

DISASTER RECOVERY GUIDE

Returning to **your home** after a disaster



COLORADO

Department of Public
Health & Environment

www.colorado.gov/cdphe

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Emergencies and disasters can occur at any time. They can disrupt our homes, our communities and our health.

Time and again, in varied situations, those who are resilient recover more quickly.

Resiliency is the ability to resist, absorb, recover from or adapt to an adverse occurrence. That includes individuals, communities and systems.

Gov. John Hickenlooper set a goal for Coloradans to become more resilient. To achieve that goal, he created the Colorado Resiliency and Recovery Office.

For Colorado, resiliency means more than rebuilding. It means supporting individual and community efforts to thrive and grow stronger and smarter in the face of disasters.

If you are reading this guide, you probably are in a safe place. Your safety and the safety of your loved ones are among our highest priorities, too.

That's why public health and environmental experts created the guide to help you restore your home and family life following a disaster. While getting back to normal, it is easy to forget all that goes into making your home and your community safe.

You have a team on your side. The Colorado Resiliency Framework brings together state and local public health, public safety agencies such as emergency management, police and fire, and all Colorado state government agencies to rebuild and recover. The team works together to reduce threats to human health and promote resiliency. Advance planning will speed recovery. The checklist on the next page may help you get started. Contact your local public health department for more information.

Dr. Larry Wolk
Executive Director



Jamestown, October 2, 2013



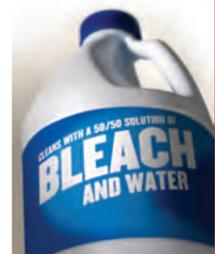
Denver, December 19, 2006



near Poudre Canyon, June 19, 2012



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EMERGENCY CHECKLIST

- Get accurate information.
 - Sign up for your county's notification alerts.
 - Tune into local media.
 - Monitor social media popular in your area.
- Activate your family communication plan.
 - Gather emergency phone numbers and emails.
 - Update your contact information at your children's schools.
- Follow instructions from local public safety authorities.
 - Watchful waiting?
 - Prepare for potential evacuation? Stay indoors?
 - Turn off power and natural gas?
- Replenish cash on hand and identify an emergency credit card.
- Locate important documents for home and family members.
- Check in with neighbors who may need help. Share contact information.
- Check supplies and replenish.
 - Refill food and water provisions.
 - Refill pet food.
 - Check family members' medications and special medical supplies.
 - Gather baby's formula and diapers.
 - Check batteries and propane tank if power supply threatened.
- Secure your home if storms or other natural disasters are possible.
 - Check windows, doors, locks, vehicles.
 - Stow outdoor furniture, toys, tools.
 - Tell neighbors if you plan to leave.
 - Plan ahead to protect valuables and minimize damage to house.

IS IT SAFE TO RETURN HOME?

When you go home.

- If your home or neighborhood was evacuated, do not return until public safety officials give the go-ahead.
- Sign up for notifications from local authorities if you have not already.
- Stay away from downed power lines and tree limbs, broken concrete and asphalt and damaged pipes and gas lines. Avoid debris like broken glass and nails.
- Don't go home if there could be mold in the house. If your floors, walls or furnishings were soaked by rain, floodwaters or fire control efforts, assume you have mold. Contact a qualified professional or your insurance company if you may have mold.
- If your home's phone and internet systems were damaged, make alternative arrangements for communicating. Let family and the authorities know you are back home.
- Don't turn on electrical and natural gas systems or light pilot lights if you are unfamiliar with the possible risks. If you need help, ask your service provider.
- Check foundations and chimneys for damage before entering the house.
- If the house's water source may have been damaged, don't use the water for drinking. Consult with your water provider or a well expert before using the water for drinking.
- Be prepared to encounter rodents, snakes or insects that may have entered a flooded home.

If you are unable to locate a loved one who has a serious, pre-existing health or mental health condition, initiate an **Emergency Information Request** by calling your local American Red Cross Chapter or 1-800-RED-CROSS.



EVACUATION NOTICES REQUIRE ACTION

Evacuation warnings and notifications

- If there is a threat to your neighborhood, local public safety authorities will issue a notice that you may have to evacuate. Act immediately and follow instructions. You should prepare to leave quickly.
- If you have time, gather critical information such as identification, insurance, financial and medical records, contacts and your family disaster plan or checklist.
- Pack your emergency "go kit" with supplies such as medications and medical supplies, water, weather-appropriate clothing, flashlights and batteries, and chargers for phones. For children, older adults and others with unique needs, take the important items that are hard to replace.
- Public safety or utilities officials may advise shutting off the gas and electricity if you have time before leaving your home. Disconnect electronics and appliances to help protect them from weather or power problems.
- If there is enough time, pack or move valuables to safe areas and protect family keepsakes.

Follow instructions from safety officials.

- Evacuations protect lives. The purpose is to keep you, your family and your whole community safe.
- Shelter, food and transportation assistance may be available from local non-profit organizations.

- When you evacuate, emergency responders can focus on protecting people and property in harm's way.
- Evacuation orders are **not** voluntary. There is no support, supplies or other resources available in evacuated areas.

Make evacuation easier.

- Plan ahead to assure your family's safety, including your four-legged family members.
- Minimize the risk to your home by eliminating potentially dangerous conditions. For example, in some areas, that means removing trees, brush and other flammable materials near the house.
- Do what you can to secure your home. If you may need to evacuate at some point, plan ahead for how you will protect valuables and minimize damage to your house.
- Follow instructions for the safest evacuation routes and where to go for shelter.

Immediate or no-notice evacuation

- If your home or community is no longer safe, public safety authorities may order evacuation immediately.
- Do not delay and endanger yourself, your family and others. Ask any disaster survivor—life safety is your first priority.



Wildfire evacuation, Los Alamos, NM, June 27, 2011



EVACUATIONS: WHAT TO DO



Check on the safety of your loved ones.

- Part of your family emergency plan should be to select an “out-of-area” contact person to help communicate with each other. Call as soon as possible to check in and set up a meeting place.
- If calls will not go through due to system damage or heavy volume, try text messaging on a cell phone. Long distance calls might connect even when local calls won’t—another good reason to choose an out-of-area contact person.
- When the power is out, cordless home phones do not work. Keep a corded phone for emergencies. Use it only to make necessary calls. Sometimes service to pay phones will be restored first. Keep coins and a credit card in your emergency supplies and know where to find a pay phone.
- In a major disaster, a website called [Safe and Well](#) is helpful both to register your current status and to look for loved ones. Find it through the American Red Cross or at [safeandwell.communityos.org](#). The National Library of Medicine’s [People Locator](#) at [pl.nlm.nih.gov](#) is similar, with a function to search images.
- Family members with disabilities may have additional needs. Plan ahead. Visit [READYColorado.com](#) for tips.
- Don’t overlook pets and livestock. Plan for their safety and shelter as well. That may include gathering vaccinations and health records (some shelters require proof), information about microchips, alternative shelters or boarding facilities, and extra food and medications. See [READYColorado.com](#) for a brochure about planning for pets.

Stay up-to-date.

- Check online for your county’s emergency management agency or sheriff’s department or the local police department. Most will update the status information frequently.
- If you have not signed up already, subscribe to notifications from local authorities. By providing the authorities with your contact information, they can send updates directly to your phone or email. Sign up at college, too.
 - Find your county emergency management agency online at [www.coemergency.com](#). Most have notification systems to provide instant text alerts or emails about bad weather, major road closures and disaster status updates.
 - Register mobile devices for reverse 9-1-1. Cell phone registration for notifications are “opt-in.” That means you have to tell your service provider that you want your phone to receive reverse 9-1-1.
- Monitor local news. Local public safety authorities, the Colorado Department of Public Health and Environment and your local health department share status updates with newspapers, radio and television so you have the latest information.
- Find out what resources there are to help people who evacuate. In addition to emergency shelter and food, there could be emergency funding offered. Officials may set up emergency transportation and disaster assistance centers.



EVACUATIONS: WHAT TO DO

Recognize stress.

- Emergencies, disasters and evacuations are unusual events for most of us.
- Provide for your own and your family’s emotional needs as well as basic food and shelter.
- Include your children’s comfort items and favorite games, books and toys in your emergency go-kit.

After a disaster or emergency:

- Remain calm.
- Be patient.
- Listen carefully to information and advice from medical and public health authorities.
- Use your personal and family communications plans.



**COLORADO
CRISIS SERVICES**
supporting a stronger state of mind

Colorado Crisis Services is the first statewide resource for mental health, substance use or emotional crisis help, information and referrals. Its purpose is to strengthen Colorado’s mental health system by providing greater access to mental health services. The goal is to help Coloradans get the right services in the right place at the right time.

Mental health professionals are available 24 hours a day, 365 days a year at **1-844-493-TALK** (8255) to offer solutions and support to Coloradans in crisis.

Callers to the Colorado Crisis and Support Line will be connected with experienced professionals, counselors and peer specialists who are trained to:

- Assess and plan for safety;
- Provide solutions and support to individuals or their loved ones who are experiencing a mental health or substance abuse issue; and,
- Make referrals to resources as needed.



1-844-493-TALK

1-844-493-8255

24 / 7 / 365

PUBLIC HEALTH EMERGENCIES

Whether caused by natural, accidental or intentional means, public health threats are real and ever-present. It is public health's goal to prevent, respond to and rapidly recover from these threats.

Federal, state and local governments work together to build on decades of science and research. We use the resulting evidence to promote the public's health.

Health and medical systems focus on protecting and improving the health of individuals. Public health supports medical preparedness to make sure that health care systems can recover quickly.

Public health develops partnerships with businesses and private sector organizations, community leaders and volunteers. Together we work to make changes at the community level.

Between emergencies, training and practice activities are nonstop. These help us respond to surges of need during widespread influenza outbreaks, foodborne disease, exposure to dangerous chemicals and other diseases like pandemic flu, Ebola virus and West Nile virus.

Being prepared can save lives and protect the public's health security. And that's the bottom line for all of us.

Public health threats

Public health is impacted by weather, terrorism, crashes and other events that demand extra medical assistance and strain the normal system.

- Biological threats can be natural, accidental or deliberate. They include viruses, bacteria, parasites, fungi or their toxins that can cause illness or death in people, animals or plants. They are spread through air, water or food. Examples include flu viruses or bacteria in foods.
- Natural disasters include snow or ice storms, earthquakes, wildfires, tornadoes and floods.
- Chemical and radiological materials released accidentally or intentionally could create large-scale public health emergencies, especially in densely populated areas.
- Explosions are by far the most common cause of casualties associated with terrorism. Explosions can cause large numbers of casualties with complex injuries not commonly seen after natural disasters.



Field hospital exercise, April 26, 2013

Public health preparedness

The Colorado Department of Public Health and Environment and its local health department partners are here for you and ready for anything.

Public health agencies:

- Monitor and investigate health threats.
- Maintain laboratories to help identify diseases, toxins and other health threats.
- Manage a distribution system for critical medications that could be needed for large numbers of people.
- Develop, practice and improve emergency plans at state and local public health departments to ensure rapid and effective responses to real health security threats.
- Maintain and improve systems and technologies to support preparedness, response and recovery activities.
- Ensure communities have safe drinking water, functional wastewater systems, waste disposal and improved air quality.
- Enforce standards for food services and other products that could be health or safety hazards.
- Protect the environment and respond to environmental hazards.



Boulder Creek, September 13, 2013

HOME SAFETY AFTER A DISASTER



Prevent mosquito-borne illness.

Heavy rains and flooding can lead to an increase in mosquitoes. Mosquitoes could be infected with West Nile virus or other diseases. Use mosquito protection and follow these precautions:

- Wear clothing that covers most of your skin.
- Avoid being outdoors when mosquitoes are most active. For many species, this is during the dusk and dawn hours.
- Use repellents containing DEET (N,N-diethyl-m-toluamide), picaridin or OLE (oil of lemon eucalyptus). Use strictly according to label instructions.
- Do not allow children to apply insect repellents. Avoid applying insect repellents to the hands of young children.
- Eliminate breeding sites. Remove standing water around the house and yard. Remove old tires and turn over or remove empty containers that gather rain.



Keep rodents and insects out.

As you start cleaning up, you will likely produce a great deal of garbage and trash. Local authorities will tell you where and when collection is scheduled. Garbage invites insects and rodents. Rodents, in particular, enter the house looking for food because their homes and food sources are disrupted.

- Store garbage in watertight, rodent/insect-proof containers with tight-fitting covers. Use plastic liners if available.
- Don't allow garbage to pile up. If your community has not yet identified a temporary disposal site for disaster-related debris, contact landfills¹ directly to determine which garbage and trash they will accept.



¹ Colorado landfills: www.colorado.gov/cdphe/swfacilities

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HOME SAFETY AFTER A DISASTER

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Carbon monoxide poisoning can result from the improper use of gasoline-powered generators and power washers.



Use gas-powered generators and pressure washers safely.

Using gasoline-powered generators or pressure washers is serious business. Carbon monoxide (CO) poisoning from engine exhaust is a common and serious danger that can result in death.

- ⊘ Never use generators, pressure washers or other gasoline-powered tools indoors or in a garage, carport or basement. These tools produce large amounts of CO that can build to dangerous levels in minutes.
- ☐ Keep your generator or pressure washer engine outdoors and well away from windows, doors and vents.
- ☐ If you feel dizzy, light-headed or nauseous, you could be breathing CO. Get to fresh air right away and seek prompt medical care.
- ☐ Generators can create serious electrical hazards. You could be electrocuted or cause a fire if you use a generator incorrectly.
- ☐ Most portable generators are designed to work with a few appliances or pieces of electrical equipment. They may be plugged directly into the generator with an extension cord, without the use of a generator transfer switch.
- ⊘ Portable generators are not recommended for sensitive equipment or numerous large appliances or business machines. If you intend to power more than a few pieces of equipment, contact the manufacturer about using a transfer switch.
- ☐ Always use the right electric power cord for the electrical equipment.
 - Use a heavy-duty, outdoor-rated extension cord that is the right size for the total electrical load (voltage and amps) needed.
 - To prevent excessive heat buildup in the power cord, select a cord that exceeds the total expected load.
 - Be sure the cord has three prongs and no splits, cuts or holes in the external insulation covering.
- ⊘ Never overload the power cord or use a damaged cord. It could cause electrocution or start a fire.

To report any community public health emergency or hazardous substance spill event, call the 24-hour Incident & Emergency Reporting Line at **1-877-518-5608**.

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HOME SAFETY AFTER A DISASTER

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Disinfect drinking water safely



First choice usually bottled water

There are several ways to disinfect water. None of them are perfect. Commercially bottled water is the safest source for drinking water, if it is available when systems are damaged. The two most common methods of cleaning drinking water are boiling and disinfecting with chlorine bleach.

Boiling water

Boiling water kills disease-causing organisms but sometimes is not recommended. If there is a possibility of chemical contamination, boiling will concentrate the contaminants.

- If the water is cloudy, let it settle. Then filter it through a clean cloth, paper towel or coffee filter into a clean container.
- Boil the water for 1 minute.
- Boil longer at high altitudes or if the water is from a source suspected to have *Giardia* or other protozoa. Five minutes boiling time is recommended at 10,000 feet above sea level.
- Let the water cool at least 30 minutes. You can re-oxygenate the water by pouring the water back and forth between two clean containers if the taste seems flat.
- Store the boiled clean water in clean containers with covers.

Sanitizing surfaces with bleach

- First, wash surfaces with soap and warm, clean water to remove dirt and debris.
- Then sanitize with a solution of household bleach and clean water.¹ Dip the item to be cleaned in the bleach solution, or apply to surface with a spray bottle or sponge soaked in the solution.
- Finally, allow to air dry.

¹ Warning: Read and follow the safety instructions on the bleach you use. Different brands have different amounts of chlorine, usually 6 to 8.25 percent. The amount of bleach to add to water depends on the percentage of chlorine it contains. That means if you use "concentrated" bleach, the amount of water to add will be different. A chart with guidance for bleach with 5-6% chlorine is at www.cdc.gov/disasters/bleach.html.

Disinfecting water with bleach

If you cannot boil the drinking water, you can use bleach as a disinfectant. Chlorine bleach will kill some, but not all, disease-causing organisms.

- If the water is cloudy, let it settle. Then filter by pouring the water through a clean cloth, paper towel or coffee filter into a clean container.
- Use only regular, unscented, household liquid chlorine bleach. Do not use "splashless" or bleach combined with cleansers.
- Read the label on the container of bleach. Different brands have different amounts of chlorine, usually 6 to 8.25 percent. The amount of bleach to add to water depends on the percentage of chlorine it contains. That means if you use "concentrated" bleach, the amount of water to add will be different.
- Use clean containers for mixing and storing. Select containers with covers or lids, such as soft drink bottles with screw caps.
- Carefully follow the directions for the proper amount of bleach to add to the amount of water you are treating.
- If the water is cloudy, discolored or very cold, double the amount of bleach.
- Stir and let stand for 30 minutes. The water should have a slight chlorine odor. If it does not, repeat the dosage and let stand another 15 minutes before using.
- If the chlorine taste is too strong, pour the water from one clean container to another and let stand for a few hours before using.



CAUTION

- ⊘ Never store bleach or bleach solutions where children have access.
- ⊘ Never mix bleach with anything containing ammonia.
- ⊘ Bleach is irritating to eyes and skin. Bleach be harmful if swallowed. Bleach could cause skin swelling.

FOOD SAFETY

Sanitation and hygiene are important to prevent foodborne illness, especially after a natural disaster.

- ❑ Always wash hands with soap and clean water before eating and after toilet use, and after cleanup activities or handling items contaminated by floodwaters, debris or sewage.
- ❑ Hand sanitizers can be used in addition to hand washing, but **not** in place of washing. Hand sanitizers may be helpful in situations where hand washing facilities are not accessible or readily available.
- ❑ If clean water is not available, use water that has been boiled properly.
- ❑ Do not allow children to play in floodwaters or to have contact with toys or household items that are contaminated by floodwaters.
- ❑ Floodwaters may contain fecal matter from sewage systems, agricultural and industrial waste and septic tanks.
 - If you have open cuts or sores exposed to floodwater, keep them as clean as possible by washing with soap and disinfected or boiled water.
 - Apply antibiotic ointment to reduce the risk of infection.
- ❑ Natural disasters may disrupt sanitary systems. If floodwaters cover your septic tank and leach field, do not use flush toilets attached to the system. A break in a sewer or septic system can cause additional structural damage and expose the household to disease-causing organisms.

Food safety: loss of electrical power

- ❑ Always keep meat, poultry, fish, dairy and eggs refrigerated at or below 41°F.
- ❑ Keep frozen food frozen.
- ❑ If you lose power, keep the refrigerator and freezer doors closed as much as possible to maintain the cold temperature.
 - ❑ Most refrigerators will keep food cold and safe for about 4 hours if unopened.
 - ❑ A full freezer will hold the temperature for approximately 48 hours if the door remains closed.
 - ❑ For a freezer that is half full, keeping the door closed can maintain the temperature for 24 hours.
- ❑ For longer power outages, you may need to open and close the refrigerator and freezer doors.
 - ❑ Dry ice or block ice keeps the refrigerator cold up to two days.
 - ❑ For an 18-cubic-foot full freezer, you can maintain freezing temperatures for two days with 50 pounds of dry ice.
- ⊗ Discard perishable food that has been at temperatures above 41°F for more than 4 hours.
- ⊗ Discard any food that has an unusual odor, color or texture.
- ⊗ Throw away food in your refrigerator and freezer that looks suspicious. For example, discard foods with liquid or refrozen meat juices, soft or melted and refrozen ice cream or food with unusual odors.
- ⊗ Never taste food to determine its safety.
- ⊗ Food unfit for humans also is unfit for pets.



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FOOD SAFETY

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Fire and smoke create tars, plastics and their by-products. They may remain in the air for a long time. All of these substances make food products unsalvageable. Be safe—throw it out.

Food exposed to fire can be damaged by four factors: heat, smoke, firefighting chemicals and power outages affecting refrigeration.

1. **Heat:** Food in cans or jars may appear fine? If they have been close to the heat of a fire, they may not be safe to eat. Heat from a fire can activate bacteria that spoil food. In severe heat, the cans or jars can split or rupture, making the food unsafe.
 - ⊗ Discard foods in cans or jars, as extreme heat can re-cook canned goods and damage the contents.
2. **Smoke:** Toxic fumes, which can be released from burning materials, are one of the most dangerous elements of a fire. The fumes alone can be hazardous, and they also can contaminate food, right through the packaging.
 - ⊗ Discard all meats, oil products such as butter and produce.
 - ⊗ Discard food stored in packaging with friction-type closures and food packed in cardboard, cellophane or plastic wrap.
 - ⊗ Discard food stored at room temperature, such as fruit and vegetables.
 - ⊗ Discard refrigerated or frozen food with an off-flavor or odor when prepared. Food stored in the refrigerator or freezer may become contaminated by fumes, as food packaging is not necessarily airtight.



3. **Firefighting chemicals:** Chemicals used to fight fires contain toxic materials that can contaminate food and cookware. While some of the chemicals may be labeled as non-toxic to humans, they still can be harmful if swallowed. These chemicals cannot be washed off food.
 - ❑ Canned goods and cookware exposed to chemicals can be decontaminated if they have not been subjected to severe heat.
 - ❑ Wash canned goods and cookware with soap and hot water. After washing, dip in chlorine bleach for 2 minutes, in a solution with clean water as directed on the bottle's label. Rinse and let air dry.
 - ⊗ Discard foods exposed to chemicals, including:
 - ⊗ Food stored at room temperature, such as fruit and vegetables.
 - ⊗ Food stored in porous or temporarily sealed containers, like cardboard and screw-topped jars and bottles.
4. **Loss of refrigeration (see opposite page)**
 - ⊗ Discard perishable food that has been at temperatures above 41°F for more than four hours.
 - ⊗ Discard any food that has an unusual odor, color or texture.
 - ⊗ Discard food in your refrigerator and freezer that looks suspicious, such as foods with liquid or refrozen meat juices, soft or melted and refrozen ice cream or food with unusual odors. Better to be safe than sorry.
 - ⊗ Never taste food to determine its safety.

For more information:

Colorado Department of
Public Health and Environment
Division of Environmental Health
and Sustainability
303-692-3645

HOME SAFETY AND FLOOD CLEANUP

Keeping home furnishings items soaked by sewage or floodwaters may be unhealthy. If you find it difficult to throw away items from your home, such as belongings with sentimental value, ask a friend to help.

What to save

- ❑ Nonporous items such as china, glass, jewelry, porcelain and metal.
- ❑ All-wood furniture with mold growth but otherwise in good condition.
- ❑ Some electronics and small appliances (depending on flooding conditions).
- ❑ Photographs, books and valuable or important legal documents with minor mold growth.
- ❑ Artwork, textiles and clothing that are not physically damaged.

If in doubt, throw it out.



What to discard

- ❑ Throw away items that cannot be thoroughly cleaned, disinfected and dried within 24-48 hours.
- ❑ Throw away wood cutting boards, baby bottle nipples and pacifiers.
- ❑ Do not try to save porous items that have become moldy.
- ❑ Discard if the materials have been under water or if you see or smell mold:
 - ⊗ Carpet, carpet padding and rugs
 - ⊗ Upholstered furniture, mattresses and box springs
 - ⊗ Computers, microwaves and window air conditioners if they have been in moldy rooms
 - ⊗ Other electronics and appliances with fans that have been in moldy rooms
 - ⊗ Papers and books



Cleaning salvaged items



- ❑ Wear rubber boots and waterproof gloves during cleanup.
- ❑ Clean walls, hard-surfaced floors and many other household surfaces with soap and water. Disinfect in a chlorine bleach solution. Use only as directed on the bottle (see page 11).
- ❑ Thoroughly disinfect surfaces that come in contact with food and children's play areas.
- ❑ Replace fiberboard, insulation and disposable filters in your heating/cooling system.

Cleaning pools, spas, hot tubs

- ❑ Drain and super-chlorinate pools, hot tubs and spas affected by floodwaters.
- ❑ You can refill with water from a public water system on a boil order as long as the pool, spa or hot tub maintains the proper disinfection level.



When returning to a home that has been flooded or exposed to rain, be aware that mold could be present. Mold may be a health risk to building occupants.

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.



Mold can be hazardous.

- Excess moisture and standing water cause mold to grow in homes and other buildings.
- Mold spores can float through the air. They are too small to see with the naked eye.
- Molds cause disease, trigger allergic reactions and make asthma and other breathing problems worse.
- Never use your heating or air conditioning system before the cleanup is complete. The system's fans may spread the mold spores.
- Assume there is mold if the building was wet more than 48 hours.

First steps

- Remove standing water and wet materials promptly and ventilate.
- If you do not find mold, use fans and dehumidifiers to reduce moisture. Do not use fans if there is sewage in the water, to avoid spreading germs around the house.
- Consult a qualified professional if more than 100 square feet of mold is found or suspected from visual inspection or odor.
- Individuals with known mold allergies or asthma should never clean or remove mold.
- Remove small areas of mold growth with soap and water.

DISEASE PREVENTION

Widespread outbreaks of infectious disease after disasters are uncommon in the United States. Rare and deadly exotic diseases, such as cholera or typhoid, do not suddenly occur after disasters in areas where such diseases do not naturally occur.

Unless a disease is brought into a disaster area from somewhere else, outbreaks almost always are from diseases that already were found in the area before the disaster struck.

Wounds

- Wounds in contact with soil, sand, sewage and debris can become infected with bacteria.
- Puncture wounds can carry bits of clothing and dirt into the wounds and result in infection.
- Crush injuries are more likely to become infected than wounds from cuts.
- Prompt first aid can help heal small wounds and prevent infection.
- Seek medical attention as soon as possible if:
 - There is a foreign object embedded in the wound such as soil, wood or metal.
 - The wound is from an animal bite, puncture by a dirty object, abdominal wound, large wounds or wounds on the hands or feet.
 - Antibiotics may be recommended if the wound has a high risk of becoming infected.
 - The wound is deep or severe.
 - Wound shows signs of infection, such as increased pain, heat, swelling, redness, pus, draining or fever.

Care for minor wounds

- Wash your hands thoroughly with soap and clean water.
- Avoid touching the wound with your fingers while treating it. If possible, use disposable latex gloves.
- Remove obstructive jewelry and clothing from the injured area.
- Apply direct pressure to control bleeding.
- Clean the wound after bleeding has stopped.
- Examine wounds for dirt and foreign objects.
- Gently flood the wound with clean water, then gently clean around the wound with soap and water. Use bottled water when there are concerns about tap water being contaminated.
- Pat the wound dry. Apply an adhesive bandage or dry, clean cloth.
- Provide pain relievers when possible.

Vaccinations

Everyone is better prepared for emergencies when we all are up-to-date on vaccinations.

- Ask your health care providers if you have had the recommended vaccinations. Keep a copy of your vaccination history in a safe place in case you need the information quickly.
- The state health department has vaccination recommendations for children and adults at www.colorado.gov/cdphe/immunization-schedules.



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DISEASE PREVENTION

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Tetanus

- As cleanup and recovery efforts begin after a disaster, there is high risk of injury. Tetanus is a concern for persons with both open and closed wounds.
- A tetanus vaccination is recommended for anyone returning to an area affected by a disaster if they are not up-to-date on their tetanus vaccination.
- Usually a tetanus-diphtheria (Td) booster is recommended for all adults every 10 years. A tetanus-diphtheria-pertussis (Tdap) booster can replace one regular Td dose to provide pertussis protection.
- Children usually receive tetanus vaccine as part of their routine immunizations in the DTaP vaccine.
 - Children do not need a booster vaccination until they are adolescents.
 - If your child has not received routine immunizations, ask what immunizations are needed and at what intervals.
- If you have a wound but do not know if you have had at least three tetanus vaccinations, your health care provider may suggest tetanus immune globulin (TIG) as well as the tetanus vaccination. TIG may prevent tetanus infection.
- Tetanus in the U.S. most commonly is reported in people older than 50 years of age because they are less likely to be adequately vaccinated.
- People with diabetes have a higher risk for tetanus because they may have wounds that do not heal.
- Seek prompt first aid for a puncture wound or a wound contaminated with sewage, soil or saliva. Consult a health care professional to find out if a tetanus booster is necessary.

Respiratory illness

In most disaster situations, an increase of respiratory illnesses is not detected.

- The occurrence of typical, short-term illnesses such as the common cold may increase after natural disasters. The increase usually occurs because maintaining basic hygiene becomes more difficult.

Animal and insect-related hazards

- Avoid mosquito bites.
- Use repellents containing DEET (N,N-diethyl-m-toluamide), picaridin or OLE (oil of lemon eucalyptus). Use strictly according to label instructions.
- Wear clothes that cover as much skin as possible, such as long-sleeved shirts and long pants.
- Avoid outdoor activities around sunset.
- If you become sick, tell your health care providers if you have mosquito or other insect bites.
- Stay away from wild or stray animals.
- Keep rodents and scavengers out.
 - Remove potential sources of food, water and shelter.
 - Dispose of garbage and debris properly and as quickly as possible.

Gastrointestinal illness

- In most disaster situations, an increase of gastrointestinal illnesses is not detected.
- When gastrointestinal illnesses increase after disasters, it may be because drinking water is contaminated and maintaining basic hygiene has become more difficult.
- Ask if laboratory testing is appropriate when you have three or more days of diarrhea, any bloody diarrhea or diarrhea with a fever.
- Stay home from work, child care or school for at least 24 hours after diarrhea and/or vomiting have stopped.
- People who are ill with gastrointestinal symptoms should not prepare food for others until at least 24 hours after diarrhea and/or vomiting have stopped.

CDC Natural Disaster and Severe Weather Information

www.cdc.gov/disasters

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DISEASE PREVENTION

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Sewage exposure and disease risks

- ❑ Raw sewage can contain bacteria, viruses and parasites.
- ❑ The risk of illness depends on the type and duration of exposure to the sewage.
- ❑ The most common mode of infection is through oral contact with sewage, often by touching the mouth with a hand.
- ❑ Skin contact poses a health threat if someone has an open wound.
- ❑ Reduce the risk of exposure if you have contact with sewage. Take appropriate safety precautions and clean up quickly and thoroughly.
- ❑ Follow boil-water advisories, from your health department when there could be sewage or other contaminants in the water supply. Assume anything touched by sewage is contaminated.
- ⊗ Avoid water contaminated with sewage.
- ⊗ Do not eat or drink in areas near sewage.
- Wash thoroughly with soap and clean water after contact with sewage, sewage-contaminated water or any item that is contaminated with sewage, especially before eating or touching the mouth or face.
- Hand sanitizers can be used in addition to hand washing, but not in place of washing.
- Hand sanitizers may be helpful in situations where hand washing facilities are not accessible or readily available.
- Immediately clean any wound that comes into contact with sewage or floodwaters.
- ⊗ After contact with sewage, remove contaminated clothes and shower. Launder clothes separately or discard them.



Stay safe: it just makes sense

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



CDC/James Gathany

For more information:

Find your local health department:
www.colorado.gov/cdphe/categories/services-and-information/find-your-local-public-health-agency

Updates and changes to guidance:
www.colorado.gov/cdphe

Disease Control and Environmental Epidemiology
 303-692-2700

Resources from CDC

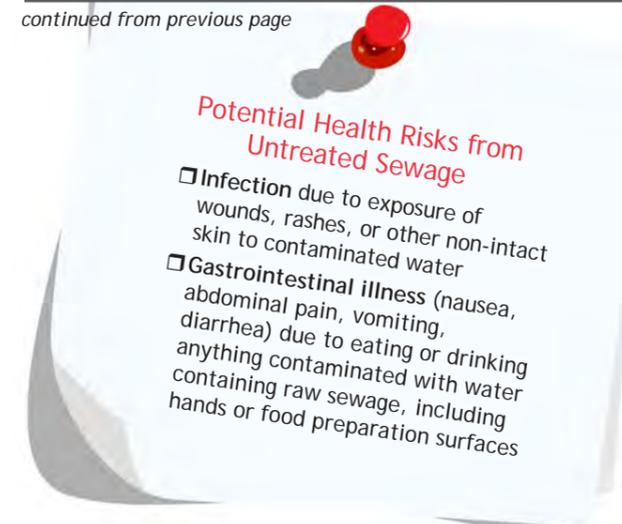
Natural Disasters and Severe Weather
www.cdc.gov/disasters/

Prevent Illness and Injury After a Disaster
www.cdc.gov/disasters/illness-injury.html

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DISEASE PREVENTION

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FEMA/Bryan Dahlberg



EFFECTIVE HANDWASHING

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



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



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

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

Free public health information

The Colorado Health Emergency Line for the Public (CO HELP) is a service to keep people informed about current public health 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 Coloradans.

SEWAGE BREAKS AND BACKUPS

Causes

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

Prevent mold.

- Drying out an enclosed area such as a basement or crawl space can take several weeks.
- Mold grows as long as humidity levels remain high.
- If the damaged area is not cleaned and dried out properly, a musty odor, which can indicate mold growth, may remain long after the sewage overflow.

Clean with caution.

- ⊘ Never mix household cleaners and disinfectants. Some mixes can produce harmful vapors. Bleach and ammonia form toxic gases called chloramines and ammonium chloride.
- ⊘ Never use cleaners and disinfectants without good ventilation. Open windows and doors. Use fans to circulate air during and after the use of disinfecting, cleaning and sanitizing products.



Hurricane Sandy, NJ, November 11, 2012

Use protective gear.

- Wear protective clothing such as waterproof boots, gloves, eye protection and washable or disposable clothes.
- Wear a mask or respirator if splashes into the mouth and nose are possible.



Inside the home

- ❑ Make sure the structure is safe before doing work in the affected area. Check for structural damage, electrical hazards or natural gas leaks.
- ❑ Thoroughly clean and disinfect damaged areas to reduce risk of disease.
- ❑ Reduce the humidity in the damaged area. Open the house and remove standing wastewater with a mop, pump, wet vac or squeegee. Open interior closets and cabinet doors to allow circulation. Use moisture-absorbing products in enclosed areas where air can not move freely.
- ❑ Use fans, dehumidifiers and window air conditioners to circulate the air. Central air conditioners or furnace blowers should be used only if air ducts were not impacted by standing wastewater.
- ❑ Separate salvageable furnishings from the unusable debris in the damaged areas. Get a cost estimate from a professional cleaner to help determine if furnishings are worth saving.
- ❑ Hire a professional cleaning company to steam clean and disinfect salvageable furnishings.
- ❑ Dispose of any materials exposed to wastewater that cannot be thoroughly steam-cleaned or disinfected. Discard contaminated food, 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.
- ❑ Thoroughly wash soiled clothing and small throw rugs with hot water. Use bleach if possible.
- ❑ If only a portion of the carpeting is damaged, contact a professional carpet cleaner for an inspection.
- ❑ 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 probably 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.

SEWAGE BREAKS AND BACKUPS

continued from previous page

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 applying garden lime liberally. This will reduce odor and help break down 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 the open.
- ❑ Mix the lime in with a rake after a day or two. Use a sprinkler or hose to water the lime and remaining residues into the soil.
- ❑ Let the area dry in the sun before allowing anyone in the area, if possible.
- ❑ Treat excavated soils on-site with garden lime in the same manner.
- ❑ 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 cannot be accomplished without creating a nuisance condition, remove the contaminated soils and other materials from the impacted area and dispose of the contaminated materials at any landfill that is willing to accept them.

When you have extensive damage

- ❑ Consider removing and replacing damaged wallboard and insulation to avoid indoor air quality problems later.
 - Wallboard acts like a sponge, drawing moisture up above the original water level. It becomes very fragile if it stays wet for long and will fall apart easily.
 - Contaminants can seep behind the drywall and dry inside.
 - Mold penetrates porous materials such as wood, insulation and drywall. Microorganisms can be released later into the air and trigger allergic reactions when inhaled.
- ❑ Thoroughly clean, disinfect and dry wooden wall studs and sills to avoid replacing. If studs and sills will be covered by new wallboard and paint, there will be no 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 to allow the area between wall studs to drain and dry. You may have to remove the paneling completely to take out wet insulation or extensive contamination behind it. Once disinfected and dry, the paneling often can be nailed back into place.
- ❑ Thoroughly wash, disinfect and dry concrete walls and floors. Wastewater will not damage concrete like it will wood or wallboard, but it still soaks in to some extent.

When you have minimal damage

1. Clean and disinfect thoroughly if you are able to clean up the overflow promptly. Disinfectants and sanitizers often contain toxic substances. Follow label instructions carefully.
2. Thoroughly wash walls, floors, closets and washable contents of the area with soap and water.
3. Common household cleaning products and disinfectants like bleach are effective if used correctly.
4. Keep the bleach solution in contact with the contaminated surface for at least one minute, then rinse well.
5. Wash again with a mild soap and water and rinse thoroughly.
6. If the material cannot be cleaned with bleach without causing damage, try a quaternary ammonia product such as Lysol. Handle these cleaning agents with care. Never mix the two cleaners.

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

DEBRIS CLEANUP

After a large-scale emergency, the Colorado Department of Public Health and Environment may issue temporary guidance. The temporary guidance may relax some of the regulations for managing and disposing of damaged or destroyed structures, vegetation debris, vehicles, spoiled food, household chemicals, dead animals, septage and sewage.

Flooding, fires, explosions and severe storms can create large amounts of debris and waste. Quick cleanup and safe management of debris helps people to move forward with their lives. We also can reduce the potential for public health and environmental issues that may become worse the longer the debris piles up. Prompt cleanup helps prevent nuisance conditions, odors, disease and water contamination from runoff.

Vegetation

- Follow your city's and county's rules and ordinances for disposal of vegetation and sediment.
- ❑ Remove vegetation debris and sediment that was moved by storm water into ditches, natural or manmade ponds or other low lying areas to ensure they function properly.
 - ❑ Handle and store vegetation debris in a way that keeps it out of storm drains, streams, ditches and other surface waters. Store in upland areas away from concentrated stormwater flows, to prevent erosion and further movement of materials.
 - ❑ Property owners may dispose of vegetative debris as solid waste. Centralized collection facilities for debris are allowed by the department during disaster recovery without going through a formal permitting process.¹

Structures

- Use caution when handling and removing debris from buildings, whether partially damaged (when salvageable building materials remain) or completely destroyed (when only ash and debris remain).
- If the structures are partially damaged but safe to enter, you can gather and dispose of household hazardous waste (i.e., paints, car batteries, pesticides, etc.) at the county or municipal household hazardous waste facility.

- ❑ Minimize the potential for exposure to hazardous materials that might be present in damaged structures or debris from structures.
- ❑ Older structures are more likely to contain asbestos and lead. Some inert debris (non-leaching, or unable to dissolve in water) and sediment may be disposed of onsite.

¹ The local government or other sponsor of the collection site is responsible for proper debris management. Vegetation debris should be ground or chipped and removed. Otherwise, it may be considered an illegal disposal site subject to enforcement.

Household Chemicals

- Take household hazardous waste (HHW) to a county or municipal HHW facility or collection site for recycling, including intact paint and chemicals in containers less than 5 gallons.
- ❑ Check with your local environmental health agency to find a temporary HHW collection site.
 - ❑ If HHW cannot safely be removed from other flood debris or no recycling option is available, HHW can be taken to a landfill for disposal.

Food Waste

- ❑ Take spoiled, contaminated or expired food from homes and businesses to a landfill or a composting operation approved to accept food waste.
- ❑ Check with your city's and county's rules and laws when disposing of food waste. Follow the state Water Quality Control Division's stormwater regulations for food disposal:
 - Never dispose of food waste in any body of water or seasonal creek or pond.
 - Divert surface water from the pit with an upgradient diversion berm or other method.
 - Bury food waste at least 150 feet down-gradient from any groundwater supply source.
 - Make sure the bottom of burial pit is no less than five feet to the groundwater table.

Vehicles



Tornado, Joplin, MO, May 22, 2011

Remove fuel, oil, hydraulic fluid and other automotive fluids from vehicles prior to recycling or disposal of the vehicle at a landfill.

The guidance for refrigerant disposal in the section called "White Goods and Refrigerants" (opposite) also applies to vehicles with air conditioning.

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DEBRIS CLEANUP

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Dead Animals

Natural disasters can have serious impacts on agricultural areas. When there are many livestock deaths, the state adopts one of two possible approaches to disposal.

1. If there are a high number of animal deaths due to the disaster or disease, the Colorado Department of Agriculture (CDA) takes over. In this approach, CDA will direct all waste management activities related to carcass disposal.
2. When there are fewer livestock deaths, the Colorado Department of Public Health and Environment takes the lead. The department coordinates with local governments using the policies in the Animal Carcass Disposal Guidance.²

Some solid waste landfills may accept carcasses. Contact the landfill for more information.

Electronic Waste

- Bring damaged televisions, computers, DVD players and other electronic devices to an electronics recycler or collection location if the material is not contaminated by sewage, septage or other debris.
- ❑ Check with the state and local public health and environmental offices to find out whether they have issued a temporary waiver of the electronic waste landfill ban. A waiver may allow you to dispose of only residential electronic waste at a solid waste landfill when the electronic waste has been contaminated by sewage, septage or is otherwise considered unrecyclable from contamination after an emergency.
 - ❑ Waivers, when activated under unusual emergency circumstances, do not include electronic waste from businesses. Electronic waste from businesses must be managed as a universal waste or as a hazardous waste, depending on the materials.

Propane Tanks

Turn off valves if they are accessible and do not appear to be damaged. Tanks, brass and copper fittings and lines can be damaged in a destructive event, which can be dangerous.

- ❑ During fires, the pressure relief valve could open and release the contents. Contact your propane supplier immediately to have the system inspected and make repairs before using.

Call 9-1-1 if there is evidence of severe damage or the propane tanks cannot be removed from debris.

² Animal Carcass Disposal Guidance: www.colorado.gov/pacific/sites/default/files/HM_sw-carcass-disposal.pdf.



Heating Oil Tanks

During a destructive event like fire, floods or tornado, tanks can shift or fall from their stands and fuel lines may kink or weaken.

- ❑ Heat, such as from a fire, may cause tanks to warp or bulge. Non-vented tanks are more likely to bulge or show signs of stress.
- ❑ Contact your heating oil supplier to inspect the system before using it. Your inspector also will check for loose or damaged fittings and filters.

Septage and Sewage

Rising streams can flood domestic wastewater treatment plants. It could cause the plant to release untreated and partially treated sewage, which then is carried away by floodwaters. Septic systems also can be destroyed or damaged in a destructive event.

- ❑ In general, you do not need to separate debris contaminated with sewage or septage. It can be disposed of at a landfill mixed with other debris.
- ❑ Take care to prevent unintended exposure when working in or around septage and sewage.
- ❑ Do not spread the septage or sewage. Minimize or eliminate contact with the contaminated materials.

White Goods and Refrigerants

"White goods" is used to describe major household appliances such as washers, dryers, refrigerators, freezers, hot water heaters and other larger appliances. They are recycled frequently because they have a high percentage of metal.

- Refrigerators and freezers contain refrigerants. The refrigerants include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs).
- An EPA-certified technician with proper equipment is required to recover the refrigerants before recycling or disposal of these white goods.
- The landfill must keep documentation verifying refrigerant recovery onsite for three years.
- Download the [Owner's Refrigerant Recovery Record form](http://www.epa.gov/ozone/title6/608/recoveryform.pdf)³ or call the Chlorofluorocarbon Hotline at 303-692-3200. You can leave messages, report violations or request assistance for either the state or federal chlorofluorocarbon programs through the hotline.

³ Owner's Refrigerant Recovery Record form: from www.epa.gov/ozone/title6/608/recoveryform.pdf

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DEBRIS CLEANUP

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Asbestos: Naturally occurring minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability and high tensile strength. Asbestos may be found in flooring, carpet, roofing, drywall, ducts, adhesives, fillers such as caulking and joint compound and insulation, among many other essential building materials of any age.

Asbestos-containing materials

- Asbestos fibers may become airborne when building materials are damaged and the fibers are released.
- When asbestos-containing material is undisturbed, it should not cause a hazard to people.
- Exposure to the fibers can cause disease, particularly diseases affecting the lungs, which may not be discovered for many years.

Facilitating rapid recovery

During disaster recovery, the Colorado Department of Public Health and Environment may temporarily relax the requirements for asbestos inspection, handling and notification. CDPHE issues guidance based on the nature and severity of an event to provide a temporary, flexible and protective approach during emergency response and recovery.

This temporary modification only applies to Colorado's asbestos regulations. It does not change any federal requirements for debris cleanup and worker safety.¹ You do not need to have debris inspected or a state-issued demolition permit to remove scattered debris such as materials preventing rescue operations, blocking roads and waterways or otherwise impeding recovery efforts.

¹ Please contact the appropriate federal agencies regarding their regulations and compliance.



Big Thompson Canyon, September 22, 2013

Noel Bryan, CSU staff and Canyon resident

Procedures for asbestos removal

- If you know there is asbestos above regulatory levels in a home, commercial building or other structure, you must follow Colorado Regulation No. 8, Part B.²
- For homes, commercial buildings or other structures that are completely or partially destroyed and unsafe to enter to inspect, CDPHE needs to know whether the requirements for sampling and handling will be modified.
 - If so, disposal of this debris must be made at landfills approved to accept this waste.
 - Property owners are required to provide written notice of the demolition of buildings partially or completely destroyed. Email CDPHE's Asbestos Unit at cdphe.commentsapcd@state.co.us using the official *Demolition Notification Application* form found at www.colorado.gov/sites/default/files/AP_ASB_Demolition-Permit-Application-Form.doc.³
 - In some emergency situations, notification fees may be waived, as well as the 10-working day advance notification requirement.
 - A local agency, such as the county building department, environmental health department or emergency response team, must designate the building as being completely or partially destroyed and unsafe. Attach a photograph showing the building's condition.
- For structures with less damage where sampling and handling of potential asbestos-containing material is feasible, the owners must comply with all requirements in Regulation No. 8, Part B.

² Colorado Regulation No. 8, Part B: 5 CCR 1001-10, www.colorado.gov/pacific/cdphe/regulation-8-part-b-asbestos

³ Link downloads form. Please fill in the site address, owner, demolition contractor and landfill information only.

Check the website to be sure you are following the most up-to-date guidance, and for information on current incidents.
www.colorado.gov/cdphe/asbestos

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DEBRIS CLEANUP

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Asbestos inspection, abatement and disposal

- You can find a list of asbestos consulting firms that employ Colorado-certified asbestos building inspectors, general abatement contractors and contact information for landfills that will accept asbestos-containing material at www.colorado.gov/cdphe/asbestos.
- For more information including emergency modifications to Regulation No. 8, Part B,* please contact the Asbestos Unit at 303-692-3100 or cdphe.commentsapcd@state.co.us. CDPHE's Asbestos Unit can provide recommendations on how to respond to both widespread and site-specific issues.

Products that may contain asbestos

- Acoustical plaster
- Adhesives and mastics
- Asphalt floor tile
- Base flashing
- Blown-in insulation
- Boiler insulation
- Breaching insulation
- Carpet backings
- Caulking and putties
- Ceiling tiles and lay-in panels
- Cement pipes
- Cement siding
- Chalkboards
- Construction mastics
- Cooling towers
- Decorative plaster
- Ductwork flexible fabric connections
- Electric wiring insulation
- Electrical cloth
- Electrical panel partitions
- Elevator brake shoes
- Elevator equipment panels
- Fire blankets and curtains
- Fire doors
- Fireproofing materials
- Flooring backing
- Heating and electrical ducts
- High temperature gaskets
- HVAC duct insulation
- Joint compounds
- Laboratory gloves
- Laboratory hoods
- Laboratory tabletops
- Packing materials
- Pipe insulation
- Roofing felt
- Roofing shingles
- Spackling compounds
- Spray-applied insulation
- Textured paints and coatings
- Thermal paper products
- Thermal taping compounds
- Vinyl floor tile
- Vinyl sheet flooring
- Vinyl wall coverings
- Wallboard, including cement

Disposal of debris on-site

Most people will need to have all the debris removed after a disaster. The Solid Waste Act and regulations allow any person, other than governmental entities, to dispose of their own waste on their own property. Contact the Department for review and approval of your engineering design and operations plan before you begin. They must comply with the requirements for locations, restrictions, standards, design and operating rules. All on-site disposal activities also must comply with local (city and county) rules and ordinances.

There are inert (non-leachable and/or non-reactive) materials and non-inert (leachable and/or reactive) materials. These materials, if handled and disposed of appropriately, are not a danger 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 your own property with certain provisions:

1. The disposal of inert waste on the property must be approved by the local government agency.



Evans, September 25, 2013

FEIMA/Michael Rieger

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 5 feet above groundwater.
3. The materials need to be covered with at least 2 feet of clean fill.
4. The cover needs to be sloped for drainage and to prevent ponding.
5. The ground should be replanted to prevent erosion of the cover and surrounding materials.
6. A notice of the fill location should be placed in the property deed.

You also can dispose of non-inert materials on your own property. If the non-inert materials could be a risk to human health, such as asbestos, you also are required to have a post-closure care plan, financial assurance and an environmental covenant.

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DEBRIS CLEANUP

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Some containers require special handling.

HAZARDOUS MATERIALS

Most homeowners find hazardous materials during the cleanup phase of a disaster recovery effort. If you find anything that might be classified as a hazardous waste, you are required to bring the container or material to a landfill licensed to accept that type of material. These items must be safely removed and separated for testing and proper disposal.

Pressurized Containers

Propane tanks, propane cylinders, gas cylinders and other large pressurized containers

Most propane and other compressed gases are in small containers. The local fire department can handle most of these containers safely and effectively. They may request technical assistance from the local propane supplier and other gas marketers.

Larger scale emergencies could include cargo tank truck rollovers, train derailments or fires involving large stationary tanks or bulk plants containing flammable materials. In these emergencies, state and local officials coordinate among multiple agencies. With the resources of a number of different agencies, the responders can safely and efficiently resolve the situation.

Trained first responders determine how to handle the incident. The first responders base their approach on the type of container involved, container design and construction, container stress, whether it is an actual or potential leak and the position and location of the container. Small containers in good condition, or undamaged larger containers that still have structural strength might be reusable or safe to move for disposal or recycling. Sometimes propane industry handlers can remove the contents, while public safety responders supervise the operations and maintain safety.



Oklahoma County, OK, May 14, 2010

FEMA/Win Henderson

As a last resort, if the container is damaged to the extent that it should not be disturbed or removed, public safety authorities may consider releasing the contents into the air. This approach may be suitable for propane, for example, which dissipates quickly in open air. Firefighters can further reduce the potential hazard using fire hoses on fog pattern. This technique may not be appropriate for certain weather conditions or for other products that pose a different hazard, such as highly toxic or potentially explosive gases. These vessels require special handling as recommended by first responders and other experts familiar with the hazard.

Contact your local fire department for help if you find potentially hazardous materials after a disaster.



DEBRIS CLEANUP

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Non-Pressurized Containers

55-gallon drums, tote tanks, fuel tanks, cans, buckets and other storage containers

The first concern when dealing with non-pressurized containers is to be sure first responders and the public are protected. Extreme care is required when handling these containers. Even if they usually are not pressurized, the containers may be damaged during movement or placed outdoors where they are exposed to warmer temperatures, and pressure may build up. Pressure buildup may cause the contents to escape suddenly when caps, covers or valves are loosened.

If they are safe to move, the containers should be removed from the debris, set aside and eventually sampled. This is required to classify the waste correctly when labels are missing. It also helps for recycling or disposal as either a solid or hazardous waste. The condition of the container may determine how the waste will be packed or transferred to a new container.

- If responders find that the contents are hazardous waste,¹ the contents of the vessel must be disposed of at a facility with a permit for hazardous waste.
- If disturbing the container may result in the release of its contents, qualified waste handlers can empty the vessel in place, putting the contents into a new container for sampling, characterization and disposal. The handlers must have equipment on hand to control a sudden release if the containers leak or rupture from physical damage to the containers.

- Any debris that is visibly contaminated from the contents of the container should be separated from other waste until authorities determine the waste classification and required method of disposal.
- After the containers of hazardous materials have been removed, the ground should be inspected for contents that may have been spilled unintentionally. Look for visible staining or odors.
- Contaminated soil or other materials should be collected and disposed of along with the original contents of the container.
- If a release occurred, this information should immediately be reported to the Department's 24-hour Emergency Reporting Line at 1-877-518-5608. The resulting report will be sent to the appropriate agency for follow-up, including conducting further investigations and cleanup.

If the containers are intact, paint and other chemicals up to 5 gallons in size known or presumed to be from homes may be considered and managed as Household Hazardous Waste (HHW). The potentially hazardous materials in HHW should be transported to an approved county or municipal HHW facility for recycling, reuse or disposal. The containers must be separated and classified before disposal in accordance with their waste classification, either solid or hazardous waste. (See "Household Chemicals" on page 22.)

Businesses are required to meet different standards for waste disposal. If a temporary waiver is approved, it does not include similar items from businesses.

¹ Note: Hazardous waste is defined in 6 CCR 1007-3 Part 261 of the Colorado Hazardous Waste Regulations at www.sos.state.co.us/CCR/NumericalCCRDList.do?deptID=16&agencyID=141.



Lyons, October 19, 2013

FEMA/Patsy Lynch

Colorado's 2013 Floods

DEVASTATING IMPACTS ON FAMILIES AND COMMUNITIES

 18.2" rainfall, Boulder, September 2013	 1.6" rainfall, Boulder, average September
 10 Coloradans lost	 18,147 people evacuated
 Disaster declared in 18 counties to unlock federal aid	 1,852 homes destroyed
 39 major roads damaged and closed	 203 commercial structures destroyed

BEHAVIORAL HEALTH SUPPORT FOR RESILIENCY

 \$3.3 million from FEMA for community disaster behavioral health teams	 23,000 people in 352 education meetings; 3,000 in 161 counseling groups
 Up to 87 staff in 8 teams for community support services	 131,415 direct support services for 157,855 individuals

COSTLIEST NATURAL DISASTER IN COLORADO HISTORY

 \$3+ billion, estimated economic losses	 \$535 million, damage to state and local highways
 \$66.7 million awarded for 2,093 flood insurance claims	 \$55 million, farming and ranching losses

RECORD-BREAKING FINANCIAL ASSISTANCE

 \$61.7 million, FEMA aid for 16,555 homes	 \$347 million, FEMA public assistance for 1,161 projects
 \$56.9 million federal funds for watershed and conservation projects	 \$3.5 million state funds for drinking water projects
 \$3.5 million federal funds to repair U.S. highways	 10,000 state highways Flood Hotline calls, Sept-Dec 2013
 \$105.1 million, federal community development disaster recovery funds	 \$19.1 million, grants for parks, trails, open space, recreation

SEPTIC SYSTEMS

An onsite wastewater treatment system, also known as a septic system, could be damaged by fire, power outages, equipment failure, floods or other contamination of water supplies.

Inspect the system for damage.

- Check above-ground plastic piping that may have been damaged by heat.
- Inspect raised systems scorched or damaged by fire.
- Look for damage to piping where pipes enter the home or structure.
- Check the soil treatment area for damage by large vehicles such as firefighting equipment.
- Check access lids/risers for damage. Any open access to tanks or other components of the system should be flagged as a restricted area to prevent access to the opening.
- Inspect electrical components such as control panels or junction boxes.

If the septic system is damaged, backing up or malfunctioning, discontinue use and contact the county public health or environmental health agency for guidance and instruction.



EPA Resources

Septic Systems: What to do after a flood
water.epa.gov/drink/emergprep/flood/septic/systems.cfm

SepticSmart Home

water.epa.gov/infrastructure/septic/septicmart.cfm

Homeowner Tips for Flooded Septic Systems

1. Let it dry out

- Use as little water as possible until the system dries out.
- ⊘ Don't allow wastewater to go to the septic system until the system has recovered.
- ⊘ No baths, laundry or flushing toilets.
- ⊘ Do not put 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 to prevent damage and soil compaction.

2. Get help from a pro

- Turn off electric power to pumps, aeration or treatment systems.
- Have an electrical contractor or an installer trained for your system check electrical components for damage and watertightness prior to restoring power to the system.
- Pump and inspect septic tank and pump tank, if there is one. Silt, debris and other contaminants may have entered the tank.
- Inspect inlet and outlet tees or baffles for blockages caused by debris or fats and grease.

3. Wait

- ⊘ Don't pump tanks until groundwater level drops. Empty tanks, including concrete tanks, have less weight and are more buoyant. They can "porpoise" out of the ground, or move and 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, it may be possible to partially pump the tank the first time.
- ⊘ Don't rush. Water from the soil treatment area could flow back into the tank, which would require multiple pumpings.

WELL WATER SAFETY

It's your water.



If there are any doubts about the safety of the water in the well, contact the county health department or a certified lab for water testing.

- If the water tastes or smells earthy, smoky or burnt, it may be necessary to flush water lines.
- In addition to routine water quality testing, you may want to test your well after circumstances such as flooding or fires. Flooded wells must be thoroughly disinfected before using the water for drinking.
- Proper decontamination of a well requires specific equipment and experience. You may want to consult with a local licensed water well driller or pump installation contractor.¹
- Inspect the well and its components, including:
 - Electrical wires and connectors that supply power to the well.
 - Above-ground PVC plastic pipes used to bring water to the house.
 - Well houses and special equipment such as chlorinators, filters and electronic controls.
 - Pressure tanks that may have been exposed to excessive heat during fires.
 - Storage tanks, vents and overflow pipes.

¹ Licensed contractors for wells and pumps: www.water.state.co.us/groundwater/BOE/Pages/LicensedContractors.aspx.

Resources

- Certified safe drinking water testing laboratories: www.colorado.gov/pacific/sites/default/files/SDWMAY2015%20.pdf
- Drinking Water from Household Wells: www.colorado.gov/pacific/sites/default/files/WQ-DW-Publications-Drinking-Water-From-Household-Wells.pdf

Well water testing

- Be sure to follow your laboratory's sampling protocol when you take a water quality sample.
- Many laboratories provide containers with detailed instructions on how to take the sample. If a container is not provided, use a clean glass or plastic container that is rinsed three times with the well water before you collect the actual sample.
- Wash your hands prior to sampling and do not touch the inside of the container or lid.
- It is best to let the water flow for about 5 minutes before sampling.
- Keep the sample cool. Take it to the laboratory as soon as possible. If you have to mail the sample to the lab, draw the sample on Monday morning so it can be analyzed the same week.
- For best results, water samples should be analyzed within 30 hours of the initial collection.
- If the well or water system is contaminated, or if testing indicates that bacterial contaminants are present, collect samples for coliform testing. Disinfection of the well is recommended.
- Test for volatile organic compounds (VOC) and hydrocarbons if the well head is damaged or compromised.

It's good to know.

- Contaminated water does not always taste, look or smell different from safe drinking water. The only sure method to determine the quality of your water is to bring a sample to a laboratory for analysis.
- Swiftly moving flood water can carry large debris. Debris could loosen well hardware, dislodge well construction materials or distort the casing. Coarse sediment in the flood waters can erode pump components.
- Clean all the silt and sand in the pump, its valves and gears. If pumps are not cleaned and properly lubricated they can burn out.
- If your system was flooded or exposed to fire, do not turn on the equipment. Have a qualified electrician, well contractor or pump contractor inspect the wiring system first. All electrical components must be dry before electrical service can be restored.

DRINKING WATER SAFETY

Disinfect your well

1. Make a chlorine solution by mixing 1 gallon of unscented, regular household bleach (6% chlorine solution) in 10 gallons of water.
2. Add the bleach solution to the well between the well casing and pump drop pipe.
3. Disconnect the well from its storage and distribution systems.
4. Check to be sure the public wastewater system is functioning properly. Pump the well water to waste until the water is relatively clear.
5. Stop the pump and reconnect to the storage and distribution systems.
6. Start the pump and open all of the faucets on the system.
7. Continue to pump until a chlorine odor can be detected at the faucets. Close all the faucets and stop the pump.
8. Allow the chlorine solution to remain in the well, storage and distribution systems at least overnight, or preferably, 24 hours.
9. Pump the well to waste until the odor and taste of chlorine has disappeared. A second treatment may be needed if there was an excessive amount of contamination in the well or water supply system.
10. Two days after disinfection, collect a sample of water for bacteriological analysis. Use only a sterile container furnished by the state or local health department's laboratory.

NOTE: 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, refer to Rule 15 of Colorado Water Well Construction Rules for instructions. (Colorado statute CCR 402-2¹)

¹ Colorado statutes at Secretary of State website: www.sos.state.co.us/CCR/Welcome.do.

What you need to disinfect a well

- Unscented, regular household liquid bleach
- Rubber gloves
- Eye protection
- Funnel
- Old clothes

Damaged drinking water systems

Public drinking water systems must follow the regulations of EPA's Safe Water Drinking Act.

When the Colorado Department of Public Health and Environment learns of a water system problem, the Safe Drinking Water Act requires the state to evaluate the system and respond. CDPHE staff notify the local authorities and keep them updated.

The water supplier is required by law to notify and distribute information to its customers. The Safe Drinking Water Act is very detailed about the required content and specific language.



Disaster Assistance Center, Greeley, May 28, 2015

Brett Roberts

WASTE DISPOSAL RESOURCES

The following facilities may accept debris and waste materials known to contain friable asbestos.¹ Call to confirm the facility's policies.

Larimer County Landfill
LARIMER COUNTY
5887 South Taft Hill Rd.
Fort Collins, CO 80526
970-498-5770

Republic Services Landfill, Inc.
ALLIED WASTE SYSTEMS
8480 Tower Road
Commerce City, CO 80022
303-371-5115

Denver Arapahoe Disposal Site (DADS)
WASTE MANAGEMENT OF COLORADO
3500 S. Gun Club Road
Aurora, CO 80018
720-876-2620

Colorado Springs Landfill
WASTE MANAGEMENT OF COLORADO
13320 State Highway 94
Colorado Springs, CO 80929
719-683-4557

Republic Services Landfill, Inc.
ALLIED WASTE SYSTEMS
8900 Highway 93
Golden, CO 80033
303-279-9037

Buffalo Ridge Landfill
WASTE MANAGEMENT OF COLORADO
11655 WCR 59
Keenesburg, CO 80643
303-732-0218

Southside Landfill
WASTE CONNECTIONS
5715 W. State Highway 78
Pueblo, CO 81005
719-948-2900

Fountain Landfill
WASTE CONNECTIONS
10,000 Squirrel Creek Rd.
Fountain, CO 80817
719-382-9661

¹NOTE: Asbestos is considered friable when it can be crumbled by hand and is easily disturbed.

RECYCLING RESOURCES

The facilities below (and some landfills listed above and opposite) may accept concrete and metal materials that do not contain asbestos. Call to confirm the facility's policies.

Recycled Aggregate Products
EL PASO COUNTY
1775 East Las Vegas Street
Colorado Springs, CO 80903
719 575-0785

City of Fort Collins crushing operations
LARIMER COUNTY
1380 Hoffman Mill Road
Fort Collins, CO 80524
970-482-1249

NOTE: More registered recyclers are listed at www.colorado.gov/cdphe/swfacilities.

WASTE DISPOSAL RESOURCES

In addition to the landfills listed opposite and online,² the following facilities accept debris and waste material that do not contain asbestos. Call to confirm the facility's policies.

Front Range Landfill
WASTE CONNECTIONS
1830 Weld County Rd. 5
Erie, CO 80516
303-673-9431

North Weld Landfill
WASTE MANAGEMENT OF COLORADO
40000 Weld County Rd. 25
Ault, CO 80610
866-482-6319

Midway Landfill
WASTE MANAGEMENT OF COLORADO
8925 Rancho Colorado Blvd.
Fountain, CO 80817
719-382-8383

Montezuma County Landfill
MONTEZUMA COUNTY
26100 Road F
Cortez, CO 81321
970-565-9858

Lake County Landfill
LAKE COUNTY
1500 County Road 6
Leadville, CO 80461
719-486-3099

Phantom Landfill
FREMONT COUNTY
County Road 67
Penrose, CO 81240
719-372-6671

Custer County Landfill
CUSTER COUNTY
P.O. 1488
Westcliffe, CO 81252
719-783-2726

² Landfills: www.colorado.gov/cdphe/swfacilities. Additional facilities may be added to these lists. Please call the landfill before transporting loads to alert the landfill that the material is coming and confirm it will accept the waste.

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

MORE SOLID WASTE RESOURCES

- Colorado Counties, Inc.: www.ccionline.org for county contact information
- State Solid Waste Program: www.colorado.gov/cdphe/solidwaste
- Solid Waste Facilities: www.colorado.gov/cdphe/swfacilities
- Solid Waste Permitters Map: www.colorado.gov/cdphe/swpermitting
- Solid Waste Inspectors Map: www.colorado.gov/cdphe/swinspection

For more information, contact your local public health or environmental agency or the Colorado Department of Public Health and Environment's Hazardous Materials and Waste Management Division at 303-692-3300.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

24 / 7 Emergency Environmental Issues

1-877-518-5608

STATE RESOURCES

Colorado Department of Public Health and Environment
cdphe.information@state.co.us
www.colorado.gov/cdphe
303-692-2000 or 1-800-886-7689
TDD 303-691-7700

Emergency Preparedness and Response
cdphe.commentsoepr@state.co.us
www.colorado.gov/cohealth
303-692-2030

Agriculture - animal health, plants, consumer services
Colorado Department of Agriculture
www.colorado.gov/ag
303-869-9000

Air Pollution Control
cdphe.commentsapcd@state.co.us
www.colorado.gov/cdphe/apcd
303-692-3100

Asbestos Safety
cdphe.commentsapcd@state.co.us
www.colorado.gov/cdphe/apcd
303-692-3100

Behavioral Health and Disaster Recovery
cdphe.commentsoepr@state.co.us
www.colorado.gov/cohealth
303-692-2030

Consumer Products Safety
cdphe.commentsCPD@state.co.us
www.colorado.gov/cdphe/dehs
303-692-3645

Disease Control
www.colorado.gov/cdphe/dceed
303-692-2700

Drinking Water
cdphe.commentswqcd.state.co.us
www.colorado.gov/cdphe/wqcd
303-692-3500

Environmental Agriculture
cdphe.commentsCPD@state.co.us
www.colorado.gov/cdphe/dehs
303-692-3645

Environmental Epidemiology and Toxicology
www.colorado.gov/cdphe/dceed
303-692-2700

Environmental Health and Sustainability
cdphe.commentsCPD@state.co.us
www.colorado.gov/cdphe/dehs
303-692-3645

Food Safety
cdphe.commentsCPD@state.co.us
www.colorado.gov/cdphe/dehs
303-692-3645

Hazardous Waste and Materials Management
comments.hmwmd@state.co.us
www.colorado.gov/cdphe/hm
303-692-3300

Mental Health and Disaster Recovery
www.colorado.gov/cohealth
303-692-2030

Motor Vehicle Emissions
cdphe.commentsapcd@state.co.us
www.colorado.gov/cdphe/apcd
303-692-3100

Radiation Safety
comments.hmwmd@state.co.us
www.colorado.gov/cdphe/hm
303-692-3300

School Chemicals Safety
cdphe.commentsCPD@state.co.us
www.colorado.gov/cdphe/dehs
303-692-3645

Wastewater
cdphe.commentswqcd.state.co.us
www.colorado.gov/cdphe/wqcd
303-692-3500

Water Systems Safety
cdphe.commentswqcd.state.co.us
www.colorado.gov/cdphe/wqcd
303-692-3500

Water Quality Control
cdphe.commentswqcd.state.co.us
www.colorado.gov/cdphe/wqcd
303-692-3500

CDC: Disasters
www.cdc.gov/disasters/
www.cdc.gov/es/disasters/ (Español)

National Center for Healthy Housing
*Creating A Healthy Home: A Field Guide for
Clean-up of Flooded Homes*
www.nchh.org/Portals/0/Contents/Flood-CleanupGuide_screen_.pdf

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

EPA: Mold
www.epa.gov/mold

FEMA
www.ready.gov
www.fema.gov

American Red Cross
www.redcross.org