop heads and any cleaning tools that contacted flood water

## Expect Pests

- Confirm that any pest management company you use is licensed.
- Ensure that any rodents/pests that may have entered the facility are no longer present.
- Expect to replace traps, bait stations, and treatments that may have been displaced or damaged and to add more pest control equipment to minimize the invasion of pests.
- Remove dead pests and their droppings and sanitize any food-contact surfaces that may have come in contact with them.
- Dispose of contaminated or spoiled solid foods in closed containers to prevent rodent and fly

- harborage.
- Seal all openings into the facility to prevent future entry of pests or rodents.
- Clear trash and debris immediately in and around the establishment (downed tree limbs, cardboard boxes, broken sheetrock, old equipment, and any other damaged materials).
- Keep grass short and cut. Remove dense brush and shrubbery.

## PREPARE TO REOPEN

### Meet the Requirements for Resuming Operations

- Refer to the [Requirements to Resume Normal Operations](#).

### Contact BCHS at [www.houstonconsumer.org](http://www.houstonconsumer.org) or [chs@houstontx.gov](mailto:chs@houstontx.gov)

- To request approval to resume normal operations once the requirements are met.
- OR**
- To request a pre-opening inspection if permits and approval were needed from the Houston Permitting Center.

**THE BUREAU OF CONSUMER HEALTH SERVICES MUST GRANT APPROVAL FOR YOUR ESTABLISHMENT TO RESUME FOOD OPERATIONS.**

Please contact the Bureau of Consumer Health Services (BCHS) with any questions or concerns.

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