

Disaster  
Information  
Resources



# Storm Recovery Guide

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Household cleanup questions can be answered by ISU Answer Line at 1-800-262-3804. Additional information can be obtained by calling Iowa Concern Hotline at 1-800-447-1985.

IOWA STATE UNIVERSITY  
University Extension

# Be Safe: Stay Healthy after a Disaster

Natural Hazards Series: Recovery - Part 1



The forces of nature – wind, water, earthquake and extremes of temperature – can leave behind debris-strewn areas, contaminated water, spoiled food, displaced wildlife and conditions which, if not treated properly, may lead to health problems. In these pages you'll find information to help you avoid and recover from some of the hazards created by wind and water; severe winter weather is covered in a separate publication. Remember to take care of *yourself* and your family first, then deal with the *things* you may have lost to the disaster.

## Safety in a Disaster Area

- Keep a radio on so you can hear bulletins and other announcements.
- Avoid riding, driving or walking through a flooded area. Flooded roads are weakened, ditches are hard to distinguish from roads and bridges may be washed out. Never go around a police barricade.
- Walk or drive cautiously. Debris-filled streets are dangerous. In flooded areas, washouts may have weakened roads and bridges, and they could collapse under the weight of your vehicle.
- Don't touch any building, car or other structure that has a fallen power line touching it. Call a professional electrician or power company representative to remove the line.
- Don't use flames or sparking devices until you're sure there is no natural gas leaking in the area.
- Be careful around damaged buildings and trees. These may fall if damaged severely.
- Wear protective clothing, sturdy shoes and gloves.
- Assume that water supplies are contaminated.
- Consider all foods that have been in contact with floodwater to be contaminated.
- Be aware that snakes, rodents and other animals may have taken refuge in storm debris or even in your home. Use a poking stick to announce your approach and allow animals to flee.
- If you are bitten by a poisonous snake, don't try to treat the bite yourself. Go to the nearest hospital for treatment immediately. Make a mental note of the appearance of the snake for identification and treatment purposes.
- Keep small children, pregnant women and people with health problems away from the flooded areas until cleanup is complete.
- If children are in the area, be sure they are safe and being cared for at all times. Never leave young children alone or allow them to play in damaged buildings or areas strewn with debris.

- Learn to recognize and deal with stress.
- If you get a scratch, cut or brush burn from flood debris and have not had a tetanus booster in the last few years, consult your doctor immediately.

## Dangers of Debris

Debris is hazardous. It often has sharp or rough edges; it may cause falls; it may contain hazardous material such as asbestos, lead or fiberglass; and it may have been contaminated with chemicals or germs by the flood or storm.

### Contamination

Floodwater may have flowed through the local sewerage system before reaching your property. If it has come from upriver, it may contain contaminated runoff. Such water may have elevated levels of fecal coliform and chemicals. Floodwaters may have picked up pesticides, herbicides, fertilizers, gasoline and other chemicals commonly held in household storage areas.

The bacteria which cause **tetanus**, or lockjaw, may lie dormant in soil. This is why cuts from tools or other objects that have been on the ground are particularly hazardous. Once the dormant forms (spores) of tetanus enter the body, they begin to multiply and form a powerful toxin that affects muscles. The most common symptoms are a stiffness of the neck muscles and painful spasms of the jaw muscles. Other muscle spasms may occur later. Tetanus frequently causes death. Symptoms of tetanus may appear from four days to three weeks after the wound is infected. About half the tetanus cases in the United States result from injuries considered trivial at the time they happen.

If you have not had immunization against tetanus and receive a scratch, cut or brush burn, consult a physician immediately. An immediate injection of tetanus antitoxin will last long enough to prevent infection from developing, if given in time.

### Hazardous Materials

Some of the debris on your property may contain asbestos (roofing, siding, flooring tiles) or be painted with lead-based paint (pre-1978 paint). Airborne asbestos and lead dust are dangerous to inhale or ingest (eat), but they are generally harmless when wet. They should be handled with gloves and bagged while wet. Fiberglass fibers from insulation will irritate skin and lungs after contact or if inhaled; collect carefully and bag.

### Burning

In areas where burning is permitted, be particularly careful not to burn asphalt roofing, vinyl siding or any form of treated lumber. The smoke can cause eye and lung

irritation or other problems. Don't burn wood with lead-based paint since the lead fumes are poisonous.

### Infestation

Proper cleanup and disposal of debris will reduce the potential for nesting by rodents, snakes and insects. If your debris will not be disposed of quickly, be sure to pile it as far from the building as possible to keep infestations in a concentrated area away from the home. Don't let children play on or around debris.

## Approaching and Entering a Damaged Building

Before entering a damaged building, check for structural damage. Make sure the building is not in danger of collapsing. Look for leaning walls, sagging roofs and ceilings, and weakened support columns.

- Turn off any outside gas lines, and let the house ventilate for several minutes to remove escaping gas.
- Be sure all electric service is turned off before entering for the first time. If the main disconnect is inside the house, it would be wise to call your utility company for assistance. Even if power is out in your neighborhood, disconnect the main switch, fuse or circuit breaker at your home, and disconnect all circuits.
- When entering the building, don't use an open flame as a light source; use a battery-operated flashlight. **DO NOT SMOKE.**
- **Enter carefully.** Walking surfaces may be slippery or uneven. Check for a sagging ceiling; wet insulation or pocketed water can cause ceilings to fall. Once in, unplug all appliances that have been flooded. Remember that some appliances can shock you even after the power is turned off.

Part 3 of this publication deals with determining and stopping structural damage.

## Food and Water Safety

### Water

After a major storm or flood, you must assume all water sources are contaminated until they are proved safe. Purify all water used for drinking, cooking and for washing eating and cooking utensils. Also purify the water used for washing hands, body and kitchen and bathroom surfaces. Do NOT try to use or purify water that has a dark color, an odor or contains floating material. Note that the purification procedures outlined here reduce biological contamination only; if you suspect chemical contamination, do not use the water.

Choose ONE of these methods to purify water that has biological contamination. Boiling is the most effective method of disinfecting of water, particularly for people who have severely weakened immune systems (infected with HIV/AIDS, cancer and transplant patients taking im-



munosuppressive drugs, or people born with a weakened immune system) and for infants and elderly who wish to take extra precautions.

- Boil water for one full minute in a clean container. The one-minute boil time begins after the water has been brought to a rolling boil. (The flat taste can be eliminated by shaking the water in a bottle or pouring it from one container to another.)
- If the water is clear, mix 1/8 teaspoon or 16 drops of unscented, liquid chlorine laundry bleach with one gallon of water and let it stand for at least 30 minutes prior to consumption. If the water is cloudy or colored, use 1/4 teaspoon per gallon of water. Be sure to mix thoroughly. If the treated water has a chlorine taste, pour it from one clean container to another several times.

**References:** *USDA Food Safety and Inspection Service, Keeping Food Safe During an Emergency, 2005 and Louisiana Department of Health and Hospitals, Office of Public Health, News Release, Drinking Water Warning Issued to Southeast LA Residents, August 31, 2005*

- Other treatments such as iodine or purification tablets are not recommended.

### Water Well Purification

#### *How do I clean and disinfect my well after a flood?*

See ISU Extension publication PM 899, Shock-Chlorinating Small Water Systems.

## Foods and Food Preparation Items Contaminated by Flood Water

- Do not eat any food that may have come into contact with floodwater.
- Discard all food that came in contact with floodwaters including canned goods. It is impossible to know if the containers were damaged and the seal compromised.
- Discard wooden cutting boards, wooden spoons, plastic utensils, baby bottle nipples and pacifiers. There is no way to safely clean them if they have come in contact with contaminated flood waters.
- Thoroughly wash metal pans, ceramic dishes and utensils with hot soapy water and sanitize by boiling them in clean water or by immersing them for 15 minutes in a solution of 1 teaspoon of chlorine bleach per quart of water.
- Clean and sanitize all kitchen surfaces, especially those that may have been contaminated by floodwaters.
- Wash and sanitize your dishes, utensils and kitchen appliances before using them.

## Foods Flooded While “on the vine”

Discard any fruits and vegetables you did not harvest before a flood. This applies to any food product which was maturing or mature at the time of the flood, both above and below ground. Examples include squash, cabbage, broccoli, tomatoes, potatoes and carrots. Most home garden plants will die from the flood. In the absence of specific research on the safety of produce from a plant which was exposed to flood water before fruit set, and given the uncertainty of what may have been in the floodwater, the LSU AgCenter recommends pulling up and discarding a flooded garden and replanting it.

## You May Run into Critters in Unusual Places

Many animals in the path of a major storm are displaced and left homeless. It's common to find these animals seeking shelter and food in areas close to people — in houses, storage sheds, barns and other buildings — and under debris. Structures damaged in a storm are particularly attractive and provide easy access for wildlife.



### Outdoors

- Watch where you place your hands and feet when removing or cleaning debris. If possible, don't place your fingers under debris you intend to move.
- Wear snake-proof boots at least 10 inches high or snake leggings in heavy debris areas where snakes are likely to be found.
- Never step over logs or other obstacles unless you can see the other side.

As soon as possible after a storm, remove from around houses and buildings all debris that provides protective

cover for displaced animals. Keep the lawn and field vegetation mowed at a low level to eliminate protective cover. Remove any potential food source.

Rats, mice and squirrels are unwelcome post-storm guests. They can damage property and, in extreme cases, pose a potential health problem. It's a good idea to get rid of them. Seal all openings around the house a quarter-inch and larger to exclude snakes and other animals.

### Tips on Rodent Traps and Baits

- Poison baits registered for rat and mouse control contain anticoagulant and nonanticoagulant toxicants. All rodent baits are effective in controlling these pests.
- Snap traps are effective in capturing nuisance rats and mice. Successful trap baits for the trigger mechanism include bacon skin, peanut butter, oatmeal and cotton balls. Check traps each day.
- Traps, including No. 0 or 1 leghold traps, box traps and cage traps, will catch squirrels. Regular rat traps will catch flying squirrels. Good baits are apple, cracked corn and pecans removed from the shell, peanut butter and sunflower seeds.

### Snakes

The only poisonous snakes in this region are rattle snakes – and it is highly unlikely that you will encounter them.



If you encounter a snake outdoors, step back and allow it to proceed on its way. Snakes usually move slowly, and a person can easily retreat from a snake's path. If you find a snake in your house, try to isolate the snake within a small area of the house.

Nonpoisonous snakes can be captured by pinning them down with a long stick or pole, preferably forked at one end, and then scooping them up with a flat-blade shovel. If you are uncomfortable removing the snake yourself, seek someone within the community who has experience handling snakes to do it for you. A good starting point is your local animal control shelter or sheriff's department.

# Avoiding Mold Hazards

A flood-damaged building requires special attention to avoid or correct a mold population explosion. Mold problems can result in damage to materials and health. The longer mold is allowed to grow, the greater the risk and the harder it is to remedy. As soon as the floodwaters recede and it is safe to return, don't delay clean-up and dry out.

## What Is Mold?

Molds are a type of fungi. They serve as nature's recycler by helping to break down dead materials. Molds produce tiny cells called spores that float and spread easily through the air. Live spores act like seeds, forming mold growths (colonies) when they find the right conditions – moisture, nutrients (nearly anything organic) and a suitable place to grow. Of these, moisture is the key factor -- for growth and for control.

## Mold and Health

Exposure to molds can affect health. People are mainly exposed by breathing spores or tiny fragments, but can also be affected through skin contact and by eating mold contaminated food. Both live and dead mold spores can affect people.

The types and severity of health effects from mold vary widely and are hard to predict. It depends on the sensitivity of the person, the amount and type of exposure, the length of exposure, the types of mold and other factors.

The most common health problems caused by mold are allergic reactions. People who are sensitive to mold commonly report nasal and sinus congestion, coughing, wheezing/breathing difficulties, sore throat, skin and eye irritation, sinus and upper respiratory infections. Although there is wide variation in how different people are affected, long term or high exposure can be unhealthy for anyone. Exposure to mold can trigger asthma attacks, may suppress the immune system or have other effects.

At greater risk of being affected more severely and sooner than others are children, the elderly, people with respiratory conditions or sensitivities such as allergies and asthma, and those having weakened immune systems. If you feel you or your family's health is affected by mold or you have special health concerns that increase your risk, you should avoid any more exposure and tell your doctor or health professional about your symptoms and mold exposures.

## What is "toxic mold"?

Some types of mold can produce harmful chemical compounds (called mycotoxins) in certain conditions, but don't always do so. Molds that are able to produce toxins are common. If a toxin is produced, it may be present in live and dead spores and fragments.

Although potential effects of specific mycotoxins are known, identifying a mold that can produce mycotoxins does not tell you whether or not you have been or will be exposed to a toxin in a harmful amount. Still, all indoor mold growth is potentially harmful and should be removed promptly, no matter what type of mold is present or whether or not it can produce a toxin.

"Black mold" is a meaningless term since many types are black. It has become a popular label for *Stachybotrys*, a toxigenic mold that has received major media attention for its suspected, yet not proven, connection to serious conditions and infant deaths.

## Mold Testing and Remediation Services

Mold testing in a home is not usually needed and is rarely useful to answer health concerns. Some insurance companies and legal services may require sampling for evidence. Professional mold remediation contractors may test before and after cleanup to verify the cleanup's effectiveness.

To protect your family's health and home, make sure the mold clean-up process is done as safely and completely as possible – as soon as possible. Using a well-trained and properly equipped professional can offer the safest remediation, but this is often not possible for many. If you hire a contractor to remove mold, seek a licensed mold remediation contractor with special training and equipment such as HEPA vacuums and dehumidifiers. Get in writing the cost, methods and steps to be used. Compare their procedures with EPA's Mold Remediation In Schools and Commercial Buildings available online at [www.epa.gov/mold](http://www.epa.gov/mold). Also review the CDC's Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes Katrina and Rita available online at [www.bt.cdc.gov/disasters/mold/report/](http://www.bt.cdc.gov/disasters/mold/report/)

## Do-It-Yourself Mold Removal Guidelines

If you need to or choose to clean up on your own, use these steps to do so as safely and effectively as you can and refer to EPA's A Brief Guide To Mold, Moisture, and Your Home at [www.epa.gov/mold](http://www.epa.gov/mold).

1. *Wear Protective Gear:* Always wear a respirator rated N-95 or higher when inside a moldy space. During clean-up, also wear gloves and goggles. Go outside frequently to breathe fresh air. Some types of respirators have valves to make it easier to breathe. A properly fitted half-face or full-face respirator with filter cartridges provides greater protection and comfort than the dust mask types.
2. *Isolate Work Area and Ventilate to Outdoors:* Disturbing mold colonies during cleanup can cause a huge release of spores into the air, so seal off the moldy areas from the rest of the house. Open windows, and don't run the central air system during cleanup. Tape plastic over air grilles, and drape plastic in the stairwell if the second story is dry and clean. If power is on, put a box fan in a window to blow out and exhaust mold-filled air to the outdoors.
3. *Remove Moldy Porous Materials:* Porous moldy or sewage-contaminated materials should be removed, put in plastic bags if possible and thrown away. To reduce the release and spread of mold spores, it is helpful to cover moldy material with plastic sheeting before removing it.
  - Remove all flooded carpeting, upholstery, fabrics and mattresses right away. It's best to discard them, but if you hope to salvage a valuable item, have it cleaned, disinfected and dried quickly outside the home. Never reuse flooded padding.

- Remove all wet fibrous insulation – even if wallboard appears to dry. Wet insulation will stay wet far too long, leading to the growth of hidden unhealthy mold and decay fungi inside the walls. Cut wall covering above the level that was wet; water can wick up above the flood level.
  - It's best to remove all moldy, porous materials, especially if there is heavy or long-term mold growth -- including gypsum wallboard, processed wood products (particle board, chip board, etc.), ceiling tiles and paper products.
  - Plaster, wood paneling and non-paper faced gypsum board walls that dried, are in good condition and have no insulation in the wall may be cleaned and sanitized to salvage them. It's best to remove multiple layers of paint on old plaster to aid drying. There is a risk of mold on the backside, however, that can release spores into the home through air leaks in the walls. If you choose to restore these materials, try to seal interior gaps with caulk.
  - Remove all vinyl wallpaper, flooring, and any other materials that hamper drying of framing toward the interior space. All interior side plastic sheeting, foil faced insulation and anything else that can act as a water vapor barrier should be removed.
4. *Clean and Disinfect:* Surface mold can be effectively cleaned from non-porous materials such as hard plastic, concrete, glass and metal; solid wood can also be cleaned since mold cannot penetrate solid wood, but grows only on the surface. Cleaning should remove, not just kill, the mold, because dead spores can still cause health problems.

After cleaning, you may choose to use a disinfectant to kill any mold missed by the cleaning. If there was sewage contamination, disinfection is a must. If you disinfect, follow label directions and warnings, handle carefully, wear rubber gloves, and never mix bleach with ammonia or acids. Many disinfectants, including bleach, can kill molds, but do not prevent regrowth of new colonies.

- Remove any sediment. Hose out opened wall cavities, if necessary.
  - Wash dirty or moldy materials with non-phosphate all-purpose cleaners, because phosphate residue is mold food. Rough surfaces may need to be scrubbed. Rinse, but avoid pressure spray that can force water into materials.
  - If available, use a HEPA filtered vacuum (not a regular vacuum) to remove dust and mold residue.
  - Disinfect wall cavities and other materials after cleaning to kill any remaining fungi and bacteria. Soil can make some disinfectants, including bleach, less effective. On colorfast, non-metal surfaces, you can disinfect with a solution of 1/2 - 1 cup household chlorine bleach per gallon of water. Do not use in the air conditioning system. Milder, less corrosive disinfectants include alcohols, phenolics and hydrogen peroxide.
5. *Consider Borate Treatment:* Applying a borate treatment to wood framing can provide some resistance to

termites, decay and mold. The type of borate solution that penetrates the wood over time is more expensive but offers greater protection. Other mold inhibitors such as latex zinc paints and fungicides may also help inhibit mold growth during drying. Do NOT apply sealants that can reduce drying.

Framing materials that are difficult to clean or replace (such as “blackboard”, OSB sheathing, rough surfaces, etc.) can be painted with latex paint to “encapsulate” any remaining mold and prevent its release to the air.

6. *Flush the Air:* After cleaning and disinfecting, air out the building. Use fans in windows to pull mold spores to the outdoors.
7. *Speed Dry:* Dry all wet materials as quickly as possible. Close windows and air condition or heat, run fans and use a dehumidifier, if possible. If there is no power, keep windows open.
8. *Remain on Mold Alert:* Continue looking for signs of moisture or new mold growth. New mold can form in as little as 2-3 days if materials stay wet. Wood and other materials that may look dry can still be wet enough to support new growth. If mold returns, repeat cleaning and, if possible, use speed drying equipment and moisture meters. Regrowth may signal that the material was not dry enough or should be removed.
9. *Do Not Restore until All Materials Have Dried Completely:* Wood moisture content should be less than 20%. Do NOT use vinyl wallpaper, oil-based paint or other interior finishes that block drying to the inside.
10. *Restore with Flood Resistant Materials:* If possible, “wet floodproof” your home so it can withstand a flood with less damage. Use closed-cell spray foam insulation in walls, or rigid foam insulating sheathing that does not absorb water. Choose solid wood or water-resistant composite materials. Elevate wiring and equipment. Consider removable, cleanable wainscoting or paneling. Use paperless drywall that does not provide a food source for mold. Use restorable flooring such as ceramic tile, solid wood, stained concrete, etc.

## These are Trying Times

A natural disaster leaves more than a trail of property destruction in its wake. Many times it leaves thousands of victims with a destroyed sense of balance. In addition to avoiding physical hazards, restoring buildings and replacing material possessions during the recovery period, you need to be aware of stress and how to reduce it. During the recovery period, devote some time to getting your stress level under control.



Start by being patient with yourself and others. Don't expect things to restore themselves instantly. Focus on the big picture instead of the little details. Determine what's really important, and keep in mind that different people, even in your own household, will have different priorities. Be tolerant of mood swings and expressions of disbelief, anger, sadness, anxiety and depression. Don't overlook the feelings of children.

### Tips for Handling Stress

- Try to keep your body healthy and strong. Keep your family's diet as nourishing as possible.
- Talk with friends, family, ministers. In crisis situations, a supportive network is essential. Provide help to other families when possible; it will make both of you feel better.
- Resist the temptation to resort to bad habits. Alcohol, blaming, denial, smoking, overeating and revenge eventually cause more problems than they solve.
- Think positive. Develop a sense that things will work out.
- Make time for rest and relaxation.

### Helping Your Child Cope

Children cope with stress every day. One of their biggest stressors is fear. Children's four major fears are **death, darkness, animals** and **being abandoned**. Children have a variety of fears: being afraid of the dark or the doctor or the vacuum cleaner, for instance. Disasters are somewhat different for children because they affect entire communities. Disaster is highly publicized and children sense that adults, too, seem to be afraid. So, it is normal for children to remain stressed and have a hard time coping for a long time after a disaster.

Even children who have not been in the disaster may be afraid and worried that it will happen to them. Young children are usually worried because they don't understand what is happening. They can't always tell the difference between what is real and what is pretend. Schoolchildren are worried for a different reason. They can tell the difference, but don't yet fully understand the laws of probability. They understand what causes a storm but may expect disasters or storms to reappear soon and often.

It's hard to predict which children will be most affected and how. Research indicates children's fears vary according to age, maturation and previous learning experiences. In a disaster, children may have encountered three of the four major fears. Undoubtedly, this will have an impact on their ability to cope for quite some time.

Another important aspect about children's fears indicated in research is that fears may be intensified when adults back away from discussing painful topics with children. Many families ban all painful topics from family conversation. Such strategies reap high costs in terms of intensified despair and negativity among children. Talk to the children about the disaster and their fears.

#### *After a disaster, some children may:*

- be upset at the loss of a favorite toy, blanket, teddy bear, etc.
- be angry. They may hit, throw, kick or act out in other ways.
- become more active and restless. They may wander about and not be able to settle down.
- be afraid of the disaster recurring. This is especially true

- if there is another storm or heavy rain soon. They may ask repeatedly, "Will it come again?"
- be afraid to be left alone or afraid to sleep alone. Children may want to sleep with a parent or another person. They may have nightmares.
- behave as they did when younger (sucking the thumb, wetting the bed, asking for a bottle, wanting to be held).
- have symptoms of illness such as nausea, vomiting, headaches, not wanting to eat, running a fever.
- be quiet and withdrawn, not wanting to talk about what happened to them.
- become upset easily - crying and whining.
- feel guilty that they caused the disaster because of something they did.
- feel neglected by parents who are busy trying to clean up and rebuild their lives and homes.
- refuse to go to school or to child care. The child may not want to be out of the parent's sight.
- become afraid of loud noises, rain, storms.
- not show any outward sign of being upset. Some children may never show distress because they do not feel upset. Other children may not give any evidence of being upset until several weeks or months later.

#### *What parents and other adults can do to help children cope with feelings:*

Talk openly about what is going on. Give simple, direct answers to questions. Children have radar. They know when adults are afraid or worried and not telling them the truth. They hear other adults talk. It doesn't help to tell a child "not to worry" yet show all the signs of worrying yourself. Take time to talk openly, honestly and often.

Listen to your child. Watch your child at play. Often children express fear and anger when playing with dolls, trucks or friends after a major disaster. Acknowledge the child's feelings, and encourage conversation.

Reassure your child, "We are together. We care about you. We will take care of you."

Hold your child. Provide comfort. Touching is important for children during this period. Close contact helps assure children that you are there for them and will not abandon them

Spend extra time putting your child to bed. Talk and offer assurance. Leave a nightlight on if that makes the child feel more secure.

Help "act out" with books, art, toys and drama. Work with claydough, paint, water play. If children need something to kick or hit, give them something safe like a pillow, ball or balloon.

If your child lost a special toy or blanket, allow him to mourn and grieve (by crying, perhaps). It is all part of helping the young child cope with feelings about disaster. In time, it may be helpful to replace the lost object.

For more information, contact your local LSU AgCenter Office listed under local government in the telephone directory.

# Surviving and Recovering From a Power Outage

*Natural Hazards Series: Recovery - Part 2*



One of the first things to go in a natural disaster is electrical service. You may suffer an outage even if you escape all other aspects of a storm, but it doesn't take a disaster to disrupt your service. An automobile accident or fallen tree may take out your power. The power company itself may suffer an equipment failure. Generally, these localized problems can be corrected before you need to take any action.

It is generally a good idea to turn off air conditioners, heaters and other appliances while the power is off. Otherwise, they will try to come on together when power is restored, and your circuit breakers or fuses may blow. Unplugging appliances will also protect them from power cycles and surges which may accompany restoration of electrical service.

Your primary concern with a prolonged power outage during the summer is usually knowing whether the food stored in refrigerators and freezers is safe. In severely hot weather, the loss of electric fans may also be life threatening. In severely cold weather, trying to stay warm and prevent freeze damage will be of concern.

If the power is off or will be off for an extended period, the information on these pages may help.

## Using Generators for Electrical Power

Emergency generators become popular after disasters. They can help save food in freezers and refrigerators, but they also may be dangerous if not used properly.



The capacity of a generator is usually stated in watts. For example, you may have a 2,000-watt generator. This is the same as a 2-kilowatt (K.W.) generator, because 1,000 watts is equal to 1 K.W.

Watts is an electrical term determined by multiplying volts times amps. For example, if an appliance requires 120 volts and uses 10 amps, this appliance requires 1,200 watts. This information is on the nameplate of the appliance. By this formula, you can determine what you can run on your generator. For example, an appliance that requires 1,200 watts and one requiring 600 watts could be run on a 2,000-watt generator. However, appliances with motors require more current to start than they do after they are running. A suggestion is to start a refrigerator, allow it to begin running and then plug in another appliance.

### Generator Tips

- Gasoline engines produce carbon monoxide. Don't run them in an enclosed area.
- Check the oil level in the engine before using and on a regular basis (for example when refueling).
- Let the engine cool off before refueling.
- The generator should be kept a safe distance from structures because of engine heat.
- Place the generator on a level surface to keep oil at proper level in engine.
- Water will damage generators as well as produce an electrical hazard, so keep the generator dry.
- A voltage drop may occur if too long an extension cord is connected to the appliance or if one with too small a wire size is used. If the extension cord becomes very warm, it is inadequate.
- Connect the generator directly to the appliance.
- You should not try to hook generators to your electrical supply box.
- Ground the generator as stated in the instructions. If you use an extension cord, use one with a ground plug.
- Have the generator running before the A.C. circuit on the generator is turned on or before you plug in the appliance.
- An appliance that has a heating element, such as a toaster or hair dryer, consumes a large amount of current. It's best to avoid using these types of items.
- If an appliance has gotten wet or damaged, it may not be in good working order. Using the appliance may damage the generator.
- Some generators have the ability to produce 115/120 volts or 220 volts. Select the outlet that corresponds to the voltage requirement of the appliance.



## After a Power Outage

There are certain precautions you should take before you begin using food from refrigerators and freezers that have been off for more than a few hours.

- Never taste a food to determine its safety!
- Food may be safely refrozen if it still contains ice crystals or is at 40° F or below. Check the temperature of the freezer with an appliance thermometer or food thermometer. If the food still contains ice crystals or is at 40° F or below, the food is safe.
- If a thermometer has not been kept in the freezer, check each package of food to determine its safety. If the food still contains ice crystals, the food is safe.
- Raw meats and poultry, cheese, juices, breads and pastries can be refrozen without losing a lot of quality. Prepared foods, fish, vegetables and fruits can be refrozen safely, but quality may suffer. Mark these to be used as soon as possible.
- Food that contains ice crystals or is at 40° F or below may also be cooked and served or frozen after cooking.
- Remember that seafood will be among the first to thaw and will need attention first. Also, ground meat is likely to spoil before other meats.
- Food that was held above 40° F for more than two hours generally should be discarded because bacteria may multiply to unsafe levels under these conditions. The only foods that can be refrozen under these conditions are well-wrapped hard and processed cheeses, butter and margarine, breads and pastries without custard fillings, fruits and fruit juices that look and smell acceptable.
- Vegetables held above 40° F for less than six hours may be refrozen, but with quality loss. Pecans and other nuts may be refrozen safely but may suffer quality loss.

When the refrigerator is operating again, use these guidelines to decide what to do with foods that were stored in the refrigerator:

- Discard refrigerated perishable food such as meat, poultry, fish, soft cheeses, milk, eggs, leftovers and deli items after four hours without power.
- Condiments such as ketchup, mustard, pickles, relishes, picante sauce, vinegar-based salad dressings, Worcestershire sauce and steak sauces should be fine. Discard opened mayonnaise, tartar sauce, and horseradish if above 50° F for over eight hours. Jams, jellies, preserves and syrups are all right because sugar serves as a preservative. Check for mold growth.
- Hard cheese will be OK, and if the temperature hasn't gotten too warm inside the refrigerator, blocks or slices of processed cheese can also be used. Well-wrapped butter and margarine can usually be kept as long as they do not melt, but should be discarded if rancid odors develop. Keep unopened packages of cream cheese, but discard if they are moldy when opened.

- Fresh fruits and vegetables are safe as long as they're still firm and there's no evidence of mold, a yeasty smell or sliminess. Juices are safe as long as there's no evidence of mold growth and they look and smell acceptable. Cut fruit should be discarded if above 40° F for more than 2 hours.
- Pecans, other nuts, peanuts and peanut butter also are safe.

## How to Cook When the Power Goes Off



After a disaster has knocked out electricity or gas lines, cooking meals can be a problem and can be hazardous if a few basic rules are not followed.

Charcoal or gas grills are the most obvious alternative sources of heat for cooking. Never use them indoors. In doing so, you risk both asphyxiation from carbon monoxide and the chance of starting a fire that could destroy your home.

- Camp stoves that use liquid or solid fuel should always be used outdoors.
- Use small electrical appliances to prepare meals if you have access to an electrical generator and the generator has sufficient capacity. Do not use an appliance that has been flooded until it has been checked for shorted circuitry.
- You can use wood for cooking in many situations. You can cook in a fireplace if the chimney is sound.
- If you have to build a fire outside, build it away from buildings, never in a carport. Sparks can easily get into the ceiling and start a house fire.
- Never use gasoline to get a wood or charcoal fire started.
- Do not use "treated" wood as fuel for a cooking fire.
- Make sure any fire is well contained. A metal drum or stones around the fire bed are good precautions. A charcoal grill is a good place in which to build a wood fire. Be sure to put out any fire when you are through with it.
- When cooking is not possible, some canned food can be eaten cold. Or it can be warmed over canned heat or candles.
- Never leave any open fire, canned heat or candle unattended. Keep children away at all times.

## Removing Odors from Refrigerator and Freezer

If food has thawed in your refrigerator or freezer, you are probably facing an odor problem that hangs on even after the spoiled food is gone. Getting rid of this odor is likely to take time, patience and a combination of techniques.

If the refrigerator has been flooded it should be replaced.

### Empty, Clean and Disinfect

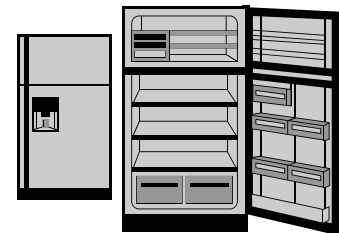
- Remove all food, unplug appliance and take out all removable parts. Empty the defrost water disposal pan (if it has one).
- Wash each part thoroughly with hot water and detergent. Rinse with a disinfectant solution (1 teaspoon chlorine bleach for each gallon of water).
- Wash the inside, including doors and gaskets, with a solution of hot water and baking soda. Rinse with disinfectant solution.
- Do not mix ammonia and chlorine solutions! This combination gives off toxic fumes.

*Note:* If garbage pickup is not expected soon, take spoiled foods off site to help avoid attracting animals, insects and to reduce odors.

### Air it Out

Leave the door open for at least 15 minutes to air out. If you had a long power outage, this probably won't be enough.

If odor remains, repeatedly heat and ventilate the inside walls. Warm the inside walls with a portable convection heater (one that blows warm air), hair dryer or hot air popcorn popper. Do not use a heat source that can cause damage, and do not leave the heater unattended.



Then turn off the heat and ventilate with a portable fan until the inside walls are cool.

Repeat this process for several hours or until the odor is almost gone.

If some odor remains, activated charcoal filters or a tray of loose activated carbon will absorb persistent odors. Look for it at drugstores, appliance service companies, hardware stores or pet stores.

If you can't find activated carbon, you can use crushed charcoal (the kind used for barbecue grills), but it will not be as effective. Spread about 3 ounces of the fine powdered charcoal on a sheet of aluminum foil or in a shallow pan, and place on the refrigerator or freezer shelf.

If possible, run your freezer with nothing but the carbon in it for a couple of days.

After 6 or 8 hours, heat the pan of loose charcoal in a moderate (350 degrees F) oven to reactivate the carbon so it can be reused. Cool the charcoal and put it back in the appliance. Repeat the process until the odor disappears.

Large servicing companies may recommend chemical deodorizers that are stronger than charcoal and last several months. Foods must be covered if such chemicals are used.

### **Store Food in Sealed Containers or Wrappings**

Keep boxes or bowls of baking soda in the refrigerator. Even if traces of the odor remain, sealed food will not be affected.

Refrigerate and freeze all food in sealed containers or secured freezer wrappings. When you take out a package, remove wrappings as soon as possible, and dispose of them immediately.

### **If Nothing Works**

If all these efforts don't seem to help much, there may have been seepage into the walls of the freezer or refrigerator. If the insulation has gotten wet, the appliance may have to be discarded eventually because it may not only have persistent bad odors, but may also run continuously or frost up on the outside because of the ruined insulation. In some cases, it may be feasible to replace the wet insulation, but for most, a new energy-efficient refrigerator or freezer may be more cost effective.

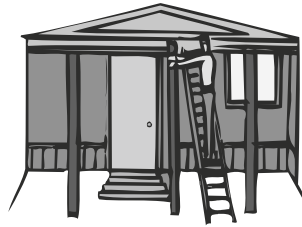
# Restoring Storm-Damaged Buildings

Natural Hazards Series: Recovery - Part 3



## Determining Structural Damage

As soon as authorities or conditions allow you to return, it's time to assess the damage and begin repairs. A number of factors should be considered, and the following information may be helpful.



### Damage to Structures

Damage to structures in many cases is obvious, but damage that is not clearly seen may cause problems also.

Look for wood structural members that are cracked, and remember these can be hard to detect. Structural bracing may not be secured as tightly as originally. If doors or windows do not open as they did before the storm, this may indicate the structure has shifted. In case of severe shifting, water lines, gas lines and electrical circuits may have been damaged.

If wetness occurred because of leaking roofs, look for wet electrical circuits, wet insulation and other water damage to the interior of the structure. Once insulation becomes wet in a wall or attic, it must be replaced. Wall insulation that is sealed within the structure will not dry out soon enough.

Structures that use a roof truss system should be carefully inspected. In many cases, truss systems are constructed of 2 x 4s and metal fasteners. Any crack or break in the truss will greatly affect the strength of the truss system.

### Repair or Replace?

Damaged structures can be our homes, equipment storage buildings, barns and other outbuildings. Care and consideration should be given to their restoration. Appropriate measures vary with the type, age and condition of the structure. Often, the structure should be removed rather than rebuilt. The structural integrity of the building should be assessed, and if the decision is made to repair, additional bracing may be required before repairs begin.

Repair of damaged buildings requires a building permit if it involves more than painting or replacing carpet. Check with your local building official or permit office before beginning or contracting for repairs.

### Checking Outside for Structural Damage

- Make sure the building is not in danger of collapsing. Look for bulges, sways, leaning walls and sagging roof lines.
- Check the roof. The roof is a very good indicator of

the presence of structural damage. Look at the ridge of the roof, and assess whether it is straight. This can be viewed from a distance better than close up. If the ridge sags either on the end or in the middle, the load-bearing walls have shifted.

- Check the walls to verify that they are vertical and straight. This normally can be done by eye or with a carpenter's level.
- Check where the structure meets its foundation. If the house is on piers, look at the individual piers and see that they remain in plane and level. Whether it is on a slab or on piers, check to see that the building has not shifted on its foundation. Flooded wooden floors, if they do not buckle, will sometimes push walls outward at the base.
- Check for cracks in masonry. Look near the corners of the structures and under and around doors and windows.

If any of these indicators of structural damage are observed, it is advisable to call a licensed building contractor, inspector or engineer. A professional needs to further assess the building for its safety and determine the required repairs. These indicators should be pointed out to insurance adjusters.

### Entering the Building

- Turn off any outside gas lines at the meter or tank, and let the house air for several minutes to remove foul odors or escaping gas.
- Turn off the main electrical breaker until safe conditions are established. If the main disconnect is inside the house, it would be wise to call your utility company for assistance. Even if power is out in your neighborhood, disconnect the main switch, fuse or circuit breaker at your home, and disconnect all circuits. Unplug all appliances that have been flooded.
- Enter cautiously. Do not smoke. Don't use a flame as a light source.
- Check for sagging ceilings; wet insulation and pocketed water can cause ceilings to fall.

### Turning off the Electricity

- Stand on a dry spot when working with electrical boxes and panels.
- If you have to step in water to get to the circuit or fuse box, call an electrician; do not try to turn off the power yourself.
- Use a dry stick to open panel doors and throw switches whenever possible. Use caution when removing fuses (can't be done with a stick).

## Preliminary Repairs

Any temporary structural repairs that can be made will require some creativity since there's likely to be a shortage of materials. The most common repairs will involve nailing plywood or taping heavy plastic to broken windows, ceiling and walls.

If the building has shifted or the floors have settled badly, it may be necessary to install temporary bracing until extensive work can be done. To prevent flooded wooden floors from buckling and warping further, remove a board every few feet.

Cover damaged roof sections with heavy plastic or roofing felt anchored in place with wooden boards to help prevent leaks until permanent repairs can be made. Be especially cautious; damaged roofing can be loose or slippery.

Inside, remove any mud and debris while it is still moist.

Flooding may require replacement of outlets, breakers, wiring and controls.

## Dry Well to Prevent Decay

Mold is likely to grow on wood and other materials that stay wet for more than 2-3 days, but mold does not penetrate or break down solid wood. However, if untreated wood stays wet for (weeks or months, decay fungi can grow and break down its cell structure, causing wood rot and loss of its structural strength. Wetness can damage many other materials, too – even steel. That is why it is crucial to not only clean and remove mold, but also speed the drying process and postpone restoration until all materials are dry and wood framing has a moisture content under 20%.

### Safety

- Read “Be Safe” section on *Avoiding Mold Hazards*.
- Wear a dust mask, goggles and protective clothing on legs, arms, feet and hands while cleaning up debris. When handling moldy or contaminated material, wear a respirator rated N-95 or higher.
- Wear rubber gloves while using cleaners and disinfectants.
- Buildings constructed in the '70s and earlier may have lead-based paint. Sanding or scraping this paint creates a serious health hazard. Before working with suspected lead-based paint, get more information from [www.epa.gov/lead](http://www.epa.gov/lead).

If you see or smell mold in a storm damaged home, refer to part 1 of this book for “Mold Removal Guidelines”. Whether or not you find mold, act quickly to dry out your storm or flood damaged home:

- Remove wet carpets, pads, rugs, upholstery and fabrics as soon as possible. Carpets wet from leaks may be

cleaned, dried and restretched during installation. Carpets that were flooded with contaminated water should be discarded. You may be able to clean, disinfect and restore valuable rugs, but always replace wet carpet pads.

- Remove flooded vinyl sheet flooring, laminate flooring and other floorings with paper or other moisture sensitive components.
- For solid wood floors, carefully remove a plank every few feet to reduce buckling. Wood floors often reshrink back to normal when dry and need only refinishing instead of replacement. This may take several weeks.
- Open closet and cabinet doors, remove drawers and contents and use fans to aid air circulation for drying. If cabinets are installed on insulated walls, they may need to be removed.
- Remove loose or crumbly plaster, drywall and wet ceiling tiles. Plaster and drywall can survive flooding if it can dry out and be cleaned or sanitized. Remove all vinyl wallpaper and any thick built-up layers of interior paint to allow walls to dry toward the interior.
- Discard all wet or moldy fibrous insulation, even if it means cutting into walls or removing drywall above the level of moisture that wicked up beyond the flood level. Wet fibrous insulation will not dry out adequately when left in place.
- Paneled walls should be removed or propped open at the bottom to remove wet insulation, then clean and treat the framing.
- If dirty or moldy, wash empty wall cavities and subfloor or slab with a non-phosphate detergent solution and rinse with clean water. To kill any fungi that may remain after cleaning, you may spray flooded wall cavities and slabs with a solution such as ½-1 cup fresh bleach per gallon of water or other disinfectant. Protect wiring and other metals from bleach spray since it is corrosive.
- Flooded wiring should be replaced. Check with your building permit office to see if wiring wet from leaks can be salvaged.
- Continuously air condition or heat the space and use fans until materials are dry. Also using a dehumidifier will speed drying and is highly recommended to avoid mold growth during the dryout process.
- Do not replace the insulation and drywall or paneling until the studs, sill plates, sheathing and any interior paneling are dry (under 20% moisture content). Without the benefit of a dehumidifier, this could take weeks.
- Do not use sealants, vinyl wallpaper or other materials on the interior side of walls. In air conditioned homes, walls must be able to dry through materials toward the inside. Use only latex paint on new drywall.

### Do More than Restore

Once it is dry, instead of just restoring your home, improve it. A silver lining of storm damage is the opportunity to make your home better than before. Make it more energy-efficient to increase comfort and lower utility costs. Make it more durable to avoid so much damage and ordeal after future storms.

- Apply a penetrating borate treatment to the bottom two feet of wood framing to provide termite and decay protection.
- Caulk to seal the gap between sill plates and a slab foundation, a major source of air leakage.
- Seal holes and penetrations in framing with expanding foam sealant.
- Replace damaged outlet boxes, recessed can lights and other fixtures with “air-tight” types.
- Replace damaged windows, appliances and equipment with Energy Star labeled types.
- Replace damaged doors with insulated doors (fiberglass or steel skin).
- Consider upgrading to impact resistant windows and doors in high-wind zones.
- Before installing new windows or doors, make sure openings are well flashed to drain water leaks to the outside.
- Insulate wall cavities for higher R-value and better coverage than before, from R-13-19. Consider spray cellulose with borates, spray foam or high-density friction fit fiberglass batts in non-flood hazard areas, and closed cell spray foam or rigid foam sheathing in areas at risk of flooding.
- Raised wood floor systems may be less vulnerable to moisture problems with insulation methods that both insulate and protect floor joists from moisture; consider min. R-12 spray foam or foil-faced rigid foam with taped seams.
- Choose more flood-resistant wall and floor materials. Consider removable wainscoting, paperless drywall, ceramic tile, decorative concrete, solid wood and other restorable options.
- If replacing all your drywall or ceilings, use gaskets or drywall adhesive to seal the drywall to framing at top and bottom plates and around openings – the “Airtight Drywall Approach”

# Repairing the Roof After a Storm



Under the multiple pressures of shortages of time and finding skilled or reputable workers, materials, etc., it may be tempting to take short cuts on roof repairs, but remember that a depreciated home and future expensive trouble can come with such a decision. Repairs now, while the damage is clearly linked to the storm, may be covered by insurance or other assistance. Later, when problems reappear, you may bear those repair costs alone.

When considering roof repair, assess the condition of the roofing materials. If your shingles are not new, you may want to replace the roof rather than patch it, and make it more resistant to damage in further events.

## A Word of Caution

Before getting on the roof to do repairs, inspect the rafters for breaks and sags.

- Remember that electrical wiring is run through the attic; be sure the power is off before entering the attic space for the first time.
- Even without a disaster, the attic can be a dangerous place. Nail tips are left exposed and there can be numerous rough edges which could cause injury.
- When you do get on the roof, be very careful. The slope of the roof is a hazard and a damaged roof may have loose shingles, exposed nails or other features which could lead to injury. When working on steep inclines, use a safety harness.

A common roof consists of three layers of materials: sheathing (or decking), roofing felt and an outer layer of shingles, metal panels or tiles. Sheathing is nailed to rafters before the felt and roofing are applied. The felt is the layer which waterproofs the roof; it is important to overlap the layers properly so water runs over a lower course, not under it. Shingles, tiles or panels protect the felt from physical damage but don't really seal the structure against rain.

## Rafters

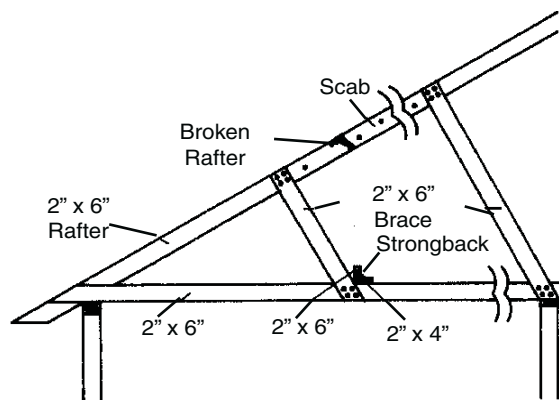
If you have broken rafters or ridge beams, they must be repaired first. The size of the area damaged dictates proper procedures. One or two broken rafters can be repaired by using a scab-and-prop method. If three or more adjacent rafters are broken, it is advisable to replace them. Replacing rafters may require removal of undamaged shingles, felt and sheathing along the length of the rafter to be replaced.

Check with the local permit office to find out what inspection or permitting requirements or building codes must be met.

To repair a broken rafter using a scab method, place a new rafter alongside the broken one and nail them together

at several points. A scab should run approximately 4 ft. on each side of the break. A scab can be used to repair a truss rafter. In a truss, the scab must cover the broken rafter element and the points where that element is attached to other elements. The size of wood used for repairs should be the same size as the wood broken or larger (but never smaller).

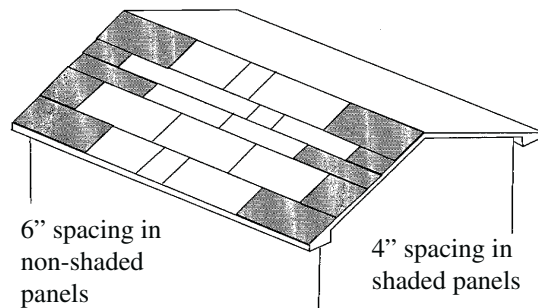
Broken or severely damaged rafters are seldom as strong after repairs. Further strengthening may be achieved by adding support braces between the rafter(s) and the ceiling joist(s) below. Run two braces from each repaired rafter: one from the rafter scab to the point on the joist where it crosses a load-bearing wall and one to the joist below (see diagram). If the attachment point for a brace is not over a load-bearing wall, the joist should be reinforced with a "strongback." The strongback is constructed of one 2x4 and one 2x6 plank nailed together at right angles; it is nailed to the ceiling joist and extends across several joists on both sides of the damaged area.



## Sheathing

If you have limited damage to the roof decking that can be repaired without total removal, replace damaged sheathing with panels of the same thickness as that used on the rest of the roof. Attach the new sheathing and re-nail the existing sheathing to all rafters or trusses with 8d ring shank nails spaced every 6 inches.

If you replace all the sheathing, strengthen your roof by using 40/20 rated roof deck sheathing (plywood or OSB) with a minimum thickness of 19/32 inches and a nailing pattern of 8d ring shank nails every 4 inches on all panels along a gable end, and 6 inches apart everywhere else. Make sure joints are placed over rafters and nails don't miss the rafters. Do not use staples.



Nail spacing recommendations for plywood or OSB roof deck.

## Roof Underlayment and Coverings

Consider sealing roof-sheathing joints with a self-adhered asphalt/rubber tape (modified bitumen) at least 4 inches wide to provide a secondary moisture barrier. An alternative that offers even greater protection is to apply a peel-and-stick roof membrane over the entire roof deck in place of joint tape and roofing felt.

Otherwise, roofing underlayment may consist of either a single layer of #30 felt with a minimum 2-inch overlap, or two layers of 15# felt installed in accordance with manufacturer's instructions. Both methods require a minimum 6-inch lap at ends. Flashings must be installed to maintain a shingle-type layering with the underlayment so water flows over and not under them.

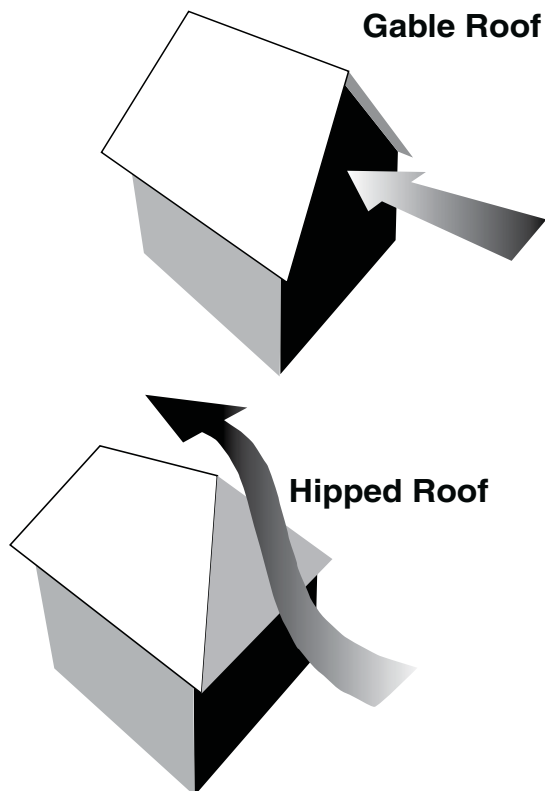
Select a high wind rated roof covering (shingles, metal, etc.) and, regardless of type, ensure that it is installed in accordance with the manufacturer's recommendations for high wind regions. Look for roofing that meets the standards: ASTM D 3161 enhanced, or UL 2390 for wind resistance and UL 2218 for impact resistance.

## Strengthen Weak Points

### Soffits and Gable Ends

Soffits in hurricane-affected areas tend to fail allowing wind driven rain into the attic. Vinyl and metal soffits that rest in slots or t-channels are most vulnerable. Consider using plywood or fiber cement soffits securely anchored to wood framing members or wind rated soffit systems.

Hip roofs are more wind resistant than gable roofs. For homes with gable roofs, bracing should be installed in the attic to resist the damaging force of strong winds on gable end walls. For more details on bracing gable walls and other protections, visit [www.ibhs.org](http://www.ibhs.org)



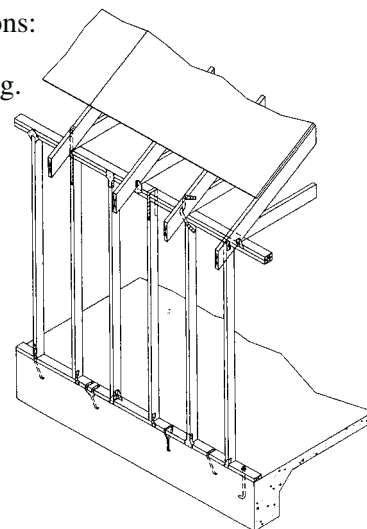
## Opening Protections

When wind-borne debris breaks windows or doors, the inside air pressure buildup can cause major structural damage. To avoid the rush to board up during each storm warning, consider replacing windows and doors with hurricane rated units or installing impact resistant shutters. Standard double-wide garage doors are especially vulnerable to wind damage. Look for products that have met recognized product approval systems such as SBCCI SSTD 12, ASTM E 1186 and ASTM E 1996, or Miami-Dade Protocols PA 201, PA 202 and PA 203.

### Roof to Wall to Foundation Connections

Your home is as strong as its weakest link. To make sure the roof stays in place during a severe storm, anchor the roof to the wall with hurricane straps over each rafter (if sheathing is removed), or if that's not feasible, with hurricane clips at every wall-to-rafter connection. If the walls are opened for repair, consider also adding metal hurricane connectors that tie the studs to the bottom plate, and the bottom plate to the foundation (such as epoxy-set anchor bolts into the slab).

Typical Wall Connections:  
Stud spacing different  
from truss/rafter spacing.



**For more information** on disaster-resistant building techniques and systems, get the La. Extension publication, *Building Your Louisiana Home: Homeowners Guide* through your parish LSU AgCenter office or from [www.LouisianaHouse.org](http://www.LouisianaHouse.org)

If you have experienced structural damage, some strengthening of the roof may be required under uniform building codes. It is likely you'll need to engage one or more contractors to make repairs. Information on selecting a contractor, what should be in a contract and consumer protection is given in Part 6, "Financial Recovery and Risk Management."

Contact your local LSU AgCenter office listed under local government in the telephone directory or [www.lsuagcenter.com](http://www.lsuagcenter.com)



# Salvaging Water-damaged Belongings

Natural Hazards Series: Recovery - Part 4

## Caring for Large Electrical Appliances

Appliances wet by flood water or by rainwater after roofs were damaged will need extreme care before reuse. This care will be important if the life of the appliance is to be extended and for the safety of the user.



*Appliances submerged by floodwaters, particularly saltwater, are often not repairable.* Appliances that have been wet by rainwater and not flooded are often repairable. It is always desirable to have these repairs made by a reputable service person. Following disasters, however, individuals who have these skills often are very busy, and the owner of the appliance may find it necessary to make repairs.

Remember that an appliance damaged by water can sometimes be made functional, but will probably have a shortened life expectancy. Depending on the age and condition of the appliance before it was damaged by water, and considering the danger of personal injury from improper repairs, it may be advisable to replace the appliance rather than repair it.

Many small appliances, including television sets, microwave ovens and radios, are more electronic than electrical. The tips offered in this fact sheet do not apply to electronic repairs. Most small appliances or electronic devices are not economical to repair.

### Safety

- Approach a flooded or wetted appliance with caution. Water can short-circuit an electrical appliance so that parts which don't normally conduct electricity can shock you.
- Disconnect power to the building or to the circuit which feeds the suspected appliance. Then unplug the appliance. If the power to the building or neighborhood has been shut off, be sure all appliances suspected to have water damage have been unplugged before power is restored.
- If you are uncertain whether an appliance has been damaged by water, do not test it by plugging it in and/or turning it on. Either treat it as damaged or have a knowledgeable individual check for electrical shorts to assure that it is safe to use.

## Motor and Circuit Repairs

- Disconnect all switches, contacts, motors and electrical wiring. Make a diagram of the connections, or list the steps you took to disconnect these items; this will help you remember how to reassemble the parts.
- Flush all parts of the system with clean water, and allow the parts to dry for several days before reconnecting.
- Use spray-on drying agents to help in the displacement of moisture in contacts, motors and so forth.
- Re-assemble the disconnected parts referring to your diagram or list of steps.
- Be sure the appliance is dry and properly grounded before reconnecting.

## Insulation and Mechanical Components

Appliances that are insulated such as ranges, ovens, freezers, refrigerators and water heaters may need to have wet insulation removed and replaced.

- Remove insulation by opening the frame of the appliance; consult your owner's manual for construction details. Use gloves when removing the insulation. Clean the cavity before installing new insulating material.
- On appliances where insulation cannot be removed, replace the appliance.
- Newer freezers and refrigerators include rigid foam insulation that may not require removal.
- Remember to check the mechanical parts of the electric appliance. Such things as the bearings, hinges on doors and other moving parts should be dried and lubricated to prevent rust.

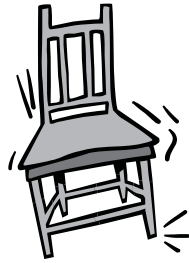
## Preventing Damage from Future Floods

If the appliance was damaged by floodwaters which were less than 2-feet deep, you can help prevent future damage by installing the repaired or replacement appliance on a platform.

- Consider elevating the electrical system itself. Install all electrical switches and outlets 12 inches above either the 100-year flood level or the level of the highest known flood at your location - whichever is higher.
- Check with the local permit office to see what permits are required for any physical alteration of the location of your appliances or for modification of the electrical wiring in your building.

# Salvaging and Cleaning Furniture

Before starting to salvage damaged furniture, decide which pieces are worth restoring. Such decisions should be based on: extent of damage, cost of the article, sentimental value, cost of restoration and quality of the wood or fabric. Consider each piece individually.



## Restore or Replace?

### *Antiques*

Antiques are probably worth the time, effort and expense of restoration. Unless damage is severe, you can probably clean, reglue and refinish antiques at home. Extensive repair or re-veneering work should be done at a reliable furniture repair shop.

### *Solid wood furniture*

Solid wood furniture can usually be restored unless damage is severe. You will probably need to clean, dry and reglue it. Do not throw away solid wood furniture until it has dried and repair efforts can be assessed. Slightly warped boards may be removed and straightened or replaced.

### *Wood veneered furniture*

Wood veneered furniture is usually not worth the cost and effort of repair, unless it is very valuable monetarily or sentimentally. If veneer is loose in just a few places, you may be able to repair it. Veneered furniture repairs are usually best done by a reliable refinisher.

### *Upholstered furniture*

Wet upholstered furniture may be salvageable, depending on its general condition. Flooded pieces will require replacement of padding and upholstery. Since this is an expensive process, it might be wiser to apply the money toward a new piece of furniture.

You will not need to repair all pieces immediately. Any furniture worthy of repair should be completely cleaned, dried and stored in a dry, shady, well-ventilated place until you have time to repair it. Wooden furniture damaged by floods can best be salvaged through slow drying and proper repair.

## First Steps to Restoration

### *Submerged or wet wooden furniture*

Take furniture outdoors, and remove as many drawers, slides and removable parts as possible. Drawers and doors will probably be stuck tight. Do not try to force them out from the front. With a screwdriver or chisel, remove the back and push out the drawer from behind.

After you have removed movable parts, clean off mud and dirt, using a hose if necessary.

Take all furniture indoors and store it where it will dry slowly. Furniture left in the sunlight to dry will warp and twist out of shape.

When furniture is dry, reglue it if necessary. You will need equipment and clamps to reglue some pieces. Before you start, decide whether you have the time, equipment and ability to do the work. Consult an experienced carpenter if necessary. Many books are available on the subject.

To reglue loose joints or rungs, cut or scrape off old glue so the area will be as clean and free of glue as possible. Use a white all-purpose glue, following directions on container. Hold parts together with rubber rope tourniquets or C-clamps. To prevent damage from ropes or clamps, pad these areas with cloth.

### *Damp furniture - removing white spots*

White spots or a cloudy film may develop on damp furniture that has not been submerged.

If the entire surface is affected, rub with a damp cloth dipped in (a) turpentine or camphorated oil or (b) in a solution of 1/2 cup household ammonia and 1/2 cup water. Wipe dry at once and polish with wax or furniture polish.

If color is not restored, dip 3/0 steel wool in oil (boiled linseed, olive, mineral or lemon). Rub lightly with the wood grain. Wipe with a soft cloth and re-wax.

For deep spots, use a drop or two of ammonia on a damp cloth. Rub at once with a dry cloth. Polish. Rubbing cigarette ashes, powered pumice or a piece of walnut into spots may also help remove them. Be sure to wear rubber gloves when using these solutions.

If spots remain after all efforts to remove them, the piece should be refinished.

## Cleaning Tips

- Always wear rubber gloves when using cleaning solutions or working with flood-damaged or moldy furniture. Take furniture outdoors to clean.
- If mildew has developed, vacuum (preferably with an HEPA filter) surface or brush off with a broom.
- Read fiber content labels of upholstery. Test a hidden area using a solution of lukewarm soapy water (1 tablespoon soap to 1 quart water), or dilute denatured alcohol (1/2 alcohol and 1/2 water) or bleach solution (1 tablespoon bleach to a pint of water) to see if color is removed or fabric shrinks. Allow to dry, then decide if the fabric can be cleaned. Sponge fabric to remove dirt, and use bleach or alcohol solution to remove mildew. Fabric may be removed from frame to clean, depending on the damage.
- Remove tacks, nails, braid, other fasteners.
- Although wet synthetic foam padding can be restored, the risk of contamination and costs usually make replacement a better option. Wet cotton or other organic padding should always be replaced.
- Wipe down wooden frames with a wood cleaner or alcohol solution remove mold or mildew. Wipe dry and allow to air dry in an open shady place (never dry furniture in direct sunlight).



- Dry springs and other metal parts. If rust has formed, you may need to replace or clean. Use steel wool and coat with paint. A light oil could be wiped on metal parts to help prevent later rusting. Many major manufacturers keep records of fabric or metal parts which can be ordered from the dealer for replacement.
- Be sure all parts are dry before reassembling.
- A reliable furniture repair shop will give estimates on cost of redoing furniture. Also, consider replacement cost and value of each piece. If insurance allows part value on flood-damaged furniture, it may be financially worthwhile to apply the money to new articles, rather than pay for extensive repairs.

## Cleaning Carpets and Floors

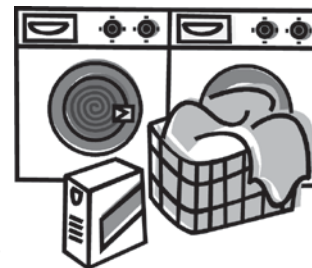
Cleaning water-soaked carpets and floors is difficult in itself, but in the aftermath of a storm or flood, contamination by mud, silt, sewage and mildew can compound the problem.

It's best to replace carpets and get professional cleaners to work on floors, but this may not be possible. In any case, begin cleanup as soon as possible.

### Tips

- Pull up all saturated carpets and rugs, and take them outdoors.
- If you wish to salvage valuable rugs and water was not contaminated, hose muddy carpets down. Work a low-sudsing, disinfectant carpet cleaning product deep into soiled spots with a broom.
- If only small areas of carpet got wet from leaks, pull up and prop the wet carpet to dry. Cut away wet padding.
- To discourage mildew and odors, rinse the backing with a solution of 2 tablespoons bleach to 1 gallon water. Don't use this solution on wool carpets. Also disinfect the slab or subfloor.
- Discard and replace foam pads.
- Sections of subfloors that separate must be replaced to avoid buckling. When floor coverings are removed, allow subfloors to dry thoroughly, even though it may take several months. Disinfect all wet surfaces.
- In wood floors, remove a board every few feet to reduce buckling caused by swelling. Ask a carpenter for tips on removing tongue-and-groove boards.
- Clean and dry floor thoroughly before attempting repairs. Using a dehumidifier will speed the drying process.
- In vinyl floors with wood subflooring, the floor covering should be removed so the subflooring can be replaced. With concrete floors, removal isn't necessary except to hasten drying of the slab.
- Loose tiles may be replaced if the floor has not been soaked. If water has seeped under sheet flooring, remove the entire sheet.
- While cleaning, wash exposed skin frequently in purified water. Wear rubber gloves.

## Cleaning Storm-soaked Clothing



When cleaning clothes soaked during storm flooding, remember that the flood water may have been contaminated with sewage waste. Simply drying these clothes is not enough.

For safety, they must be disinfected to kill harmful bacteria. Two tablespoons of liquid chlorine bleach per washer load will kill bacteria without substantially damaging clothes. Do not use more than 2 tablespoons per washer load unless all the clothes can be safely bleached.

Dry cleaning is also effective. Do not use bleach on wool, silk, feathers and foam.

### Tips

- Separate wet items as soon as possible to keep clothing colors from running together. Sort out clothing that should be drycleaned. Do not mix flood-soiled clothes with clean clothes. Take care not to contaminate work surfaces.
- Items to be drycleaned should be air-dried and taken to a cleaner as soon as possible. (If you suspect they may have been in sewage-contaminated water, wear plastic gloves.) Do not dry the clothes near a heat source such as a stove. Once dry, shake and brush clothing outdoors to remove as much soil as possible.
- Rinse washable items several times in cold water. If badly soiled, soak overnight in cold water and an enzyme product or detergent. Wring out and air dry if you're unable to machine wash.
- Machine wash clothes as soon as possible. Use a heavy duty detergent and a disinfectant such as 2 tablespoons of chlorine bleach, pine oil or a phenolic disinfectant. Use highest water level possible, don't overcrowd washer and use hottest water temperature suitable for the garments. Select the longest wash cycle available. Dry in a dryer (if available) at the highest temperature suitable for the fabric.
- Stained or very dirty clothes may require adding an appropriate bleach to the wash. Follow directions on the bleach containers and garment tags for types and amounts to use.
- If an item is still stained after washing, rewash before drying. Drying may make some stains harder to remove.

Contact your local Cooperative Extension Service office listed under local government in the telephone directory or [www.lsuagcenter.com](http://www.lsuagcenter.com)

# Financial Recovery and Risk Management

Natural Hazards Series: Recovery - Part 6

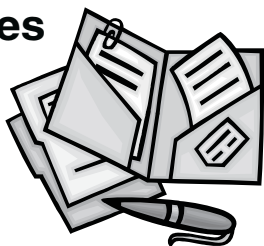


As you attempt to restore your life and home after a storm or flood, you will face many decisions. In many cases, the decisions will involve considerable investments. Naturally, you'll want to recover as much as possible through your homeowner's and flood insurance policies. Where insurance falls short of your needs, other types of assistance may be available, especially after a presidentially declared disaster. Part of your financial recovery involves making good business decisions when contracting for repairs.

These pages give advice on documenting losses, insurance, financial assistance, contracting and consumer protection.

## Documenting Losses and Claims

Whether you're filing for insurance, seeking assistance or claiming a casualty tax deduction, you will need proof of your losses. Before you start cleanup, take pictures. If you can't take pictures, describe the situation accurately, listing the specific items which have been lost or damaged. Keep damaged materials for proof of loss unless your adjuster authorizes their disposal. It's okay to remove the damaged articles from their original location to prevent further damage to the building, but do not discard.



Remember to document the losses in your landscape and garden. Also, document the amount of debris you will have to remove, and whether it came from your property or elsewhere. The flood insurance policy, and some homeowner's insurance policies, cover debris removal. If you discard an appliance, record the serial number. If you discard a large item such as ?? – keep a sample.

- Save all receipts relating to your temporary lodging and food if your home is uninhabitable. Some policies pay the difference between normal living expenses and the cost of living elsewhere, although the flood insurance policy does not.
- Save receipts for temporary repairs you made to protect your property from further damage.
- Save receipts for materials you purchased and other items related to protecting your building or contents from flood damage. You may be able to claim these on your flood insurance policy.
- Keep a copy of all letters and receipts that are sent to insurance companies or relief agencies.
- Keep a record of all phone calls made in attempts to receive reimbursements or aid. Be sure to include date and time of call and name of person spoken to.

## Filing for Insurance

These tips are offered to guide you in filing insurance claims for damage to your home and loss of personal property:

- Call your insurance adjuster immediately, and provide a phone number where you can be reached.
- After carefully documenting losses, begin cleanup and salvage as soon as possible. Don't wait for an adjuster. Keep damaged materials in an isolated spot as far from the building as possible.
- Follow up on your insurance call with a letter detailing the problem. Keep a copy of the letter.
- Leave phone numbers where you can be reached when the adjuster arrives.
- Ask the adjuster to assess damages. Sign the proof of loss statement. Report additional damage as it is found.
- Provide any other information the adjuster requests.

Be sure to file your insurance claims within the policy's imposed time limits. For the National Flood Insurance Program policy, this time limit is 60 days; for homeowner's policies, it varies. Review the settlement steps outlined in your policy. If you're dissatisfied with the proposed settlement offer, explain your position in writing.

If there's a significant difference between what you are offered and what you believe you are entitled to, you may wish to submit the dispute to arbitration. The arbitration process for a National Flood Insurance Program claim is described in the policy under "Appraisal" in Article 9.

It can be difficult to determine whether damage was caused by wind or flood, and thus which insurance policy will cover the loss. Following Hurricanes Katrina and Rita, the Louisiana State Department of Insurance established a mediation program to aid in settling such disputes.

## Homeowner's Insurance

Many people are surprised about the extent of protection a homeowner's insurance policy offers. Although your homeowner's policy does not cover damage caused by rising floodwaters, it may offer some protection from loss caused by wind, rain, hail, snow, lightning and freezing temperatures.



Increasingly, policies for homes in hurricane zones exclude wind damage, or if the coverage is offered, it's available only in separate policies at a higher cost. In some areas, private insurance is not available, and property owners can obtain insurance only through a state insurance program that may provide minimal coverage also at a higher cost.

If you have experienced a loss or damage to property, review your policy's provisions and contact your insurance agent to file a claim and/or to update your policy to include the coverage needed for the future. Be sure your coverage amount is always at least 80% of the current replacement cost of your home. Otherwise, you will not be paid the full cost of replacing a partial loss.

Also, most homeowner's policies pay for losses to your contents (furniture, appliances, clothes, etc.) on an actual cash value basis (replacement cost minus depreciation for age or wear and tear). A better option is to buy replacement cost coverage that pays the full cost to replace your personal property at today's prices. Although the cost is higher, the extra protection is usually worth it.

### Tips

These items are usually covered but **may vary according to the policy's provisions and up to the dollar amounts that you purchased:**

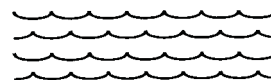
- Your house, including rental units that are part of the building, and any attachments to the building such as a garage.
- Any structures on your grounds that are not attached to your house such as a garage, tool shed, pool cabana, gazebo or fences.
- Vacant land that you own or rent, with the exception of farmland.
- Cemetery plots or burial vaults that you own.
- Personal possessions that you or members of your household own or use anywhere in the world. This includes the contents of your house and any structures on your grounds. It also covers any possessions that guests bring to your house, but it does not include the possessions of any tenants you may have living in your home.
- Any items friends have lent to you that you're keeping on your property.
- Your living expenses, if your house is unlivable because of damage.
- Rental payments, if you normally rent part of your house but it is unlivable because of damage.
- Legal responsibility for unauthorized use of your credit cards, checks forged under your name or counterfeit currency accepted in good faith.
- Settlements, medical expenses, defense and court costs involved in claims brought against you for bodily injury to others or damage to the property of others.

Many policy holders may be unaware of the extent of the protection offered by their homeowner's insurance. If you have experienced a loss or damage to property, review your policy's provisions and contact your insurance agent to file a claim and/or to update your policy to include the coverage needed for the future.

A standard homeowner's policy does not cover your cars, most recreational vehicles, watercraft, animals, birds or fish. While homeowner's insurance does not cover losses from rising water, it usually does cover water damage from such things as leaking roofs, broken windows and broken pipes but excludes mold damage. Most policies do not cover sewer backup unless you purchase a sewer backup endorsement.

You should know, if you are in a designated special flood hazard area and your structure is substantially damaged by any force (wind, water, fire), you may be required by the local permit office to meet the flood damage prevention requirements for new construction; for residential structures this means elevation. A structure is substantially damaged when the cost of restoring the structure to its pre-damage condition is 50% or more of its pre-damage market value. Owners of structures in special flood hazard areas can partially insure themselves for the added expense of elevating a wind- or fire-damaged structure before repairs by purchasing a "Code Compliance" endorsement on their homeowner's policy.

## Flood Insurance



Losses caused by rising floodwater are not covered under most homeowner's insurance policies. If you have purchased coverage through the National Flood Insurance Program at least 30 days before being affected by a flood, you will be protected against property damage caused by such flooding. You may also be partially reimbursed for steps you take to prevent flood damage, even if the flood never reaches your building.

Flood insurance policies include an endorsement called Increased Cost of Compliance (ICC). This coverage will pay up to \$30,000 for elevating or relocating an insured dwelling so that it is above the flood protection elevation required for new construction. For nonresidential structures, floodproofing by other methods may also be covered. The coverage may be used toward the cost of demolishing the floodprone structure and building an elevated foundation for a new structure at the required elevation.

At present, ICC coverage is available only for structures that have been substantially damaged by a current flood event for which a damage claim is being filed. In communities with cumulative substantial damage ordinances, eligibility may include the amount of damage incurred in a prior flood.

Final responsibility for determining whether a structure has been substantially damaged rests with the community. In most Louisiana communities, the determination will be made by or through the floodplain administrator who is usually the building or permit official. Find your local floodplain office at [www.LouisianaFloods.org/officials](http://www.LouisianaFloods.org/officials).

Insurance doesn't protect your home, it protects your pocketbook, and makes it possible for you to restore or rebuild. There are things you can do to protect property from damage by natural hazards. It's called "mitigation." Ask about our flood protection factsheets and hurricane guide, or check the [www.LouisianaFloods.org](http://www.LouisianaFloods.org) Web site.

# Credit and Other Sources Of Relief



Victims of natural hazards whose losses exceed their insurance coverages may obtain loans or other financial assistance.

- The Red Cross often helps with immediate building repairs and living expenses when no other immediate assistance is available.
- Merchants and dealers may extend credit for feed, equipment and rehabilitation of buildings and land.
- The Small Business Administration (SBA) offers medium- and long-term loans for rehabilitation of non-farm homes and small businesses if overall damage in the community meets certain criteria. Borrowers may obtain 20% over the repair loan amount for mitigation (to protect the property from future damage by natural hazards).
- Commercial and federal land banks offer loans with moderately low interest rates for home repairs, improvements, land equipment and livestock.
- After a major disaster, many mortgage lenders offer payment grace periods, forbearance, or may be willing to restructure loan terms. Mortgage loans with no down payment requirement may be available to storm victims from private lenders and the USDA Rural Housing Service.
- Insurance companies offer long-term loans at relatively high interest rates for home repair, improvements, land, equipment and livestock.
- Uninsured losses, and the uninsured portion of losses, should be reported as an additional itemized deduction on federal income tax form Schedule A under casualty losses.

## Federal Disaster Assistance

If an event is declared as a major disaster by the president, numerous additional sources of federal assistance will become available. The Federal Emergency Management Agency will set up a disaster registration hot-line and will usually work with the Louisiana Office of Homeland Security and Emergency Preparedness to establish local disaster recovery centers. The hot-line and recovery centers will be sources of access to the various federal assistance programs.

In addition to the SBA loans already mentioned, these types of assistance are usually available:

- Individual and family grants, for those who do not qualify for a loan
- Temporary housing assistance
- Unemployment assistance
- Assistance with recovery planning; mitigation advice
- Legal services to low-income families and individuals
- Crisis counseling for disaster-related mental health problems
- Special income tax advice and treatment

Housing rehabilitation assistance for low- and moderate-income households may also be available in some communities through the U.S. Department of Housing and Urban Development programs administered by local and state agencies.

Recipients of federal assistance for flood damage will be required to purchase and maintain flood insurance on their property. In catastrophic disasters congress may authorize additional financial assistance and programs.

## Contracting for Repairs and Rebuilding

### Selecting a Contractor

As you attempt to restore your life and home after a storm, the availability of local companies and individuals to perform the necessary services will be limited. It often may be advisable to do temporary repairs and wait for local contractors who will be there to guarantee their work long after the storm is over. If it is necessary to complete the repairs, however, it is important to receive good quality work, or major deterioration may appear later.

Outside contractors and companies will enter the area to offer their services. Some are honest and will do an adequate job, but be careful in working with outside contractors.

It is advisable, if possible, to check with the Better Business Bureau, either in Louisiana or in the state and city where the company or person is located. It also is advisable to check with others for whom they have worked in Louisiana. Determine if they have performed in a timely and adequate manner.

Verify that a general, remodeling or mold removal contractor is licensed with the Louisiana State Licensing Board for Contractors. Visit [www.lslbc.state.la.us](http://www.lslbc.state.la.us) for a searchable list.

Ask about training or experience in complying with the wind and flood provisions of the current building code.

Ask for proof of insurance. The contractor must have disability and workers' compensation insurance, or you may be liable for accidents occurring on your property.

Do not pay in advance. Do not let the contractor begin work until you have a signed contract. When the job is complete to your satisfaction, pay by check or credit card, not cash.

If you cannot find a contractor willing to accept these basic terms, strengthen the patches and wait patiently until you can be sure of a good job. Even under critical emergency conditions, complete, high quality repairs must be done, or damage and deterioration will appear later.

# Contract Essentials

*The offer and acceptance (agreement)* to do specific things in a specific manner. State clearly, simply and completely all that is to be done. If beginning and finishing dates are involved, state them in the body of the contract. A good item to include in a contract for home rebuilding is that materials and procedures used will be those provided for in minimum standards of the current building code.



## **Guarantees**

Include what is guaranteed and for how long. Also include who is responsible for the guarantee (contractor, dealer or manufacturer).

## **Permits**

State who is responsible for obtaining and paying for any required building permits.

## **Parties**

Parties involved must be at least 18 years of age and mentally competent (not insane, retarded or suffering mental problems of aging). All parties must sign the contract.

## **For a consideration**

Something of value changes hands, usually money. The amount to be paid and schedule of payments should be included in the contract. That schedule should be based on progress toward completion, not on the passage of time. Exercise your right to inspect all work or to hire someone to inspect the work for you.

## **Change Orders**

The contract should specify procedures to be used to change the original work order. Keep a copy of the signed contract.

## **Withhold Full Payment Until**

- The building contractor or person hired has paid for all building supplies used. Require receipts for all paid bills for all materials used.
- Everything has been completed on the job to the full satisfaction of the contract and to the satisfaction of you and your inspector.
- The contractor has provided you with releases of lien from himself/herself, from suppliers and from labor subcontractors.

## **Buyer Beware!**

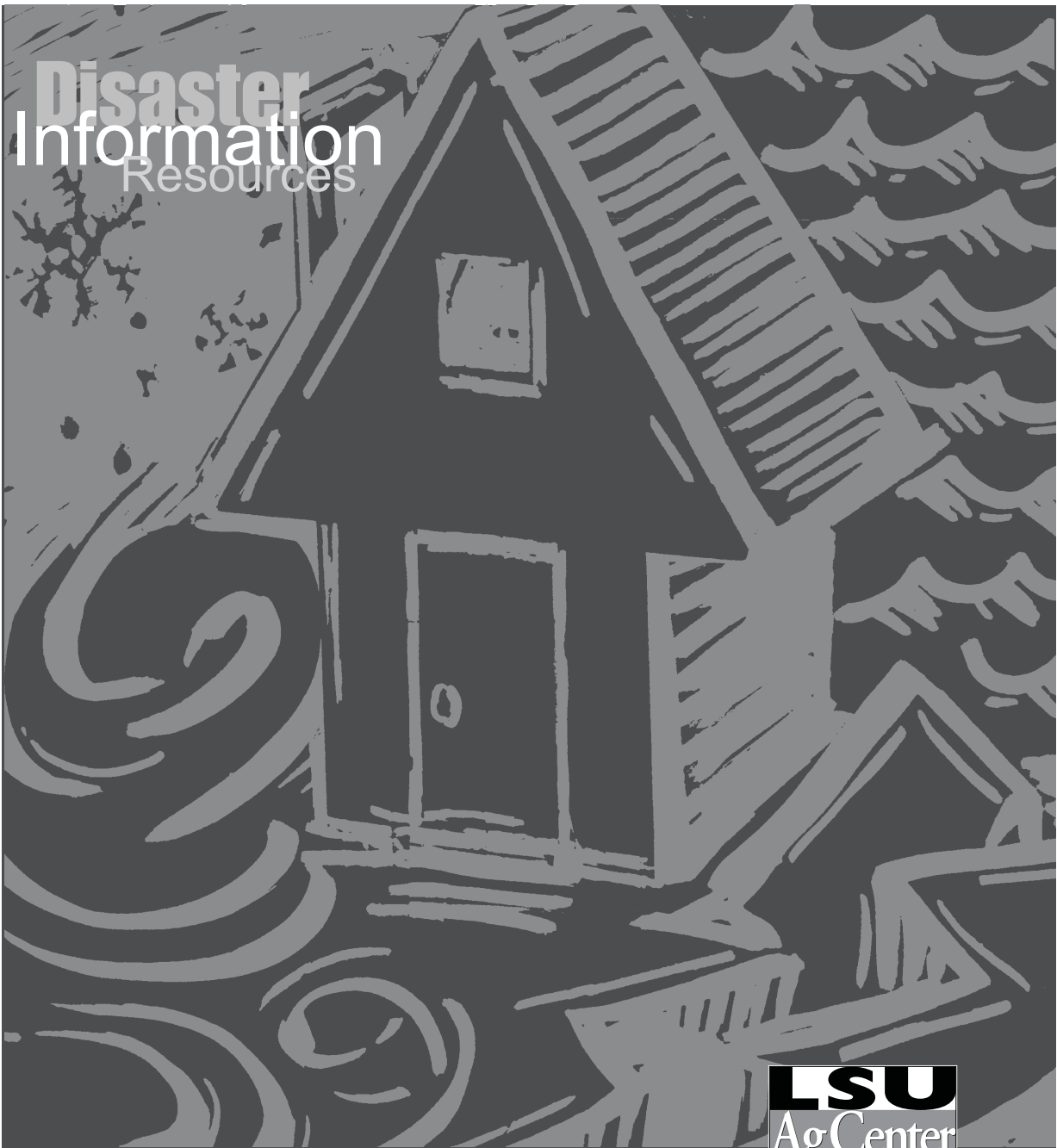
- Is the contractor offering you a special deal? Using your home as a model for his work? Shy away.
- Is the offer too good to be true? Be sure the quality is there before you agree to buy.
- Does the contractor want cash only? Find another contractor.
- Did the contractor solicit your business, rather than your calling him? Were you pressured into signing a contract? Federal law gives you three days to cancel such a contract after you sign it. Send your notice of cancellation by registered mail.
- Do you think you've been had? Have you tried to resolve your problem with the contractor, but been unsuccessful? Don't be embarrassed to call the Consumer Protection Section of the Attorney General's Office at 1-888-777-4590 or [consumer@ag.state.ia.us](mailto:consumer@ag.state.ia.us), [www.IowaAttorneyGeneral.org](http://www.IowaAttorneyGeneral.org)

For more information, contact your local LSU AgCenter office listed under local government in the telephone directory.

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**... and justice for all**

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