

After the flood

A guide to returning to your home and cleaning up from the
**Colorado Department of Public
Health and Environment**



DRINKING WATER SAFETY

pages 13-14

MOLD

Prevention and
treatment

pages 4-5

SEWAGE

Cleaning up

pages 6-7, 18

FOOD SAFETY

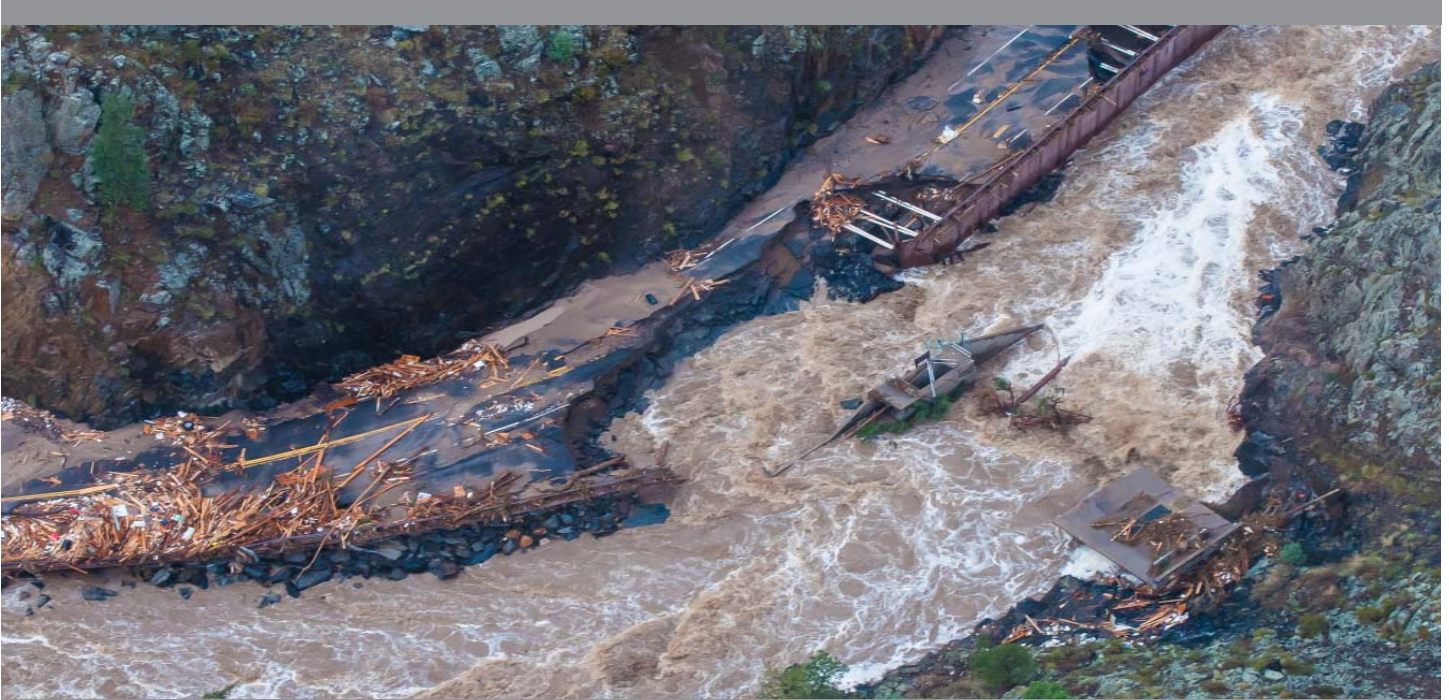
page 17

www.colorado.gov/cohealth

ON THE WEB
<http://bit.ly/CDPHEfloodresc>
STATE RESOURCES
page 19

2 AFTER THE FLOOD

Colorado rivers and streams pose serious threats to health and safety when water levels rise.



A healthy, safe home

Our hope is that your home or business has not been significantly damaged by flood waters. If your home or business has been impacted by floods, there are a number of things you should know that will help you return and recover, with your health and safety as the first, most important considerations.

Turn to this resource if you experience any of these situations:

- Potential health and safety risks
- Structural damage to your home or business, including damage to the building's foundation, frame, walls, roof and flooring
- Systems damage to your home or business, including water, heating and cooling and plumbing
- Contents damage to your home or business, including appliances, floor coverings, clothing and bedding
- Loss of power and subsequent damage to food supplies
- Debris disposal difficulties due to the type or quantity
- Difficulty adjusting to what may become your new reality, or in coping with trauma from the floods



Public Health
Prevent. Promote. Protect.

Information you can depend on from Public Health

Whether you need information on childhood immunization or flood recovery, you can count on your state, local and federal public health partners. We work together to make sure you have the accurate and timely information you need to make the best decisions for your own family.

SAFE RECOVERY, STEP BY STEP

GOING HOME AFTER A FLOOD

Your home or business may be contaminated with mold or sewage, which can lead to serious health problems. Understand the risks and how to prevent illness and injury before you re-enter your home. Your loved ones' lives could depend on it.



Step 1

Turn off the main power from a dry location. If you only can access the main power switch in an area with standing water, do not attempt to cut the power yourself. Contact the power company for guidance or call an electrician. Have the power company or an electrician check the building's electrical system before restoring the power. Never use electric tools or appliances while standing in water.

Step 2

If the house has been closed up for several days, enter briefly to open doors and windows to let the house air out for at least 30 minutes before you stay for any length of time. You should assume that your house is contaminated with mold and possibly sewage if it has flooded.

Step 3

Dry out the house as soon as possible:

- 3.1 If you are able to use electricity safely (see Steps 1 and 2 above), remove as much water as possible using one of these methods. Wear rubber boots, rubber gloves and protective goggles to avoid contact with flood water.
 - wet-dry shop vacuum
 - vacuum function of a carpet steam cleaner
 - water transfer pump or sump pump
- 3.2 If you are not able to use electricity safely, you can use a portable generator to power equipment for removing standing water. Never operate a gasoline-powered tool or motor in an enclosed or partially enclosed area, even if the windows are open. Improper use can create dangerously high levels of carbon monoxide and lead to carbon monoxide poisoning, which may cause death.
- 3.3 If weather permits, open windows and doors to aid in the drying process.
- 3.4 Use fans, dehumidifiers and air conditioners to remove moisture. Place fans at a window or door to blow the air outwards, so you don't spread mold inside.

Step 4

Prevent water outdoors from re-entering your home or business. Rainwater from gutters or the roof should drain away from the building. The ground around the building should slope away from the structure to keep basements and crawl spaces dry.

Step 5

Have your home or business heating and cooling systems inspected and cleaned by a maintenance or service professional experienced in mold clean-up before you turn them on.

- 5.1 If the heating and cooling system was flooded, mold is forming inside. Turning on the system before cleaning will spread mold throughout the building.
- 5.2 Professional cleaners are able to kill the mold and prevent the growth of mold later.

Free public health information

CO HELP

1-877-462-2911
303-389-1687

M-F 9 a.m. to 10 p.m.
S-S 9 a.m. to 5 p.m.

The Colorado Health Emergency Line for the Public (CO HELP) is a service to keep you informed on current public health or bioterrorism issues. CO HELP, which is operated by the hotline experts at the Rocky Mountain Poison and Drug Center, works closely with state and local public health agencies to be able to share the most accurate information with you.

*A partnership of the Colorado Department of Public Health and Environment
and the Rocky Mountain Poison and Drug Center*



MOLD

Molds gradually destroy the things they grow on. Prevent damage to building materials and furnishings, save money and avoid potential health risks by controlling moisture and eliminating mold growth.

Recognize mold by sight and smell:

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

Mold growing inside of a wall. Note that the drywall was cut to minimize disturbance to the mold, which is spread easily through the air.



Protect your family from mold

After 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 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 on others

- People with sensitivity: stuffy nose, irritated eyes, wheezing, skin irritation.
- People with allergy: difficulty breathing, shortness of breath.

If you have health problems after exposure to mold, contact your health care provider.

Prevent mold growth safely

Controlling moisture in your home is the most critical factor for preventing mold growth.

- Mold can develop within 24 to 48 hours. Dry out the building quickly. Open doors and windows and use fans.

- 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. Porous, noncleanable items include carpeting and carpet padding, upholstery, wallpaper, drywall, floor and ceiling tiles, insulation material, some clothing, leather, paper, wood and food. 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.

Remove mold growth safely

- Never mix bleach with ammonia or other household cleaners to avoid dangerous, toxic fumes. Follow manufacturers' directions.

- To remove mold growth from hard surfaces try soap and water or a bleach solution of no more than one cup of bleach in one gallon of water. Use a stiff brush on rough surfaces such as concrete.
- Wear non-porous gloves and protective eye wear.
- Use an **N95 mask** -- not a dust or surgical mask -- from your home supply store if you will be inside the building for a while or when cleaning up mold. Follow instructions for fitting the mask tightly to your face.



N95 respirator or mask

- For more information on personal safety while cleaning up, see <http://bit.ly/CDC1fSw8QQ>.

UNDERSTANDING RISKS

MOLD EXPOSURE

CDC Recommendations for Protection from Exposure to Mold in Flooded Buildings¹ by activity and risk factor²

NOTE: EVERYONE SHOULD AVOID UNNECESSARY EXPOSURE TO MOLD. IT IS ESPECIALLY IMPORTANT FOR ANYONE AT HIGH RISK FOR INFECTION AND ANYONE WITH A DISEASE CAUSED BY IMMUNE SENSITIZATION TO MOLD AND MOLD CONSTITUENTS.

RISK FACTOR	LIMITED	MINIMAL	MODERATE	ELEVATED	HIGH
<i>level of activity during exposure</i> <i>type of risk factor</i>	Observing from outside (disturbs no dust or mold)	Inspecting or assessing damage (disturbs little dust or mold)	Recovering moldy belongings (disturbs some dust or mold)	Sweeping, light cleaning, removing mold (disturbs much dust or mold)	Using power tools, cleaning, demolishing (disturbs all dust and mold)
No risk factors	No special precautions needed	No special precautions needed	Respiratory, gloves and dermal (skin) protection	Respiratory, gloves, dermal (skin) and eye protection	Respiratory, gloves, dermal (skin) and eye protection
PEOPLE AT HIGH RISK FOR INFECTION OR COLONIZATION					
Profound immunosuppression ⁵	Avoid exposure	Avoid exposure	Avoid exposure	Avoid exposure	Avoid exposure
Immunosuppression ⁶	Respiratory protection	Respiratory, gloves, dermal and eye protection	Avoid exposure	Avoid exposure	Avoid exposure
Obstructive or cavitary lung disease ⁷	Respiratory protection	Respiratory protection	Respiratory, gloves and dermal (skin) protection	Respiratory, gloves, dermal (skin) and eye protection	Avoid exposure
PEOPLE WHO HAVE DISEASES WITH IMMUNE SENSITIZATION⁸					
Allergic rhinoconjunctivitis exacerbated by moldy materials	Respiratory protection	Respiratory protection	Respiratory, gloves, dermal (skin) and eye protection	Respiratory, gloves, dermal (skin) and eye protection	Avoid exposure
Asthma exacerbated by moldy materials	Respiratory protection	Respiratory protection	Respiratory, gloves, dermal (skin) and eye protection	Avoid exposure	Avoid exposure
Hypersensitivity pneumonitis caused by moldy materials	Respiratory protection	Respiratory protection	Respiratory, gloves and dermal (skin) protection	Avoid exposure	Avoid exposure
PEOPLE WITH UNKNOWN RISK⁹					
Younger than 12 years ¹⁰	Avoid exposure	Avoid exposure	Avoid exposure	Avoid exposure	Avoid exposure
Pregnant	Respiratory protection	Respiratory protection	Respiratory, gloves, dermal (skin) and eye protection	Avoid exposure	Avoid exposure
Older than 65 years	Respiratory protection	Respiratory protection	Respiratory, gloves and dermal (skin) protection	Avoid exposure	Avoid exposure

see reference notes on page 8

6 AFTER THE FLOOD SEWER BACKUPS IN HOMES

Causes

- Too much precipitation in leaky sewer pipes
- Insufficient capacity within the system, particularly in newly-developed residential or commercial areas
- Blocked or broken pipes
- Improperly designed and installed sewer systems

Sewage backups may cause unpleasant odor problems, property damage and unhealthy living conditions. Untreated sewage contains disease-causing organisms such as bacteria, viruses and parasites.

Avoid mold

- The drying-out process can take several weeks in an enclosed area such as basement or crawl space.
- Mold growth can occur as long as humidity level remains high.
- If damaged area is not cleaned and dried out properly, a musty odor, which might indicate mold growth, can remain long after the sewage overflow.

Use protective gear

- Wear protective clothing such as waterproof boots, gloves, eye protection (goggles or safety glasses) and clothes that are either washable or disposable.
- Wear mask or respirator if splashes into mouth and nose are possible.

Use cleaning products safely

- Never mix household cleaners and disinfectants. Some mixes can produce harmful vapors. For example, mixing bleach and ammonia forms toxic gases called chloramines and ammonium chloride.
- Open windows and doors and use fans to circulate air during and after the use of disinfecting, cleaning and sanitizing products.

Outside the home

- Remove plastic ground liners, surface contamination and heavily contaminated soil from the impacted area if possible.

- Treat remaining contaminated soil in place by liberally applying garden lime to reduce odor and enhance degradation of organic matter.
- Cover with clean dirt or temporarily fence off area to prevent accidental contact with lime and any remaining contamination if contaminated area is out in open.
- Mix lime in with a rake after a day or two. Use a sprinkler or hose to water lime and remaining residues into soil.
- Let area dry in sun if possible before allowing access.
- Turn over clean soil frequently to provide oxygen to naturally occurring microbes in soil that degrade organic material.
- If onsite treatment is not possible, or if it can't be accomplished without creating a nuisance condition, contaminated soils and other materials removed from impacted area may be disposed of at any landfill that is willing to accept them.
- For specific guidance on food items, see page 14.

Inside the home

- Thoroughly clean and disinfect damaged area to reduce risk of disease.
- Ensure that structure is safe prior to doing work in affected area. Make sure there is no structural damage, electrical hazards or natural gas leaks.



- Reduce humidity in damaged area by opening up house and removing standing wastewater with a mop, pump, wet vac or squeegee.
- Open interior closets and cabinet doors to allow circulation.
- Use fans, dehumidifiers and window air conditioners to circulate the air. Whole house air conditioners or furnace blowers should be used only if air ducts were not impacted by standing wastewater.
- Use moisture absorbing products found in home improvement stores and place in enclosed areas where air can't move through.
- Sort contents of damaged area to separate salvageable furnishings from unusable debris.
- Hire a professional cleaning company to steam clean and disinfect salvageable furnishings.
- Dispose of materials that were exposed to wastewater that cannot be thoroughly steam cleaned or disinfected.

continued on next page



AFTER THE FLOOD

SEWER BACKUPS IN HOMES

continued from previous page

- Discard contaminated cosmetics, stuffed animals and baby toys.
- Contaminated mattresses, pillows, foam rubber items, upholstered couches and chairs, books and most paper products generally should be discarded as they are difficult to disinfect.
- Get a cost estimate from a professional cleaner to help determine if furnishings of particular value are worth saving.
- Thoroughly wash soiled clothing and small throw rugs with hot water. Use bleach if possible.
- If only a portion of the carpeting is damaged, it may be adequately cleaned by a professional carpet cleaner. Larger rugs and those with foam backing may have to be discarded, as may wall to wall carpeting, which usually will not return to its former size. The foam padding likely will have to be replaced.
- Seal discarded items in heavy plastic garbage bags before disposal.
- Contact your trash collection company about removing furniture, appliances and bulky furnishings, or take these items directly to a landfill.

Minimal Damage

- Clean and disinfect thoroughly if the damage to the home is minimal and you are able to clean up the overflow promptly.
- Disinfectants and sanitizers often contain toxic substances, so be sure to read and follow all label instructions carefully.
- Thoroughly wash walls, floors, closets and other washable contents of the damaged area with soap and water first.
- Follow washing by disinfecting with a bleach solution of one-quarter cup chlorine bleach in one gallon of water, or a quaternary ammonia disinfectant product such as Lysol. In most cases, common household cleaning products and disinfectants will do the job if used correctly.
- Use a mixture of one-quarter cup chlorine bleach in one gallon of water for an effective disinfecting solution. Keep the solution in contact with the item to be disinfected for at least one minute. After disinfecting it with the bleach solution, rinse it well and wash again with a mild soap and water. Thoroughly rinse again.
- Many fabrics can't be cleaned with bleach without causing damage. Try a quaternary ammonia product such as Lysol.



Extensive Damage

- Consider removing and replacing damaged wallboard and wall insulation to avoid indoor air quality problems later. Wallboard acts like a sponge, drawing moisture up above water level. It becomes very fragile if it stays wet for long and will fall apart easily. Even if the area is dried out, contaminants may have gotten up behind the drywall and dried inside. Mold can penetrate deep into soaked porous materials such as wood, insulation and drywall and continue to damage these materials long after the overflow event is over. Even after everything has dried out, microorganisms can later be released into the air and trigger allergic reactions when inhaled.
- Thoroughly clean, disinfect and dry

wooden wall studs and sills to avoid replacing. Since studs and sills will be covered by new wallboard and painted, they will be removed from direct human contact.

- For paneling, carefully pry the bottom of each panel away from the wall. Hold the paneling bottom away from the wall sill with a block so that the area between wall studs can drain and dry out. You may have to remove the paneling completely in order to take out any wet insulation or extensive contamination behind it. Once disinfected and dried out, the paneling can often be nailed back into place.
- Thoroughly wash, disinfect and dry concrete walls and floors. Wastewater won't damage concrete like it will wood or wallboard, but it will still soak in to some extent.

Emergency Livestock Disposal: Policy and Pre-Approved Design and Operations Plan

In an emergency, the Colorado Department of Public Health and Environment may authorize temporary management practices in order to protect human health and the environment. These temporary practices may include procedures for the disposal of dead animals associated with the emergency conditions. The Colorado Department of Agriculture regulates carcass disposal. If you comply with the requirements below, you will be considered to be in compliance with regulations.



Landfill and burial requirements

1. No dead animals shall be placed in any body of water or seasonal creek or pond.
2. Surface water should be diverted from the pit utilizing an upgradient diversion berm or other method.
3. All dead animals must be buried at least 150 feet down gradient from any groundwater supply source.
4. In no case should the bottom of the burial pit be closer than five feet to the groundwater table.
5. Burial sites must be located more than one mile from any the residence of any person.

Note: When burying dead livestock, it is best to add a layer of lime or quicklime below and above a carcass to accelerate the decomposition process. Overuse of lime should be avoided. If lime or quicklime is not available, burial without it is acceptable. Avoid contacting human skin with lime or quicklime, which are caustic and can cause severe burns.

Other disposal options for dead animals

- Permitted landfills that will accept them.
- Rendering plants. (Only out-of-state options exist at this time.)
- Composting. Requires approval of a separate design and operations plan (see contact below).

Other best management practices

- Before burial or other disposition:
 - a. Arrange carcasses individually in rows and not on top of one another.
 - b. Locate carcasses in the shade and out of sunlight.
 - c. Keep carcasses covered with snow to keep cold.
- Avoid burial sites with fractured or cavernous bedrock, highly permeable soils or seasonal high water tables.
- Do not bury more than 10 animals together to minimize potential nuisance conditions and impacts to ground water.
- Contact your local health department or CSU Cooperative Extension Office for additional advice.

NOTES from CDC Recommendations for Protection, page 5

1. Significant mold contamination is assumed if the building's interior was saturated with water for more than 48 hours, extensive water damage is present, extensive mold growth is visible, or "mildew" odors are clearly stronger than before the flooding.
2. A visible dust cloud suggests high potential for exposure. However, activities can be associated with high fungal exposure even without visible dust. Consider more protective interventions for activities of longer duration or greater frequency.
3. Recommended respiratory protection for residents is a respirator at least as protective as an N-95 filtering face piece. Respirator protection for workers in isolated areas of mold contamination (100 square feet or less) or small isolated areas of heating, ventilation, and air conditioning (HVAC) systems (10 square feet or less) where mold is disturbed is a respirator at least as protective as an N-95 filtering face piece. For working in areas of extensive contamination (greater than 100 contiguous square feet) or HVAC systems with large areas of contamination (greater than 10 square feet) and significant mold-containing dust, full face-piece respirators with N100, R100, P100 particulate filters (or for powered air-purifying respirators – HEPA filters) are recommended.
4. Occlusive eye protection (safety goggles, not regular eyeglasses); see discussion of personal protective equipment (PPE) in Chapter 4 of CDC's report, *Mold: Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes Katrina and Rita*. Available at: www.cdc.gov/mmwr/pdf/rr/rr5508.pdf.
5. Transplant recipients, including organ or hematopoietic stem cell recipients within 6 months of transplant or during periods of substantial immunosuppression; neutropenia (neutrophil count < 500/ μ L) due to any cause (including neoplasm, cancer chemotherapy); CD4+ lymphopenia (lymphocyte count < 200/ μ L) due to any cause, including HIV infection. Affected individuals should consult with their physicians before entering the affected area.
6. Includes immunosuppressant drug therapy, such as cancer chemotherapy, corticosteroid, or other immunosuppressive drug therapy; and diseases impairing host defense such as leukemia or lymphoma. Affected individuals should consult with their physicians before entering the affected area. Duration and frequency of exposures should be minimal.
7. Such diseases include chronic obstructive pulmonary disease, asthma not exacerbated by mold, cystic fibrosis, and cavitary tuberculosis. Risk of airway colonization and subsequent diseases following mold exposure is unknown. Recommendations are based on best professional judgment.
8. The optimal treatment for allergic rhinitis, allergic asthma, or hypersensitivity pneumonitis is avoidance of the sensitizing agent. If symptoms occur despite the recommended preventive measures, avoidance of exposure is indicated. In many cases, allergic etiology of rhinitis or asthma needs to be inferred from clinical information, since the available diagnostic reagents for documenting IgE-sensitization to fungi are mostly unstandardized. Similarly, the precise antigenic agent causing hypersensitivity pneumonitis is often unclear.
9. The level of risk associated with exposure activities and the potential benefit of recommended PPE are unknown for these vulnerable populations. Due caution is recommended.
10. Exposure-reducing behavior and respiratory protection are problems for this group.

AFTER THE FLOOD

DEBRIS CLEANUP EMERGENCY GUIDANCE

Vegetation

- a. Vegetation debris and sediment lying in-place following the flood may be managed by the property owner or the property owner's contractor in accordance with local (city and county) rules and ordinances. The Department will not enforce solid waste requirements so long as the management does not create a nuisance or violate the Water Quality Control Division's stormwater regulations.
- b. You may remove vegetation debris and sediment transported by storm water into ditches, natural or manmade ponds or other low lying areas to ensure they function properly. Vegetation and sediment that has been removed or stockpiled must be managed in accordance with local (city or county) rules and ordinances. The Department will not enforce solid waste requirements so long as the waste material does not create a nuisance.
- c. Handle and store vegetation debris in a manner that prevents its release into storm drains, streams, ditches and other surface waters. Store waste in upland areas away from concentrated stormwater flows, and in a manner that prevents erosion and transport of materials.

Structures

- a. A property owner (or their contractor) may remove debris from damaged and destroyed structures. If the structures are partially damaged but safe to enter, the owners may dispose of household hazardous waste (i.e., paints, car batteries, pesticides, etc.) at the county or municipal household hazardous waste facility. Structures should be handled in a manner that will minimize potential exposure to any hazardous materials that might be present in a damaged structure or debris from structures.
- b. Older structures have a greater potential to contain asbestos and lead. Some inert debris (non-leaching, or unable to dissolve in water) and sediment may be disposed of onsite. If you wish to bring debris from a damaged structure to a landfill, please contact the facility to confirm the landfill will accept the waste.

Vehicles

Fuel, oil, hydraulic fluid and other automotive fluids from vehicles must



be removed and managed appropriately prior to recycling or disposal of the vehicle at a landfill.

Food Waste

Spoiled, contaminated or expired food managed by residents and businesses may be disposed at a landfill or taken to a composting operation approved to accept food waste. The property owner or the property owner's contractor may handle food waste disposal in accordance with local (city and county) rules and ordinances. The Department will not enforce solid waste requirements so long as the management: 1) does not create a nuisance, 2) does not violate the Water Quality Control Division's stormwater regulations, and 3) complies with the following criteria:

- a. No food waste shall be placed in any body of water or seasonal creek or pond.
- b. Surface water should be diverted from the pit utilizing an upgradient diversion berm or other method.
- c. All food waste must be buried at least 150 feet down gradient from any groundwater supply source.
- d. In no case should the bottom of the burial pit be closer than five feet to the groundwater table.
- e. The food waste burial complies with local (city and county) rules and ordinances.

* This guidance only applies to flood debris resulting from the September 2013 floods.

AFTER THE FLOOD HAZARDOUS MATERIALS REMOVAL

Q Do landfills accept hazardous waste?

Most landfills are not licensed to accept hazardous waste, including propane cylinders, chemical tote tanks, 55-gallon drums, tanks, cans, buckets and automobiles. You are required to dispose of items like these properly, after safely removing, segregating and sampling the contents. See page 8 for guidance on handling and disposal of fluids and other hazardous materials from vehicles.

Q Do I need a permit to remove damaged materials?

A state-issued demolition permit is not required to remove the debris from buildings that have been partially or completely destroyed. However, flood debris may contain unknown substances, including chemicals. People should take care when handling materials from buildings that either are partially damaged or completely destroyed.

Q How do we handle containers that are damaged?

If you or the first responders are concerned that its contents may leak, contact trained technicians who can empty the vessel in place, putting the contents into a new container for sampling, characterization and disposal. Technicians have the equipment needed to control any sudden release if the container leaks or ruptures as a result of physical damage to the container. Any debris that is visibly contaminated from a release also should be segregated until a determination can be made as to its classification and appropriate disposal. After the container is removed, inspect the ground for evidence of a release, as demonstrated by visible staining or odors. Contaminated material also can be collected, put into an appropriate container and disposed of along with the original contents of the vessel.

Q How do we handle containers of paint or chemicals?

Intact containers of paint and other chemicals up to five gallons in size that are likely from residential areas may be managed as household hazardous waste. Contact your county or municipal household hazardous waste facility for recycling, reuse or disposal. Containers from non-residential facilities such as businesses must be segregated, characterized and disposed of in accordance with their waste classification (i.e., solid or hazardous waste).



Some containers require special handling.

Q What should I do if hazardous materials have leaked from a container?

If there was a release of potentially hazardous materials, immediately report the situation to the Department's 24-hour Emergency Reporting Line at 1-877-518-5608. The Department will contact the appropriate agency for follow-up response actions, including conducting further investigations and cleanup.

Q What do I do with containers that could contain chemicals or gases?

Some containers and other vessels may hold materials that could either pose an immediate risk to cleanup crews if disturbed or might be classified as a hazardous waste for disposal purposes. There are two main categories of containers: pressurized or non-pressurized. For specific instructions, contact a trained industry handler and consult the Colorado Hazardous Waste Regulations at <http://bit.ly/CDPHE1f0EmU3>.

Q Can pressurized containers be recycled?

Small containers in good condition or some larger vessels in good condition might be reusable or safe for delivery to the marketer for reuse or recycling of the contents. Public safety officials may require that the product contained within the pressurized vessel be transferred and removed by propane industry responders, product specialists or container specialists who are hired as contractors by the owner/operator while public safety responders oversee the operations and maintain overall site safety.

continued on next page

AFTER THE FLOOD

HAZARDOUS MATERIALS REMOVAL

continued from previous page

Q What are “pressurized containers” and how do I handle them safely?

This category includes propane tanks, propane cylinders, gas cylinders and other large pressurized containers. Most propane and other compressed-gas-related emergencies probably will involve small cylinders and non-bulk containers. The majority of these incidents can be handled safely and effectively by the local fire department with some technical assistance from local propane and other gas marketers.

Larger scale emergencies such as cargo tank truck rollovers, train derailments or fires involving large stationary tanks or bulk plants containing flammable materials may require resources from a number of different agencies to resolve the problem, requiring coordination of information and resources among various players to safely and efficiently resolve the situation.

In either situation, contact trained first responders. It is their job to determine how to isolate the area to protect themselves and the public. You need to stop removal and recovery operations until the incident site is stabilized and the area has been re-evaluated for hazards and risks.

Q Can the contents of pressurized containers be transferred to another safe container?

The procedures to transfer or remove the container contents will vary based upon the type of container involved, container design and construction, container stress and actual or potential breach, and the position and location of the container. Consult with first responders. As a last resort, if the condition of the pressurized vessel is unstable and may pose a hazard, it may become necessary to vent the gas directly into the atmosphere. This approach may be acceptable for propane, which dissipates quickly in open air. Often firefighters can accelerate its dispersal with firehoses with nozzles on fog pattern. However, the venting technique may not be suitable under certain weather conditions or for other products that pose a different hazard, such as highly toxic gasses or those that might be explosive. These vessels will require special handling techniques recommended by first responders in consultation with marketers and other people familiar with the hazard.

Q What are “non-pressurized containers” and how do I handle them safely?

Non-pressurized containers include 55-gallon drums, chemical tote tanks, fuel tanks, cans, buckets and other storage vessels. The first concern when approaching these vessels is to protect first responders and the public. Extreme care should be taken when handling these containers. Although normally not pressurized, damage to the containers during movement or placement outdoors where they are exposed to warmer temperatures could result in pressure buildup. This may cause the contents to escape suddenly when caps, covers or valves are loosened.

Q Can non-pressurized containers be recycled?

If the vessels are determined to be safe for movement by trained first responders or industry experts, you may remove the vessels from the debris, segregate and eventually sample the contents for characterization purposes if the container labels are missing. Trained experts then can determine whether they eventually can be reused or if they should be disposed of as either a solid or hazardous waste. The condition of the vessel may require that they be overpacked or transferred to a new container. If determined to be a listed or characteristic hazardous waste (defined in 6 CCR 1007-3 Part 261 of the Colorado Hazardous Waste Regulations at <http://bit.ly/CDPHE1aFrJZS>), the contents of the vessel must be disposed of at a permitted disposal facility.

Q Where can I find more information about propane containers?

For more information regarding response actions when vessels containing propane are encountered, please consult the publication at <http://bit.ly/19wb11f> (Propane Emergencies, Third Edition, by Hildebrand and Noll, 2007).

Note: Facilities covered by Water Quality Control Division CDPS storm water discharge permits and municipalities with MS4 permits must ensure practices are in accordance with the facility Stormwater Management Plan or MS4 CDPS Stormwater Management Program, respectively.

12 AFTER THE FLOOD BUILDING MATERIALS WITH ASBESTOS

Q What if there is asbestos in the house? What if I don't know if there is asbestos or not?

If you know that asbestos-containing materials are in your property's debris from the flood in amounts greater than regulatory levels (shown in the box at right), those materials must be removed in accordance with Colorado Air Quality Control Commission Regulation No. 8, Part B (see <http://bit.ly/CDPHE1dp8DXQ>). If you do not know whether there is asbestos in the material, the material may be handled as non-asbestos flood debris and disposed of at a permitted landfill.

Q How should we handle and remove damaged materials that could contain asbestos?

All debris should be handled in a manner that will minimize potential exposure to both the people handling the material and those in the surrounding area. Heavy rains and flooding presumably will have resulted in debris that is thoroughly wetted, which helps minimize dust and related potential risks from airborne materials during cleanup, including, potentially, asbestos fibers.

Handling flood soaked and muddy materials is difficult enough; adding plastic wrapping could increase personal injury risk and hamper timely and effective cleanup. Flood-soaked or thoroughly wetted asbestos-containing materials transported for immediate disposal at the landfills do not have to be wrapped with plastic for short haul and immediate disposal purposes.

Q How do I get the debris to the landfill safely? Is it my responsibility to remove everything myself?

You must cover roll-offs and trucks to prevent the materials from drying out and keep the material from blowing out of the vehicles between the point of pick-up and the disposal site. The risks from potential asbestos fibers and other airborne contaminants could increase as the debris dries out. If the material is not thoroughly wetted, the debris should be packaged inside a 6-mil plastic sheeting liner. This is done to contain the debris as it is transported from the site to the landfill.

The property owner ultimately is responsible for arranging and paying for removal. In emergency circumstances, your city, town or county may make special arrangements for disposal, such as centralized disposal sites. Contact your local government to find out more.

ASBESTOS

Trigger levels for single family residential dwellings

- 50 linear feet on pipes
- 32 square feet on other surfaces
- volume equivalent of a 55-gallon drum.

Q Can any of the debris be recycled?

Possibly. Metal debris must be washed clean of mud prior to recycling. Concrete debris, such as the house foundation, must be sent to an approved landfill. If you want to recycle this material, it has to be inspected by a certified asbestos building inspector and found to be free of asbestos-containing materials prior to recycling.

Landfills that will accept flood debris known to contain asbestos-containing material can be found on the Air Pollution Control Division's Asbestos Program website at www.colorado.gov/cdphe/asbestos.

Q Do I need to wear protective equipment when I am working in flood debris?

You may want to wear respiratory protection, particularly if you are cleaning up after materials have dried out. Commonly available one-strap paper dust masks, which are designed to keep larger particles out of the nose and mouth, typically offer little protection. The same is true for bandanas (wet or dry) tied over the mouth and nose. A mask called a "disposable particulate respirator" that has been certified by the National Institute for Occupational Safety and Health (NIOSH), will offer some protection if properly worn. Respirators (masks) rated "N95" will capture at least 95 percent of very small particles and those rated "P100" filter out at least 99.97 percent.

If you have pre-existing heart and lung conditions, please seek advice from your physician regarding use of respirators. Other personal protection may include protective clothing and gloves to avoid skin contact and eye protection.

AFTER THE FLOOD

DRINKING WATER AND RETAIL FOOD

Q What is a boil water order and who issues the order?

The Water Quality Control Division of the Colorado Department of Public Health and Environment may issue a "boil water" order when there is a threat to public health due to the drinking water system.

Q What is regulated by the State in regard to drinking water safety?

Retail food establishments in Colorado, including restaurants and grocery stores, are required to have a safe and adequate drinking water supply in order to operate.

Q Can a restaurant comply with the safety rules by just shutting off the water?

No, if a facility has lost water service, the facility is REQUIRED to close.

Q How would a retail food establishment comply with a boil-water order?

Water must be heated to a rolling boil for 1 minute. At altitudes greater than 6,500 ft., boil water for 3 minutes. Otherwise, the establishment may purchase bottled or bulk water transported from an approved source outside of the boil order area.

Q What water uses are included in a boil-water order for retail food establishments?

- Drinking
- Food preparation/inclusion in recipes
- Vegetable and fruit washing
- Manual utensil/equipment washing, rinsing and sanitizing
- Wiping cloth solutions
- Making ice
- Hand washing

Q Is a chemical sanitizing machine allowed?

No, chemical sanitizing may not dispense an adequate concentration of sanitizing solution to kill the organism(s) of concern during a boil order. It is recommended that retail food establishments use single-service plates and utensils.

Q Is heat sanitizing permitted for utensils and tableware?

Yes, heat sanitizing will adequately sanitize utensils with the required final rinse temperature of 180°F. It is not allowed to be used on equipment directly plumbed to the water source during a boil order. This includes soft drink machines, coffee makers, dispenser "guns" in bar facilities, hot chocolate/cappuccino machines, produce misters and ice machines. The ice machine should be disconnected in order to allow the ice to drain off. The machine then may be cleaned and sanitized prior to re-use.

Q How can I find out more about retail food regulations?

Additional information about the rules and regulations may be obtained by calling 303-692-3620, or online in the **Rules and Regulations Governing Retail Food Establishments in the State of Colorado** at <http://bit.ly/CDPHE1dOjqjIN>.

NOTES

These guidelines should be used to supplement the information provided in the boil-water order. In an emergency, more stringent requirements may be ordered and those requirements would take precedence. Conditions are rapidly changing at all times. Please pay attention to local public health agencies and local drinking water and wastewater providers for local information.

This guidance is for consumers and small business operators. More detailed information for regulated retail food services is available online at www.colorado.gov/cdphe/dehs.

What to know before service can resume

Equipment

Contact your equipment service representative to ensure procedures related to your specific equipment are followed.

Ice and ice makers

- Discard ice made after service disruption or during the advisory from ice maker bin, fountain dispenser bin and other ice storage areas.
- Run three complete ice-making cycles. Discard all ice made.
- Clean and sanitize icemaker bin.

Restarting water

- If the facility has been closed during the boil order or advisory, turn on all faucets/taps and allow water to run freely for at least two minutes.

Water filter systems

- Follow sanitation procedures recommended by your water filter manufacturer and/or service representative.
- Clean and sanitize filter housings.
- Remove and replace filter(s) on equipment if not designed to be cleaned in place prior to any equipment start-up.
- Any system that does not have a new water filter cartridge must not be placed back in service.

Commercial chemical sanitizing and domestic dishwashing machines

- Run empty machine through wash, rinse, sanitize cycle three times to flush water lines and assure that dishwasher is cleaned and sanitized internally.

Three-compartment sinks

- Clean and sanitize before use.

Produce misters

- Remove all produce from bins under misters.
- Flush water through misters for at least 10 to 15 minutes.
- If removable, disconnect, clean and sanitize misting nozzles.
- Clean and sanitize produce bins prior to restocking.

Fountain dispensers

- Run each beverage valve on for at least four minutes.
- Remove, clean and sanitize dispensing nozzles and associated removable parts.
- Clean and sanitize ice bin.

Frozen beverage dispensers

- Discard all products in the dispenser(s).
- Request service and/or follow equipment manufacturer's recommendations for cleaning and sanitization.

Juice machines

- Flush water through unit for at least five minutes on first flavor.
- Flush water through any additional flavors on same unit for at least one minute.
- Request service and/or follow equipment manufacturer's recommendations for cleaning and sanitization.

Coffee and tea makers

- Flush by brewing at least four pots of hot water per unit before brewing beverages.

AFTER THE FLOOD SAFE WELL WATER FOR DRINKING

If you have a well on your property that you use for drinking water and it has been flooded or otherwise contaminated during repair work it is important that you thoroughly disinfect it before using the water. If these procedures are unfamiliar to you, you should consult with a local licensed water well driller or pump installation contractor (see <http://bit.ly/CDPHE1akJEdN>). It does require specific equipment and experience for proper decontamination of the well.

1. Stay away from the well pump while it is flooded to avoid electric shock. Turn off the electrical supply if possible.
2. Do not drink from the well or wash with well water to avoid becoming sick until you can disinfect the well.
3. Inspect the water supply installation to assess and correct any damage or faults through which the well could be contaminated by insects, surface drainage or dust.
4. Disconnect the well from its storage and distribution systems. Pump the well water to waste until the water is relatively clear. Stop the pump and reconnect to the storage and distribution systems. Prior to pumping, check to be sure the public wastewater system is functioning properly.
5. Make a chlorine solution by mixing 1 gallon of unscented household bleach (6 percent chlorine solution) in 10 gallons of water and add the solution to the well between the well casing and pump drop pipe. If a household water well (4-inch diameter casing) has more than 500 feet of standing water column or the casing diameter is greater than 4 inches, please refer to Rule 15 of "Colorado Water Well Construction Rules" at <http://bit.ly/CDPHELIDDfs> for instructions.
6. Start the pump and open all faucets on the system. Pump until you can detect a chlorine odor at the faucets. Close all the faucets and stop the pump.
7. Allow the chlorine solution to remain in the well, storage and distribution systems at least overnight, or preferably, 24 hours.
8. Pump the well to waste until the odor and taste of chlorine has disappeared. Excessive amounts of contamination in the well or water supply system may require repeating the process. Two days after disinfection, collect a sample of water for bacteriological analysis, using only a sterile container furnished by the Colorado Department of Public Health and Environment or your local public health agency's laboratory.
9. Private well owners with concerns about their wells should collect samples for coliform testing. You also should test for volatile organic compounds (VOC) and hydrocarbons if the well head is damaged or compromised, or if the well is in a high risk area where drilling activity or hydrocarbon storage occurs.
10. A list of certified water testing laboratories in Colorado that can perform water testing can be found at <http://bit.ly/CDPHEKtqQ0a>. The publication "Drinking Water from Household Wells" at <http://bit.ly/CDPHE1dK2sDO> may provide additional guidance for your situation.



Use caution during cleanup

Flood water may contain raw sewage.

Raw sewage could have biological agents such as bacteria, viruses and parasites. The most common mode of infection is through oral contact - your mouth. Skin contact poses a health threat if you have an open wound.



What you might find in raw sewage:

Bacteria - E. coli, salmonella: May cause diarrhea, fever, cramps, vomiting.
Parasites - Giardia: May cause diarrhea, stomach cramps.
Viruses - Hepatitis A: May cause abdominal pain, nausea, jaundice or yellow skin, diarrhea.

AFTER THE FLOOD

COMMUNITY AND INDIVIDUAL RECOVERY THROUGH RESILIENCE

Most people notice that their emotions vary widely after a disaster. Some could feel very low about their situation, while others may feel excited because of the satisfaction that comes from communities working together to rebuild. A range of emotions is normal under the circumstances.

Public health behavioral health programs support disaster survivors to help people manage the psychological effects of the situation and promote adaptive functioning. Behavioral health staff can help you determine whether you need additional support.

There are several goals for programs that offer emotional support to disaster survivors in the areas of personal and community resilience:

- Reduce stress reactions
- Help people adapt
- Encourage compliance with response and recovery procedures
- Refer people to resources to meet basic needs

Our job is to help your family find some normalcy during a difficult time. The Colorado Department of Public Health and Environment may request funding for support programs from FEMA after a disaster. The FEMA grants help extend support resources, because problems don't just go away a month after a serious flood or destructive wildfire. There may be ongoing community-based programs that suit your needs.



CO HELP

1-877-462-2911

303-389-1687

M-F 9 a.m. to 10 p.m.

S-S 9 a.m. to 5 p.m.



Trained behavioral health teams staff Disaster Assistance Centers in affected communities. After the destructive wildfires in El Paso and surrounding counties in 2012, FEMA provided funding to determine what survivors needed, and to provide support and referrals to resources for a full year. The intent is to provide recommendations to survivors that help reduce the stress levels that may be interfering with healthy functioning. For the 2013 floods, extended support programs already are in place in several counties.

In the immediate aftermath of a disaster, the centers may be open extended hours to provide needed support and information. Behavioral health responders also may team up with other responders engaged in damage assessment and community re-entry programs.

Effective handwashing

1. Use soap and warm running water.
2. Wash all surfaces:
 - Between fingers
 - Under fingernails
 - Back of hands
 - Wrists
3. Scrub hands for at least 20 seconds; use a nail brush.
4. Rinse well and dry hands with a clean paper towel.



Hand sanitizers may be useful when soap and water are not available.

16 AFTER THE FLOOD FOOD RECOVERED FROM FLOOD WATERS

You may have lot of food damaged during the floods by either dirty flood water or power failures. Most of this food will not be safe to eat. It is unfortunate, especially if you do not have insurance to help minimize the financial strain, but do not take any unnecessary chances with your family's health. Please review this information for guidance and contact your local public health department or CO HELP if you have other questions.

FOOD DISPOSAL

Make arrangements for proper disposal of damaged belongings, including food, after a flood. For most people, this means that food will have to be taken to a landfill. Food waste should be placed in garbage bags and tied shut.

Your local municipal or county government may have some drop-off sites established for a short time during the flood recovery.

Flood damage

All food except what is called "commercial hermetically sealed cans" that came into contact with "non-potable water" must be destroyed. It cannot be salvaged safely. Commercial hermetically sealed cans are those with double seams on the top and bottom of the cans, the kind of canned food you find in grocery stores.



Non-potable water is water that is not safe to drink. This means that any of the following foods that came in contact with flood water must be discarded:

- All produce - fresh fruits and vegetables
- Eggs of all types
- Coffee and tea, in bags, bulk or cans that were opened before the flood
- Flour, cereals, beans, rice and other grains
- Salt, sugar, spices and dried milk and other baking products
- All nuts, whether in shells or not
- Screw top, crimped-cap and similar containers such as bottled water, soft drinks and alcoholic beverages and wine
- All food wrapped in paper, foil, plastic, cardboard or cellophane such as candy, cereals, bread, cakes and chewing gum
- All tobacco products

Loss of power

- Frozen foods in which the internal product temperatures have reached 41 degrees F or higher, for a period greater than four hours, must be discarded.
- Potentially hazardous food under refrigeration

where temperatures have reached 41 degrees F or higher for a period greater than four hours must be discarded, including:

- Meats
- Eggs
- Milk, other dairy products
- Fish and shellfish
- Refrigerated produce



Fire and smoke damage

Fire and smoke create insoluble tars, plastics and by-products that may be in the smoke for a long time. All meats, oil products such as butter, and produce readily absorb smoke. Even with commercially canned goods, extreme heat can re-cook the contents and make the food unsafe.

continued on next page

**Find your
county health
department:**

**[http://bit.ly/
CDPHELIRwuH](http://bit.ly/CDPHELIRwuH)**

CO HELP

1-877-462-2911

303-389-1687

M-F 9 a.m. to 10 p.m.

S-S 9 a.m. to 5 p.m.

AFTER THE FLOOD FOOD RECOVERED FROM FLOOD WATERS

continued from previous page

Chemical contamination of food can occur by chemicals used in fire fighting. Most homes have insecticides, rodenticides and household cleaning items in aerosol cans that may be punctured and leak. If there is any indication food has been exposed to chemical contamination, it cannot be salvaged and must be discarded.

FOOD RECONDITIONING

Food reconditioning is difficult. It usually requires completely eliminating the cause of the contamination, and cleaning and repackaging the food. For example, in some situations you might be able to vacuum the outside of a bag and rebag the product. It's a good idea to contact your local public health agency to be sure your methods are correct and the food will be safe to use. It may not be worthwhile to recondition foods.

Salvageable?

- Food in glass containers: **No.** Do not try to recondition foods packed in glass, no matter what type of closure or seal.



- Food in cans: **Maybe.** The only types of cans that are acceptable for reconditioning are:
 1. Commercial hermetically sealed (top and bottom double seamed) cans in which most canned foods from grocery stores are packed
 2. Commercial cans that have a key, when the key is removed and the key tab is lifted so the can can be thoroughly cleaned underneath

Reconditioning methods

- **Canned goods**
 1. Remove labels. Preserve original labels for relabeling of products.
 2. Scrub cans thoroughly and remove all of the silt from the surfaces of can.
 3. Rinse thoroughly and dip in a chlorine solution of 200 parts per million. Make this solution from one tablespoon of unscented bleach per one gallon of water.
 4. Air dry cans or wipe dry with clean cloths to prevent rusting or leaks.
 5. Make new labels for every can.
- **Empty containers** such as fruit jars, cans, bottles: It may be acceptable to wash and chlorinate thoroughly as directed by the local health department.

FOOD DETENTION

Detention refers to the safe storage of items that may not be usable. If you are unsure about the safety of any items, you should set them aside in a safe area and label clearly, until you can ask your local public health department for instructions.



Stay safe: it just makes sense

- Avoid sewage-contaminated water. Assume anything touched by sewage is contaminated.
- Follow any boil water advisories in your community if there is any sewage or other contamination of your water supply.
- Do not eat or drink in areas near sewage.

- Wash your hands well with soap and clean water before eating or touching your mouth or face.
- Immediately wash and disinfect any wound that comes into contact with sewage.



18 AFTER THE FLOOD RESTORING SEPTIC SYSTEMS

Be patient

What is the most important piece of advice for coping with a flooded septic system? Have **patience**.

Your septic system has to dry out. The water above ground needs to drain away, and the underground water level needs to drop, before you can get your septic system back in service.

Dry Out

Two very important tips require your patience:

- Use as little water as possible until your system dries out.
- Don't allow wastewater to go to the septic system until the system has recovered.
- No baths, laundry or toilet flushing.
- No water with disinfectants from flood cleanup down the drain. Large quantities of disinfectant can kill the good bacteria in the septic system.
- Route water from roof gutters and sump pumps away from the septic system.
- Mark locations of septic tank and leachfield (drainfield) to keep traffic, even foot traffic, off the system. This helps prevent damage and soil compaction.

Get help from a pro

- Turn off all electric power to pumps, aeration or treatment systems. Have an electrical contractor or an installer trained about your system check out the electrical components for damage and watertightness prior to restoring power to the system.
- Pump and inspect septic tank and pump tank, if you have one. Silt, debris and other contaminants may have entered the tank.



Flooded septic tanks can fill with silt and debris

- Inspect inlet and outlet tees or baffles for blockages caused by debris or fats and grease.

Wait (be patient)

Avoid costly tank or pipe repairs. Don't pump tank until groundwater level drops.

- Empty tanks, including concrete tanks, have less weight and are more buoyant. They can "porpoise" out of the ground, or at least move/ shift.
- Tanks pumped under high water conditions can collapse or be crushed by pressure from surrounding soil and water. If the groundwater level is part way up the side of the septic tank, you may be able to partially pump the tank the first time.
- Water from the soil treatment area could flow back into the tank, which would require multiple pumpings.

The U.S. Environmental Protection Agency has more information at <http://water.epa.gov/drink/emmerprep/flood/septicystems.cfm>.



National Disaster Distress Helpline
all 1-800-985-5990 or text 'TalkWithUs' to 66746

STAFF RESOURCES

24/7 Emergency Environmental Issues
1-877-518-5608

Emergency Preparedness and Response

Lyle Moore, Director
Colorado Department of Public Health and Environment
303-692-2669
Lyle.Moore@state.co.us

Yonette Hintzen-Schmidt, ESF 8 Branch Manager
Colorado Department of Public Health and Environment
303-692-2954
Yonette.Hintzen@state.co.us

Greg Stasinos, Deputy Director
Colorado Department of Public Health and Environment
303-692-3023
Greg.Stasinos@state.co.us

Agriculture

Nick Striegel
Colorado Department of Agriculture
303-239-4162
Nick.Striegel@state.co.us

Behavioral Health

Jonathan Gunderson
Colorado Department of Public Health and Environment
303-692-2586 / 303-870-1225
Jonathan.Gunderson@state.co.us

Aimee Voth Siebert
Colorado Department of Public Health and Environment
303-692-2686 / 720-666-5298
Aimee.VothSiebert@state.co.us

Keith Schemper
Colorado Department of Public Health and Environment
303-692-2643 / 303-945-1204
Keith.Schemper@state.co.us

Curt Drennen, Manager
Colorado Department of Public Health and Environment
303-691-4941/ 303-915-8115
Curt.Drennen@state.co.us

Construction, MS4 (Stormwater) and Pretreatment

Nathan Moore, Unit Manager
Colorado Department of Public Health and Environment
303-692-3555
Nathan.Moore@state.co.us

Drinking Water

David Dani, Coaching & Training Lead, Local Assistance Unit
Colorado Department of Public Health and Environment
303-692-3605
David.Dani@state.co.us

Tyson Ingels, Lead Drinking Water Engineer
Colorado Department of Public Health and Environment
303-692-3002
Tyson.Ingels@state.co.us

Environmental Agriculture Program

Sean Scott, Unit Manager
Colorado Department of Public Health and Environment
303-692-3422
Sean.Scott@state.co.us

Environmental Health and Sustainability

Jeff Lawrence, Director
Colorado Department of Public Health and Environment
303-692-3639
Jeff.Lawrence@state.co.us

Hazardous Materials and Waste Management

Colorado Department of Public Health and Environment
303-692-3320 or Comments.HMWMD@state.co.us
www.colorado.gov/cdphe/hm

Solid Waste and Materials Management

Charles Johnson, Program Manager
Colorado Department of Public Health and Environment
303- 692-3348
CharlesG.Johnson@state.co.us

Solid Waste Permitting

Roger Doak, Unit Leader
Colorado Department of Public Health and Environment
303-692-3437
Roger.Doak@state.co.us

Wastewater

David Kurz, Lead Wastewater Engineer
Colorado Department of Public Health and Environment
303-692-3552
David.Kurz@state.co.us

Additional resources

CDC: Flooding
emergency.cdc.gov/disasters/floods/
emergency.cdc.gov/es/disasters/floods/ (Español)

CDC: Mold
emergency.cdc.gov/disasters/mold/

FEMA: Flood Resources
www.ready.gov/floods

American Red Cross: Flood Safety & Cleanup Tips
<http://rdcrss.org/15VSts1>

EPA: Flooding
<http://bit.ly/EPA1f0B1UW>

EPA: Mold
www.epa.gov/mold

National Center for Health Housing: Field Guide for Clean-up of Flooded Homes
<http://bit.ly/8lls6a>

20 AFTER THE FLOOD ON-SITE DISPOSAL OF FLOOD DEBRIS

The regulations of the Solid Waste Act allow any property owner (other than governmental entities) to dispose of their own waste on their own property. You still need to contact the Colorado Department of Public Health and Environment for approval of your engineering and operations plan, which has to comply with the landfill location restrictions and standards, design requirements and operating criteria.

The requirements vary depending on the setting and type of material being disposed. All on-site disposal activities must comply with local (city and county) rules and ordinances.

There are three major types of disaster debris:

1. Inert (non-leachable and/or non-reactive) materials
2. Vegetation
3. Non-inert (leachable and/or reactive) materials

If managed appropriately, these materials should not cause safety impacts to people, wildlife, groundwater, surface water or air.

Inert materials are the easiest to manage because they are not mobile and do not present a significant risk to human health or the environment. Inert materials include earthen materials, hardened concrete, cured asphalt, masonry, some metals and other approved materials. Inert materials may be disposed of on property with the following provisions:

1. The local government agency must approve disposal of inert waste.
2. The inert waste may be disposed of in a basement, if present, or in a hole in the ground. The base of the hole should be at least five feet above groundwater.
3. Cover materials with at least two feet of clean fill.
4. Slope the cover for positive drainage and to prevent ponding.



5. Revegetate to prevent erosion of cover and surrounding materials.
6. Place a notice of the fill location in the property deed.

Non-inert materials may be disposed of on your own property under certain conditions. The plan must be approved in advance by the Colorado Department of Public Health and Environment when materials that may present a risk to human health, including asbestos, are in the debris. This includes:

1. An engineering design and operation plan
2. A post-closure care plan
3. Financial assurance
4. An environmental covenant

Questions about solid waste and debris disposal? Call 303-692-3348.



Colorado Department
of Public Health
and Environment

Colorado Department of Public Health and Environment

Larry Wolk, MD, MPH

Executive Director and Chief Medical Officer

Office of Emergency Preparedness and Response

Lyle Moore, Jr., Director

4300 Cherry Creek Drive South

Denver, CO 80220

303-692-2030

www.colorado.gov/cohealth

<http://bit.ly/CDPHEfloodresc>