



## Key Facts About Flood Readiness

### Preparing for a Flood

#### ***Here are some basic steps to take to prepare for the storm:***

Contact the local county geologist or county planning department to find out if your home is located in a flash-flood-prone area or landslide-prone area.

Learn about your community's emergency plans, warning signals, evacuation routes, and locations of emergency shelters.

Plan and practice a flood evacuation route with your family. Ask an out-of-state relative or friend to be the "family contact" in case your family is separated during a flood. Make sure everyone in your family knows the name, address, and phone number of this contact person.

Post emergency phone numbers at every phone.

Inform local authorities about any special needs, i.e., elderly or bedridden people, or anyone with a disability.

Identify potential home hazards and know how to secure or protect them before the flood strikes. Be prepared to turn off electrical power when there is standing water, fallen power lines, or before you evacuate. Turn off gas and water supplies before you evacuate. Secure structurally unstable building materials.

Buy a fire extinguisher and make sure your family knows where it is and how to use it.

Buy and install sump pumps with back-up power.

Have a licensed electrician raise electric components (switches, sockets, circuit breakers and wiring) at least 12" above your home's projected flood elevation.

For drains, toilets, and other sewer connections, install backflow valves or plugs to prevent floodwaters from entering.

Anchor fuel tanks which can contaminate your basement if torn free. An unanchored tank outside can be swept downstream and damage other houses.

#### ***If you are under a flood watch or warning:***

Gather the emergency supplies you previously stocked in your home and stay tuned to local radio or television station for updates.

Turn off all utilities at the main power switch and close the main gas valve if evacuation appears necessary.

Have your immunization records handy or be aware of your last tetanus shot, in case you should receive a puncture wound or a wound becomes contaminated during or after the flood.

Fill bathtubs, sinks and plastic soda bottles with clean water. Sanitize the sinks and tubs first by using bleach. Rinse and fill with clean water.

Bring outdoor possessions, such as lawn furniture, grills and trash cans inside or tie them down securely.

## **Emergency Supplies You Will Need**

You should stock your home with supplies that may be needed during the emergency period. At a minimum, these supplies should include:

- Several clean containers for water, large enough for a 3-5 day supply of water (about five gallons for each person).

- A 3-5 day supply of non-perishable food and a non-electric can opener.

- A first aid kit and manual and prescription medicines and special medical needs.

- A battery-powered radio, flashlights, and extra batteries.

- Sleeping bags or extra blankets.

- Water-purifying supplies, such as chlorine or iodine tablets or unscented, ordinary household chlorine bleach.

- Baby food and/or prepared formula, diapers, and other baby supplies.

- Disposable cleaning cloths, such as "baby wipes" for the whole family to use in case bathing facilities are not available.

- Personal hygiene supplies, such as soap, toothpaste, sanitary napkins, etc.

- An emergency kit for your car with food, flares, booster cables, maps, tools, a first aid kit, fire extinguisher, sleeping bags, etc.

- Rubber boots, sturdy shoes, and waterproof gloves.

- Insect repellent containing DEET or Picaridin, screens, or long-sleeved and long-legged clothing for protection from mosquitoes which may gather in pooled water remaining after the flood. (More information about these and other recommended repellents can be found in the fact sheet "Updated Information Regarding Insect Repellents" at [www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm](http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm).)

## **Preparing to Evacuate**

Expect the need to evacuate and prepare for it. When a flood watch is issued, you should:

- Fill your vehicle's gas tank and make sure the emergency kit for your car is ready.

- If no vehicle is available, make arrangements with friends or family for transportation.

- Identify essential documents such as medical records, insurance card along with ID cards and put in water prove material to carry with you during evacuation.

- Fill your clean water containers.

- If you have pet, identify a shelter designated for pets Review your emergency plans and supplies, checking to see if any items are missing.

- Tune in the radio or television for weather updates.

- Listen for disaster sirens and warning signals.

- Put livestock and family pets in a safe area. Due to food and sanitation requirements, emergency shelters cannot accept animals.

- Adjust the thermostat on refrigerators and freezers to the coolest possible temperature.

## **If You Are Ordered to Evacuate**

You should never ignore an evacuation order. Authorities will direct you to leave if you are in a low-lying area, or within the greatest potential path of the rising waters. If a flood warning is issued for your area or you are directed by authorities to evacuate the area:

- Take only essential items with you.

- If you have time, turn off the gas, electricity, and water.

- Disconnect appliances to prevent electrical shock when power is restored.

- Follow the designated evacuation routes and expect heavy traffic.

- Do not attempt to drive or walk across creeks or flooded roads.

## **If You Are Ordered NOT to Evacuate**

To get through the storm in the safest possible manner:

Monitor the radio or television for weather updates.

Prepare to evacuate to a shelter or to a neighbor's home if your home is damaged, or if you are instructed to do so by emergency personnel.

For more information, visit [www.bt.cdc.gov/disasters/floods](http://www.bt.cdc.gov/disasters/floods) or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

## **After a Flood**

### **Precautions When Returning to Your Home**

Electrical power and natural gas or propane tanks should be shut off to avoid fire, electrocution, or

explosions. Try to return to your home during the daytime so that you do not have to use any lights. Use

battery-powered flashlights and lanterns, rather than candles, gas lanterns, or torches. If you smell gas or

suspect a leak, turn off the main gas valve, open all windows, and leave the house immediately. Notify the

gas company or the police or fire departments or State Fire Marshal's office, and do not turn on the lights

or do anything that could cause a spark. Do not return to the house until you are told it is safe to do so.

Your electrical system may also be damaged. If you see frayed wiring or sparks, or if there is an odor of

something burning but no visible fire, you should immediately shut off the electrical system at the circuit

breaker.

Avoid any downed power lines, particularly those in water. Avoid wading in standing water, which also

may contain glass or metal fragments.

You should consult your utility company about using electrical equipment, including power generators. Be

aware that it is against the law and a violation of electrical codes to connect generators to your home's

electrical circuits without the approved, automatic-interrupt devices. If a generator is on line when

electrical service is restored, it can become a major fire hazard. In addition, the improper connection of a

generator to your home's electrical circuits may endanger line workers helping to restore power in your

area. All electrical equipment and appliances must be completely dry before returning them to service. It

is advisable to have a certified electrician check these items if there is any question. Also, remember not

to operate any gas-powered equipment indoors. (See also "Carbon Monoxide Poisoning" at [www.bt.cdc.gov/disasters/carbonmonoxide.asp](http://www.bt.cdc.gov/disasters/carbonmonoxide.asp).)

See also "Reentering Your Flooded Home" at [www.bt.cdc.gov/disasters/mold/reenter.asp](http://www.bt.cdc.gov/disasters/mold/reenter.asp).

### **Cleanup**

Walls, hard-surfaced floors, and many other household surfaces should be cleaned with soap and water

and disinfected with a solution of 1 cup of bleach to five gallons of water. Be particularly careful to thoroughly disinfect surfaces that may come in contact with food, such as counter tops, pantry shelves, refrigerators, etc. Areas where small children play should also be carefully cleaned. Wash all linens and clothing in hot water, or dry clean them. For items that cannot be washed or dry cleaned, such as mattresses and upholstered furniture, air dry them in the sun and then spray them thoroughly with a disinfectant. Steam clean all carpeting. If there has been a backflow of sewage into the house, wear rubber boots and waterproof gloves during cleanup. Remove and discard contaminated household materials that cannot be disinfected, such as wallcoverings, cloth, rugs, and drywall. See also "Protect Yourself from Mold" at [www.bt.cdc.gov/disasters/mold/protect.asp](http://www.bt.cdc.gov/disasters/mold/protect.asp).

### **After a Flood**

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### **Immunizations**

Outbreaks of communicable diseases after floods are unusual. However, the rates of diseases that were present before a flood may increase because of decreased sanitation or overcrowding among displaced persons. Increases in infectious diseases that were not present in the community before the flood are not usually a problem. If you receive a puncture wound or a wound contaminated with feces, soil, or saliva, have a doctor or health department determine whether a tetanus booster is necessary based on individual records.

Specific recommendations for vaccinations should be made on a case-by-case basis, or as determined by local and state health departments.

### **Swiftly Flowing Water**

If you enter swiftly flowing water, you risk drowning -- regardless of your ability to swim. Swiftly moving shallow water can be deadly, and even shallow standing water can be dangerous for small children. Cars or other vehicles do not provide adequate protection from flood waters. Cars can be swept away or may break down in moving water.

### **Chemical Hazards**

Use extreme caution when returning to your area after a flood. Be aware of potential chemical hazards you may encounter during flood recovery. Flood waters may have buried or moved hazardous chemical containers of solvents or other industrial chemicals from their normal storage places. If any propane tanks (whether 20-lb. tanks from a gas grill or household propane tanks) are discovered, do not attempt to move them yourself. These represent a very real danger of fire or explosion, and if any

are found, police or fire departments or your State Fire Marshal's office should be contacted immediately.

Car batteries, even those in flood water, may still contain an electrical charge and should be removed with

extreme caution by using insulated gloves. Avoid coming in contact with any acid that may have spilled

from a damaged car battery.

For more information, visit [www.bt.cdc.gov](http://www.bt.cdc.gov)

or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

## **After a Hurricane or Flood: Cleanup of Flood Water**

When returning to your home after a hurricane or flood, be aware that flood water may contain sewage.

Protect yourself and your family by following these steps:

### **Inside the Home**

- Keep children and pets out of the affected area until cleanup has been completed.
- Wear rubber boots, rubber gloves, and goggles during cleanup of affected area.
- Remove and discard items that cannot be washed and disinfected (such as, mattresses, carpeting, carpet padding, rugs, upholstered furniture, cosmetics, stuffed animals, baby toys, pillows, foam rubber items, books, wall coverings, and most paper products).
- Remove and discard drywall and insulation that has been contaminated with sewage or flood waters.
- Thoroughly clean all hard surfaces (such as flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks, and other plumbing fixtures) with hot water and laundry or dish detergent.
- Help the drying process by using fans, air conditioning units, and dehumidifiers.
- After completing the cleanup, wash your hands with soap and water. Use water that has been boiled for 1 minute (allow the water to cool before washing your hands).
  - Or you may use water that has been disinfected for personal hygiene use (solution of 1/8 teaspoon [ $\sim 0.75$  milliliters] of household bleach per 1 gallon of water). Let it stand for 30 minutes. If the water is cloudy, use solution of 1/4 teaspoon ( $\sim 1.5$  milliliters) of household bleach per 1 gallon of water.
- Wash all clothes worn during the cleanup in hot water and detergent. These clothes should be washed separately from uncontaminated clothes and linens.
- Wash clothes contaminated with flood or sewage water in hot water and detergent. It is recommended that a laundromat be used for washing large quantities of clothes and linens until your onsite wastewater system has been professionally inspected and serviced.
- Seek immediate medical attention if you become injured or ill.

### **Outside the Home**

- Keep children and pets out of the affected area until cleanup has been completed.
- Wear rubber boots, rubber gloves, and goggles during cleanup of affected area.
- Have your onsite waste-water system professionally inspected and serviced if you suspect damage.

- Wash all clothes worn during the cleanup in hot water and detergent. These clothes should be washed separately from uncontaminated clothes and linens.
  - After completing the cleanup, wash your hands with soap and water. Use water that has been boiled for 1 minute (allow the water to cool before washing your hands).
    - Or you may use water that has been disinfected for personal hygiene use (solution of 1/8 teaspoon [~0.75 milliliters] of household bleach per 1 gallon of water). Let it stand for 30 minutes. If the water is cloudy, use solution of 1/4 teaspoon (~1.5 milliliters) of household bleach per 1 gallon of water.
  - Seek immediate medical attention if you become injured or ill.
- The information in this fact sheet is general in nature and is not intended to be used as a substitute for professional advice. For more information, please contact your local health department. For more information, visit [emergency.cdc.gov](http://emergency.cdc.gov) or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

## **Floods: Sanitation and Hygiene**

It is critical for you to remember to practice basic hygiene during the emergency period. Always wash your

hands with soap and water that has been boiled or disinfected:

- before preparing or eating food;
- after toilet use;
- after participating in flood cleanup activities; and
- after handling articles contaminated with flood water or sewage.

Flood waters may contain fecal material from overflowing sewage systems, and agricultural and industrial byproducts. Although skin contact with flood water does not, by itself, pose a serious health risk, there is

some risk of disease from eating or drinking anything contaminated with flood water. If you have any

open cuts or sores that will be exposed to flood water, keep them as clean as possible by washing well

with soap to control infection. If a wound develops redness, swelling, or drainage, seek immediate medical attention.

In addition, parents need to help children avoid waterborne illness. Do not allow children to play in flood

water areas, wash children's hands frequently (always before meals), and do not allow children to play

with flood-water contaminated toys that have not been disinfected. You can disinfect toys using a solution

of one cup of bleach in 5 gallons of water.

### **See Also...**

#### **Cleaning and Sanitizing With Bleach After an Emergency**

(<http://emergency.cdc.gov/disasters/bleach.asp>)

Follow steps in this table to clean and sanitize with bleach...

#### **Hand Hygiene After a Disaster**

(<http://emergency.cdc.gov/disasters/handhygiene.asp>)

When to wash your hands & how to do it without running water...

#### **After a Hurricane or Flood: Cleanup of Flood Water**

(<http://emergency.cdc.gov/disasters/floods/cleanupwater.asp>)

Flood water may contain sewage, protect yourself and your family by following these steps **Guidelines for the Management of Acute Diarrhea (for Healthcare Providers)** (133 KB/3 pages)

(<http://emergency.cdc.gov/disasters/hurricanes/pdf/dguidelines.pdf>)

Increased incidence of acute diarrhea may occur in post-disaster situations where access to electricity,

clean water, & sanitary facilities are limited...

For more information, visit [emergency.cdc.gov](http://emergency.cdc.gov)

or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

## Reentering Your Flooded Home

When returning to a home that's been flooded after natural disasters such as hurricanes, tornadoes, and floods,

be aware that your house may be contaminated with mold or sewage, which can cause health risks for your family.

### When You First Reenter Your Home

- If you have standing water in your home and can turn off the main power from a dry location, then go ahead and turn off the power, even if it delays cleaning. If you must enter standing water to access the main power switch, then call an electrician to turn it off. **NEVER turn power on or off yourself or use**

**an electric tool or appliance while standing in water.**

- Have an electrician check the house's electrical system before turning the power on again.
- If the house has been closed up for several days, enter briefly to open doors and windows to let the

house air out for awhile (at least 30 minutes) before you stay for any length of time.

- If your home has been flooded and has been closed up for several days, presume your home has been

contaminated with mold. (See "Protect Yourself from Mold" at [www.bt.cdc.gov/disasters/mold/protect.asp](http://www.bt.cdc.gov/disasters/mold/protect.asp).)

- If your home has been flooded, it also may be contaminated with sewage. (See "After a Hurricane or Flood: Cleanup of Flood Water" at [www.bt.cdc.gov/disasters/floods/cleanupwater.asp](http://www.bt.cdc.gov/disasters/floods/cleanupwater.asp).)

### Dry Out Your House

If flood or storm water has entered your home, dry it out as soon as possible. Follow these steps:

- If you have electricity and an electrician has determined that it's safe to turn it on, use a "wet-dry" shop

vacuum (or the vacuum function of a carpet steam cleaner), an electric-powered water transfer pump,

or sump pump to remove standing water. If you are operating equipment in wet areas, be sure to wear rubber boots.

- If you do not have electricity, or it is not safe to turn it on, you can use a portable generator to power

equipment to remove standing water. **Note: If you must use a gasoline-powered pump, generator, pressure washer, or any other gasoline-powered tools to clean your home, never**

**operate the gasoline engine inside a home, basement, garage, carport, porch, or other**

**enclosed or partially enclosed structures, even if the windows and doors are open. Such**

**improper use can create dangerously high levels of carbon monoxide and cause carbon monoxide poisoning.**

- If weather permits, open windows and doors of the house to aid in the drying-out process.
- Use fans and dehumidifiers to remove excess moisture. Fans should be placed at a window or door to blow the air outwards rather than inwards, so not to spread the mold.
- Have your home heating, ventilating, and air-conditioning (HVAC) system checked and cleaned by a maintenance or service professional who is experienced in mold clean-up **before you turn it on.**

If the

HVAC system was flooded with water, turning on the mold-contaminated HVAC will spread mold throughout the house. Professional cleaning will kill the mold and prevent later mold growth.

When the

service determines that your system is clean and if it is safe to do so, you can turn it on and use it to help remove excess moisture from your home.

- Prevent water outdoors from reentering your home. For example, rain water from gutters or the roof should drain away from the house; the ground around the house should slope away from the house to keep basements and crawl spaces dry.

- Ensure that crawl spaces in basements have proper drainage to limit water seepage. Ventilate to allow the area to dry out.

For more information, visit [www.bt.cdc.gov](http://www.bt.cdc.gov)

or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).