

## Storm Damage Cleanup Highlights

This fact sheet highlights key guidelines to help you safely and effectively clean and restore your storm-damaged home. For additional helpful information, get a copy of the LSU AgCenter "Storm Recovery Guide" at your local LSU AgCenter Extension office or visit our website at [www.lsuagcenter.com](http://www.lsuagcenter.com). For detailed "how-to" guidance, see the U.S. HUD "Rebuild Healthy Homes: Guide to Post-disaster Restoration for a Safe and Healthy Home," a free, online manual at [www.hud.gov/healthyhomes](http://www.hud.gov/healthyhomes) and free mobile app from Apple and Android app stores.

### Food and Water Safety

For instructions on water safety and purifying water, follow guidance from your community water supplier or Department of Health.



### Water Well Purification

After a flood, it is important to take every precaution to ensure the safety of your well water. First, it is necessary to inspect and clean the well and pump before using them. You may want to have your water well contractor check out the well before using it.

Have the water sampled and tested. The water IS NOT safe for drinking until lab results show no indication of total coliform bacteria. You can discuss the final lab results with the lab or local public health unit. It is important to remember that disinfection or boiling water will not remove chemicals that may have contaminated your well during a flood.

### Foods and Food Preparation Items

- Do not eat 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 seals compromised.
- Discard wooden cutting boards, wooden spoons, plastic utensils, baby bottle nipples and pacifiers. There is no way to clean them safely if they have come in contact with floodwaters.



- 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.
- Wash and sanitize dishes, utensils and appliances.

### Assessing Damage and Dangers

Never enter a building that might have structural damage. Look for signs such as cracks, sagging, leaning and foundation shifts. Make sure electrical and gas supplies are disconnected, and inspect for chemical- and bio-hazards. Be alert to possible invasion by snakes, fire ants and other creatures.

### Avoiding Lead and Asbestos Hazards

**Important Alert!** If your home was built before 1978, it may contain lead-based paint and/or asbestos-containing materials. Disturbing lead and asbestos materials during cleanup and restoration can create very serious and long-term health hazards. Even tiny amounts of lead dust can cause irreversible damage to children's developing brains and hearing. It can also harm adults. Asbestos fibers can cause lung cancer.

Do not gut walls or remove damaged materials before learning about lead- and asbestos-safe work practices, or getting a hazard assessment by a qualified professional. Refer to the "Rebuild Healthy Homes" guide, [www.epa.gov/lead](http://www.epa.gov/lead) and [www.epa.gov/asbestos](http://www.epa.gov/asbestos) for more information and to find qualified professionals.

Also, hire ONLY EPA lead-safe certified firms to repair and restore a pre-1978 home. All contractors who do any work that could disturb paint in pre-1978 homes are required by law to be certified.

### Avoiding Mold Hazards

A flood-damaged building requires special attention to avoid or correct a mold population explosion. Molds produce spores that float and spread easily through the air, forming new mold growths (colonies) when they find the right conditions – moisture, nutrients (nearly anything organic) and a place to grow.

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. So as soon as the floodwaters recede and it is safe to return, don't delay cleanup and dry out.

People are mainly exposed to mold by breathing spores or fragments, and can also be exposed through skin contact. Wearing gloves, goggles, and a respirator that can filter mold spores (rated N95 or better) is strongly recommended. Note that a dust mask is NOT the same and does not provide adequate protection.

Although there is wide variation in how people are affected by mold, long-term or high exposure is unhealthy for anyone. Exposure to mold can trigger allergic reactions and asthma attacks, may suppress the immune system or have other effects. Some types of mold can produce mycotoxins in certain conditions, which can be present in live and dead spores and fragments in the air. "Black mold" is a misleading term since many types are black, and many species of mold can produce toxins.

Mold testing is not usually needed and is rarely useful. Some insurance companies and legal services may require sampling as a form of documentation. Professional mold remediation contractors may test before and after cleanup to provide evidence of the cleanup's effectiveness. Otherwise, if you see or smell mold, you have mold and should remove it as soon as possible.

A properly trained mold remediation contractor with specialized equipment can provide the safest and most effective result. In Louisiana, find licensed Mold Remediation contractors at [www.lslbc.louisiana.gov](http://www.lslbc.louisiana.gov).

If you need to clean up mold, follow these steps and refer to EPA guidelines online at [www.epa.gov/mold](http://www.epa.gov/mold) to do it as safely and effectively as you can.

**1. Wear Protective Gear.** Always wear a respirator rated N95 or higher when inside a moldy space. During cleanup, 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 N100 half-face or full-face respirator with filter cartridges provides greater protection and comfort than the mask types.

**2. Isolate Work Area and Ventilate to Outdoors.** Disturbing mold colonies during cleanup can cause a huge release of spores in 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 outward 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. (IMPORTANT: Use lead-safe work practices in pre-1978 homes.)

- 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 and open cell foam 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 (except solid wood), especially if there is heavy or long-term mold growth -- including paper-faced gypsum wallboard and floorings, processed wood products (particle board, chip board, etc.), ceiling tiles and paper products.
- Plaster, wood paneling and nonpaper-faced gypsum wallboard that dried, are in good condition and have no insulation in the wall may be cleaned and sanitized to salvage them. 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 all interior gaps airtight before repainting.
- 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 nonporous materials such as hard plastic, concrete, glass and metal; solid wood also can be cleaned since mold cannot penetrate solid wood, growing only on the surface. Cleaning should remove, not just kill the mold, because invisible dead spores and any toxins they may contain 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, always read and 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 nonphosphate all-purpose cleaners, because phosphate residue is mold food. Rough surfaces may need to be scrubbed. Rinse, but avoid high-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 first, to kill any remaining fungi and bacteria. Soil can make some disinfectants, including bleach, less effective. On colorfast, nonmetal surfaces, you can disinfect with a solution of 1/2 cup concentrated household chlorine bleach per gallon of water. Do not use bleach in the air conditioning system. Common, milder and 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 can penetrate wood over time is more expensive but offers greater protection. Other mold inhibitors such as latex zinc paints and fungicides also may help inhibit mold growth during drying.

Do NOT apply sealants or coatings that can hamper 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 help "encapsulate" mold and reduce its release into 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, 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 Are Dry.** Check wood moisture content with a reliable moisture meter. It's recommended to wait until wood moisture content drops to less than 16% before replacing insulation and wallboard. Never restore when any wood exceeds 19% moisture content, the danger zone for decay fungi. Do NOT use vinyl wallpaper, oil-based paint or other interior finishes that block drying to the inside. Walls finished with gypsum wallboard and latex paint allow continued drying, especially when air conditioning in warm weather.

**10. Restore With Flood-resistant Materials.** If possible, "wet floodproof" your home so it can withstand a flood with less damage. Use closed-cell 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 (with fiberglass matt facing) that does not provide a food source for mold. Use restorable flooring such as ceramic tile, solid wood, stained concrete, etc.

## Salvaging Furniture

### **Cleaning and Caution Tips:**

- Always wear rubber gloves and goggles when handling flooded items and restoration chemicals. Wear a respirator if mold, lead or asbestos might be present. Wash exposed skin often.
- Read and follow warning labels. Many of the mentioned and other restoration products are flammable, irritants or produce unhealthy fumes.
- Take items outdoors to brush off and clean, if possible. When indoors, use only a HEPA vacuum and damp wipe methods to reduce airborne dust, mold and other contaminants.

## Wood Furniture

### **Submerged or wet wooden furniture:**

Pressed wood pieces and cabinets tend to disintegrate in water and may collapse when moved. Veneered furniture may not be worth the cost and effort of repair unless it is very valuable to you. Printed vinyl surfaces

and low-pressure laminates tend to come unglued and may not be repairable,

Furniture made with solid wood and plywood may be restorable.

- Take restorable pieces outdoors, and remove as many drawers, slides and removable parts as possible. Drawers and doors may be swollen and be stuck tight. Do not try to force them out from the front. Remove the back using a screwdriver or chisel, and push out the drawer from behind. After movable parts are removed, clean off mud, soil and mold with (see above guidelines).
- Move cleaned furniture indoors or a protected area where it can dry slowly. Furniture left in the sunlight to dry will warp and twist out of shape.
- When furniture is dry, re-glue 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 re-glue 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 haze may develop on damp furniture with shellac or lacquer finishes.

- If the entire surface is affected, try lightly wiping with a cloth dampened with denatured alcohol, turpentine or a half-and-half mixture of household ammonia and water, then wipe dry. For deep spots, try a few drops of ammonia on a damp cloth or a mild abrasive paste (such as powdered pumice), then buff at once with a dry cloth.
- If the color is restored, polish with wax or furniture polish. If color is not restored, dip No. 0000 steel wool in oil (boiled linseed, mineral or lemon). Rub lightly with the wood grain. Wipe with a soft cloth and re-wax.
- Black spots indicate water has penetrated the finish and entered the wood. You may need to remove the finish and treat the stained wood with oxalic acid or a commercial wood restoration product.

## Other Furniture and Items

Submerged upholstery and mattresses should be discarded. If you wish to restore valuable upholstered furniture, do not attempt to dry and restore padding. It should always be replaced due to risk of contamination.

Professional furniture restoration is safest and may provide best results. Get an estimate from a reliable furniture repair shop and consider replacement cost and value of each piece. If your insurance covers part value on contents, it may be financially better to apply the money to new articles, rather than pay for extensive repairs.

To attempt restoration yourself:

- First vacuum damaged pieces with a HEPA vacuum

or take them outside to brush off. Avoid further wetting. Remove tacks, braids and other accessories for easier cleaning.

- Read fiber content labels of upholstery. Test a hidden area using a solution of lukewarm soapy water, hydrogen peroxide or diluted denatured alcohol to see if color is removed or fabric shrinks. Allow to dry, then decide if the fabric can be cleaned.
- Sponge colorfast fabric to remove dirt, and use hydrogen peroxide, alcohol solution or solvent cleaner to remove stains and mildew. If fabric will be removed from frame to replace padding, consider professional dry cleaning.
- Wipe wooden frames with a wood cleaner or alcohol solution to remove mold. 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 with steel wool. A rust inhibitor or light oil coating on metal parts could help prevent later rusting.
- Be sure all parts are dry before reassembling. Some major manufacturers keep records of fabric or metal parts which can be ordered from the dealer for replacement.

### **Cleaning Carpets and Floors**

Cleaning and drying water-soaked carpets and floors can be difficult, but in the aftermath of a flood, contamination by mud, silt, sewage and mold compounds the problem. Surfaces exposed to rising flood water or sewage should be cleaned and disinfected. Moldy carpet and paper backed flooring should be replaced.

#### ***Carpets and Rugs***

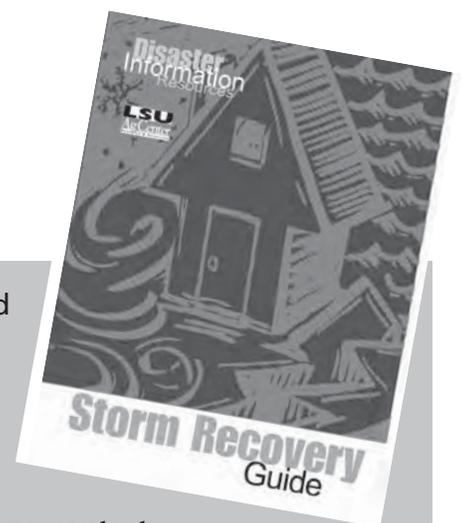
It's best to replace flooded carpets and get professional cleaners to work on floors, but if that's not be possible, begin cleanup as soon as it's safe to enter your home.

- Pull up all saturated carpeting and rugs, roll them up and drag them outdoors. Wet carpet is very heavy.

- Discard and replace wet foam pads.
- If you wish to salvage valuable rugs that were not contaminated by hazardous chemical, lead paint dust or asbestos, hose off the mud then work a low-sudsing, disinfectant carpet-cleaning product deep into soiled spots with a carpet shampooer or broom. Rinse and extract water with a steam cleaner, if possible.
- If areas of carpeting got wet from clean water leaks, extract water with a steam cleaner, if possible, and pull up and prop the wet carpet to dry. Cut away and replace any wet padding.
- If odors or mildew formed, consider (and test for colorfastness) a sanitizing rinse solution of one part of 3% hydrogen peroxide to five parts water or 2 tablespoons bleach to 1 gallon water. Don't use bleach on wool carpets. Also sanitize the slab or subfloor and baseboards.

#### **Other Floorings**

- Solid wood flooring can usually recover from flooding, Remove a board every few feet to reduce buckling caused by swelling. Ask a carpenter for tips on removing tongue-and-groove boards.
- Engineered wood and laminate flooring that swells or delaminates from flooding should be replaced.
- Solid vinyl and ceramic tile or stone flooring on a concrete slab may be cleaned in place. Sheet vinyl with paper backing is at risk of holding moisture and may support mold growth, so it may need to be replaced if discoloration or loosening occurs.
- If there is wood subflooring, it may swell and buckle or delaminate. If so, removal of flooring may be needed to hasten drying and replace damaged subflooring.
- Clean and dry wood subflooring before replacing floor covering.
- After cleaning, using a dehumidifier will greatly speed the drying process to avoid mold growth and allow faster restoration.



The LSU AgCenter offers a series of guides, fact sheets, workshops and other useful information available on the Web or by contacting your local LSU AgCenter Extension office.

There's one in every parish.

For a copy of our free **Storm Recovery Guide**, and other useful publications, contact your parish **LSU AgCenter Extension Service** or visit our Web site: **[www.LSUAgCenter.com](http://www.LSUAgCenter.com)**