



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.)
- 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.)

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

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The Flood is Over.
What do you do now?

Be Careful with Food and Water

Follow these simple steps to be safe.



Only eat food an adult says is safe to eat.

Wash your hands with soap and water before eating any food or putting your hands to your face.



Only drink water an adult says is safe to drink.



Only use water an adult says is safe for brushing your teeth and bathing.



Only cook and clean with water an adult says is safe.





Keep Food and Water Safe after a Natural Disaster or Power Outage

Food

Food may not be safe to eat during and after an emergency. Safe water for drinking, cooking, and personal hygiene includes bottled, boiled, or treated water. Your state or local health department can make specific recommendations for boiling or treating water in your area.

Identify and throw away food that may not be safe to eat.

- Throw away food that may have come in contact with flood or storm water.
- Throw away food that has an unusual odor, color, or texture.
- Throw away perishable foods (including meat, poultry, fish, eggs and leftovers) that have been above 40 degrees Fahrenheit (F) for 2 hours or more.
- Thawed food that contains ice crystals or is 40 degrees F or below can be refrozen or cooked.
- Throw away canned foods that are bulging, opened, or damaged.
- Food containers with screw-caps, snap-lids, crimped caps (soda pop bottles), twist caps, flip tops, snap-open, and home canned foods should be discarded if they have come into contact with floodwater because they cannot be disinfected.
- If cans have come in contact with floodwater or storm water, remove the labels, wash the cans, and dip them in a solution of 1 cup of bleach in 5 gallons of water. Relabel the cans with a marker.
- Do not use contaminated water to wash dishes, brush your teeth, wash and prepare food, wash your hands, make ice, or make baby formula.

Store food safely.

- While the power is out, keep the refrigerator and freezer doors closed as much as possible.
- Add block ice or dry ice to your refrigerator if the electricity is expected to be off longer than 4 hours. Wear heavy gloves when handling ice.

Feeding Infants and Young Children

- Breastfed infants should continue breastfeeding. For formula-fed infants, use ready-to-feed formula if possible. If using ready-to-feed formula is not possible, it is best to use bottled water to prepare powdered or concentrated formula. If bottled water is not available, use boiled water. Use treated water to prepare formula only if you do not have bottled or boiled water.
 - If you prepare formula with boiled water, let the formula cool sufficiently before giving it to an infant.
 - Clean feeding bottles and nipples with bottled, boiled, or treated water before each use.
 - Wash your hands before preparing formula and before feeding an infant. You can use alcohol-based hand sanitizer for washing your hands if the water supply is limited.

Keep Food and Water Safe after a Natural Disaster or Power Outage (continued from previous page)

Related Resources:

- **USDA Meat and Poultry Hotline: 1-888-MPHotline.**
Available for consumers questions and concerns about food safety.
- [USDA Alert: Keeping Food Safe During Flooding and Power Outages](http://www.usda.gov/2005/08/0340.xml)
(<http://www.usda.gov/2005/08/0340.xml>)
USDA Food Safety Information related to Hurricane Katrina
- [Hand Hygiene in Emergency Situations](http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp)
(<http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp>)
When to wash your hands & how to do it without running water...
- [Keeping Food Safe in an Emergency, U.S. Department of Agriculture](http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp)
(http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp)
General fact sheet and FAQs on food and water safety including guidance on when to discard perishable foods
- [www.foodsafety.gov - Consumer Advice: Disaster Assistance with Food](http://www.foodsafety.gov/%7Efsg/fsgdisas.html)
(<http://www.foodsafety.gov/%7Efsg/fsgdisas.html>)
Provides resources on food safety related to fires, floods, hurricanes, power outages, etc.
- [Food Safety Information for Hurricane Aftermath, FDA](http://www.cfsan.fda.gov/~dms/fsdisas.html)
(<http://www.cfsan.fda.gov/~dms/fsdisas.html>)
Tips to help people protect their health & food supply
- [Food Safety Office, CDC](http://www.cdc.gov/foodsafety/) (<http://www.cdc.gov/foodsafety/>)
Comprehensive food safety information
- [Being Prepared, American Red Cross](http://www.redcross.org/services/disaster/beprepared/) (<http://www.redcross.org/services/disaster/beprepared/>)
Comprehensive site on preparing for emergencies including power outages

Water

Water may not be safe to drink, clean with, or bathe in after an emergency such as a hurricane or flood. During and after a disaster, water can become contaminated with microorganisms, such as bacteria, sewage, agricultural or industrial waste, chemicals, and other substances that can cause illness or death. This fact sheet offers the following guidance to help you make sure water is safe to use:

- Listen to and follow public announcements. Local authorities will tell you if tap water is safe to drink or to use for cooking or bathing. If the water is not safe to use, follow local instructions to use bottled water or to boil or disinfect water for cooking, cleaning, or bathing.
- Use only bottled, boiled, or treated water for drinking (however, see guidance in the Food section for infants), cooking or preparing food, washing dishes, cleaning, brushing your teeth, washing your hands, making ice, and bathing until your water supply is tested and found safe. If your water supply is limited, you can use alcohol-based hand sanitizer for washing your hands.
- If you use bottled water, be sure it came from a safe source. If you do not know that the water came from a safe source, you should boil or treat it before you use it.

Keep Food and Water Safe after a Natural Disaster or Power Outage

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- Boiling water, when practical, is the preferred way to kill harmful bacteria and parasites. Bringing water to a rolling boil for 1 minute will kill most organisms. Boiling will not remove chemical contaminants. If you suspect or are informed that water is contaminated with chemicals, seek another source of water, such as bottled water.
- If you can't boil water, you can treat water with chlorine tablets, iodine tablets, or unscented household chlorine bleach (5.25% sodium hypochlorite). If you use chlorine tablets or iodine tablets, follow the directions that come with the tablets. If you use household chlorine bleach, add 1/8 teaspoon (~0.75 milliliter [mL]) of bleach per gallon of water if the water is clear. For cloudy water, add 1/4 teaspoon (~1.50 mL) of bleach per gallon. Mix the solution thoroughly and let it stand for about 30 minutes before using it. Treating water with chlorine tablets, iodine tablets, or liquid bleach will not kill many parasitic organisms. Boiling is the best way to kill these organisms.
- Do not rely on water disinfection methods or devices that have not been recommended or approved by local health authorities. Contact your local health department for advice about water treatment products that are being advertised.
- Use water storage tanks and other types of containers with caution. For example, fire truck storage tanks and previously used cans or bottles may be contaminated with microbes or chemicals. Water containers should be thoroughly cleaned, then rinsed with a bleach solution before use.
 - Mix soap and clean water in container. Shake or stir to clean inside of container, then rinse.
 - For gallon- or liter-sized containers, add approximately 1 teaspoon (4.9 mL) household bleach (5.25%) with 1 cup (240 mL) water to make a bleach solution.
 - Cover the container and shake the bleach solution thoroughly, allowing it to contact all inside surfaces. Cover and let stand for 30 minutes, then rinse with clean water.
- Flooded, private water wells will need to be tested and disinfected after flood waters recede. If you suspect that your well may be contaminated, contact your local or state health department or agriculture extension agent for specific advice. See [Disinfecting Wells After an Emergency](http://www.bt.cdc.gov/disasters/wellsdisinfect.asp) (<http://www.bt.cdc.gov/disasters/wellsdisinfect.asp>) for general instructions.
- Practice basic hygiene. Wash your hands with soap and bottled water or water that has been boiled or disinfected. Wash your hands before preparing food or eating, after toilet use, after participating in clean-up activities, and after handling articles contaminated with floodwater or sewage. Use an alcohol-based hand sanitizer to wash your hands if you have a limited supply of clean water.

Related Resources

- [Cleaning and Sanitizing With Bleach After an Emergency](http://www.bt.cdc.gov/disasters/bleach.asp) (<http://www.bt.cdc.gov/disasters/bleach.asp>)
- [Disinfecting Wells After an Emergency](http://www.bt.cdc.gov/disasters/wellsdisinfect.asp) (<http://www.bt.cdc.gov/disasters/wellsdisinfect.asp>)
- [Floods](http://www.bt.cdc.gov/disasters/floods/) (<http://www.bt.cdc.gov/disasters/floods/>)
- [Guidelines for the Management of Acute Diarrhea \(for Healthcare Providers\)](http://www.bt.cdc.gov/disasters/hurricanes/dguidelines.asp) (<http://www.bt.cdc.gov/disasters/hurricanes/dguidelines.asp>)
Increased incidence of acute diarrhea may occur in post-disaster situations where access to electricity, clean water, & sanitary facilities are limited...
- [Hand Hygiene in Emergency Situations](http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp) (<http://www.bt.cdc.gov/disasters/hurricanes/handwashing.asp>)
When to wash your hands & how to do it without running water...

Monitor your radio or television for up-to-date emergency information.

For more information, visit <http://emergency.cdc.gov/disasters/>,
or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

July 2, 2008

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Protect Yourself from Mold

After natural disasters such as hurricanes, tornadoes, and floods, excess moisture and standing water contribute to the growth of **mold** in homes and other buildings. When returning to a home that has been flooded, be aware that mold may be present and may be a health risk for your family.

People at Greatest Risk from Mold

People with asthma, allergies, or other breathing conditions may be more sensitive to mold. People with immune suppression (such as people with HIV infection, cancer patients taking chemotherapy, and people who have received an organ transplant) are more susceptible to mold infections.

Possible Health Effects of Mold Exposure

People who are sensitive to mold may experience stuffy nose, irritated eyes, wheezing, or skin irritation. People allergic to mold may have difficulty in breathing and shortness of breath. People with weakened immune systems and with chronic lung diseases, such as obstructive lung disease, may develop mold infections in their lungs. If you or your family members have health problems after exposure to mold, contact your doctor or other health care provider.

Recognizing Mold

You *may* recognize mold by:

- **Sight** (Are the walls and ceiling discolored, or do they show signs of mold growth or water damage?)
- **Smell** (Do you smell a bad odor, such as a musty, earthy smell or a foul stench?)

Safely Preventing Mold Growth

Clean up and dry out the building quickly (within 24 to 48 hours). Open doors and windows. Use fans to dry out the building. (See the fact sheet for drying out your house, "Reentering Your Flooded Home" at www.bt.cdc.gov/disasters/mold/reenter.asp.)

- **When in doubt, take it out!** Remove all porous items that have been wet for more than 48 hours and that cannot be thoroughly cleaned and dried. These items can remain a source of mold growth and should be removed from the home. Porous, noncleanable items include carpeting and carpet padding, upholstery, wallpaper, drywall, floor and ceiling tiles, insulation material, some clothing, leather, paper, wood, and food. **Removal and cleaning are important because even dead mold may cause allergic reactions in some people.**
- To *prevent* mold growth, clean wet items and surfaces with detergent and water.
- Homeowners may want to temporarily store items outside of the home until insurance claims can be filed. See recommendations by the Federal Emergency Management Agency (FEMA) at www.fema.gov/hazards/floods/whatshouldidoafter.shtm.
- If you wish to disinfect, refer to the U.S. Environmental Protection Agency (EPA) document, *A Brief Guide to Mold and Moisture in Your Home* at www.epa.gov/iaq/molds/images/moldguide.pdf.

Protect Yourself from Mold

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If there is mold growth in your home, you should clean up the mold *and* fix any water problem, such as leaks in roofs, walls, or plumbing. Controlling moisture in your home is the most critical factor for preventing mold growth.

To *remove* mold growth from hard surfaces use commercial products, soap and water, or a bleach solution (www.cdc.gov/mold/faqs.htm) of no more than 1 cup of bleach in 1 gallon of water. Use a stiff brush on rough surface materials such as concrete.

If you choose to use bleach to remove mold:

- Never mix bleach with ammonia or other household cleaners. Mixing bleach with ammonia or other cleaning products will produce dangerous, toxic fumes.
- Open windows and doors to provide fresh air.
- Wear non-porous gloves and protective eye wear.
- If the area to be cleaned is more than 10 square feet, consult the U.S. Environmental Protection Agency (EPA) guide titled *Mold Remediation in Schools and Commercial Buildings*. Although focused on schools and commercial buildings, this document also applies to other building types. You can get it free by calling the EPA Indoor Air Quality Information Clearinghouse at (800) 438-4318, or by going to the EPA web site at www.epa.gov/mold/mold_remediation.html.
- Always follow the manufacturer's instructions when using bleach or any other cleaning product.
- More information on personal safety while cleaning up after a natural disaster is available at www.bt.cdc.gov/disasters/workers.asp.

If you plan to be inside the building for a while or you plan to clean up mold, you should buy an N95 mask at your local home supply store and wear it while in the building. Make certain that you follow instructions on the package for fitting the mask tightly to your face. If you go back into the building for a short time and are not cleaning up mold, you do not need to wear an N95 mask.

Other Mold Resources

- Clean Up Safely After a Natural Disaster (www.bt.cdc.gov/disasters/cleanup.asp)
- Reentering Your Flooded Home (www.bt.cdc.gov/disasters/mold/reenter.asp)
- Mold - General Resources (www.cdc.gov/mold)

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

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