



# Resources for Your Flooded Home

Using science-based knowledge, University of Missouri Extension engages people to understand change, solve problems and make informed decisions.

Following the 1993 flood, MU Extension established its Community Emergency Management Program and led an effort to form the national Extension Disaster Education Network to help communities and individuals prepare for and respond to disasters.

Based on lessons learned from more recent floods, this packet provides information to help you get your life back to normal after a flood.

## Contents

<b>Cleaning Flood-Damaged Homes: A Step-by-Step Guide to Restoration .....</b>	<b>2</b>
Steps toward cleanup .....	2
Structural condition .....	2
Electrical systems .....	2
Food and water sanitation .....	3
Cleaning and disinfecting .....	3
Household appliances .....	3
Mildew prevention .....	4
Removing mildew from household articles .....	4
Wall restoration .....	4
Floor coverings .....	5
Furniture .....	5
Information and referrals .....	6
<b>Financial Recovery and Risk Management .....</b>	<b>7</b>
Documenting losses and claims .....	7
Filing for insurance .....	7
Credit and other sources of relief .....	9
Federal disaster assistance .....	9
Contracting for repairs and rebuilding .....	9
Buyer beware .....	10
<b>Children Need Special Attention .....</b>	<b>11</b>
<b>Reentering Your Flooded Home .....</b>	<b>12</b>
(Centers for Disease Control and Prevention)	
<b>Cleaning and Repairing Flooded Basements .....</b>	<b>13</b>
(North Dakota State University)	
<b>Salvaging Water-damaged Belongings .....</b>	<b>15</b>
(LSU AgCenter)	
<b>Avoiding Mold Hazards in Your Flooded Home .....</b>	<b>18</b>
(LSU AgCenter)	
<b>Reducing Bacteria in Clothing and Textiles .....</b>	<b>20</b>
(Kansas State University Cooperative Extension Service)	
<b>University of Missouri Extension Centers .....</b>	<b>24</b>

To seek additional help, contact your local MU Extension center using the listing on the last page of this publication, or visit MU Extension on the Web at [extension.missouri.edu](http://extension.missouri.edu).

# Cleaning Flood-Damaged Homes: A Step-by-Step Guide to Restoration

## Caution — before doing anything:

- Inspect for structural damage from outside to determine if the house is safe to enter.
- Watch for electrical shorts and live wires. Electrical safety is very important in floods. Make sure that electrical service is disconnected and cannot be turned on before entering any structure.
- Turn off outside gas lines at the tank or meter, and let the building air out for several minutes to remove gas fumes.
- Wear sturdy shoes, rubber gloves and eye protection.
- If mold is present, wear a respirator that can filter mold spores.
- Never mix chlorine bleach with ammonia or vinegar.

(For more information, see *Reentering Your Flooded Home* by the Centers For Disease Control and Prevention on page 12.)

## Steps toward cleanup

1. See that everyone is out of danger of new flood crests, falling buildings, fire or other hazards.
2. Contact your insurance agent immediately. Give your name, address and a phone number where you can be reached. (For more information, see *Financial Recovery and Risk Management* on page 7.)
3. Take pictures of the damage before beginning cleanup.
4. Keep accurate records. List all cleanup and repair bills, flood-related living expenses and actual losses, such as furniture, appliances and clothing.
5. The adjuster will assess damage to the house. The owner should sign a proof-of-loss statement. Additional damage can be added when found.

If you have a question or problem with your insurance carrier, contact the Missouri Department of Insurance at 800-726-7390.

## Structural condition

Making sure the foundation is sound is a critical step. One sign of foundation damage is floors that have settled or bulged. If the house or porch rests on an open foundation, make sure the structure is not in danger of collapsing before you remove debris from underneath.

Walls that show evidence of settling or cracking may have been undermined. Residents may have to dig down to the footings and reinforce or replace any that have settled. When needed, fill under footings with masonry or concrete, not earth or gravel.

(For more information, see *Cleaning and Repairing Flooded Basements* by North Dakota State University Extension Service on page 13.)

## Electrical systems

- Be sure utilities are disconnected before entering the building for the first time.
- Disconnect the main switch and all circuits. If the main switch is located in the basement, be sure all flood water is pumped out before attempting any work on electrical systems.
- Remove covers from all outlets and fuse or breaker boxes, and flush with clean water.
- Dry contacts and spray with an electrical contact cleaner or lubricant.
- Have an electrician check for ground faults and other unsafe conditions and equipment before reconnecting systems.

Equipment and wiring that appear to be safe soon after flooding may fail prematurely and become a fire or shock hazard. Replacement is often the best option. Circuit breakers that have been submerged should be replaced.

## Food and water sanitation

Until your local water utility or county health department declares your water source safe, purify all water. Purify not only water for drinking and cooking but also water for washing any part of the body, brushing teeth or washing dishes.

### Disinfected (purified) water

Use one of these method to purify water:

- Boil vigorously for 3 minutes.
- Add unscented chlorine bleach (1/2 teaspoon per 2½ gallons of water).
- Add tincture of iodine (12 drops per gallon of water).

### Food safety after a flood

After a flood, discard all foods, including garden produce, that have come in contact with flood waters. Contamination can occur if filth and disease in flood waters covers, drips or seeps into food. Only foods sealed in airtight metal cans that are not bulging or damaged and have been properly sanitized can be saved. If you are unsure about the condition of any food, throw it away.

Discard the following:

- Foods packed in foil, cellophane, paper, cloth or cardboard that have come in contact with flood waters. Even if the contents seem dry, they may not be safe.
- Flooded meats, fish, poultry and fresh fruits and vegetables.
- Foods packaged in crown-capped bottles and glass or plastic jars and bottles, as filth from flood waters can get under the lip of these lids and contaminate food.
- Cans that are bulging or damaged, as they are not safe.
- Home-canned foods covered with flood water. Sterilize the empty jars and rings, and discard the flat.
- Garden produce exposed to flood waters, as it is not safe to eat. Do not attempt to disinfect, save or preserve crops — not even root crops. If plants survive, the new produce that forms on them after the flood waters have receded is safe to consume. It will take about a month for gardens to become clean.

Only foods in sealed, airtight metal cans are safe for use.

Carefully clean and sanitize the cans before opening:

1. Remove labels and mark the contents on the cans with a permanent marker.
2. Wash cans in a strong detergent solution. Use a scrub brush to remove all dirt.
3. Use one of these two methods to sanitize:  
**Method 1:** Immerse cans for 2 minutes in bleach solution. Rinse in disinfected water.  
**Method 2:** Place cans in boiling water, and boil for 10 minutes. Cans will not explode. Do not boil longer than 10 minutes.
4. Air-dry (towels spread bacteria).

### Bleach solution

Use this solution to sanitize food cans and kitchen utensils and equipment:

- Add 1 tablespoon unscented chlorine bleach to 1 gallon of water.

For answers to food safety questions, call MU Extension's Show-Me Nutrition line at 888-515-0016.

### Disinfecting kitchen utensils and cookware

- Wash pots, pans and china and glass dishes and cups that have been covered by flood waters with hot, soapy, disinfected water. Use a brush to remove dirt. Rinse in disinfected water and air-dry. Discard dishes with deep cracks.
- Any piece of equipment that can be taken apart should be cleaned in pieces. Dip in sanitizing bleach solution and rinse in disinfected water.
- Plastic cookware, utensils, plates, dishes and cups, and wooden utensils and bowls cannot be disinfected if exposed to flood water. They must be thrown away. Plastic baby bottles and nipples and plastic storage containers also must be thrown away.
- Kitchen utensils made of iron probably will be rusted. Remove rust by scouring with steel wool. Then sterilize with the bleach solution and reseason by applying a light coat of unsalted fat or oil and placing in a 350-degree oven for about an hour.

### Cleaning and disinfecting

- Wash exposed skin, such as hands and feet, frequently in purified water. Wear rubber gloves for extra protection against contamination.
- As flood waters recede, use a disinfectant to clean walls and woodwork from top to bottom. A 3-gallon garden sprayer works well. One cup of unscented chlorine bleach per gallon of water can be used as a disinfectant. Scrub with a brush to help remove mud and silt.
- Rinse with clean water. Dry thoroughly. If utilities are on, use a heater, fan or air conditioner to speed drying.

### Household appliances

Clean and dry submerged appliances before starting them.

1. With electricity or fuel turned off, unplug and open appliance as much as possible to rinse or wipe clean.
2. Tilt to drain and aid quick drying. Three days to a week is necessary for drying.
3. Have an appliance repair person check each appliance before reconnecting. Most motorized appliances can be saved.

(For more information, see *Salvaging Water-damaged Belongings* by LSU AgCenter on page 15.)

## Mildew prevention

Mildew may develop on damp or wet items in your home. Mildew is a gray-white mold that leaves stains and rots fabric unless it is removed promptly. To prevent mildew damage:

- Use an air conditioner to remove moisture. In homes that are not air-conditioned, open as many windows as possible. Use fans to circulate air.
- Turn on electric lights in closets, and leave doors open to dry.
- As long as dampness or high humidity is present, leave lights on to promote drying and prevent mildew growth.

## Removing mildew from household articles

- Brush off mold and mildew growth outdoors to prevent scattering of spores in the house.
- Run a vacuum cleaner attachment over the area to draw out more of the mold. Discard the vacuum bag immediately.
- Sponge any remaining mildew with thick suds. Wipe with a clean, barely damp cloth.
- Wipe the mildew-stained area with cloth dampened with diluted alcohol [1 cup rubbing (denatured) alcohol to 1 cup of water] or a chlorine bleach solution (¼ teaspoon unscented chlorine bleach to a cup of water). Dry thoroughly.
- Spray with fungicide or other commercial disinfectant.
- Use a low-pressure spray containing a fungicide to get rid of musty odors and remaining mildew. Moisten all surfaces thoroughly. Respray frequently if mildew is a continuing problem. Spraying rooms with an aerosol material will not eliminate mildew problems.
- If molds have grown into inner parts of furniture, send the furniture to a dry cleaning or storage company for thorough drying and fumigation. Fumigation will kill molds present at the time but will not protect against future attacks.

(For more information, see *Avoiding Mold Hazards in Your Flooded Home* by LSU AgCenter on page 18.)

## Wall restoration

- Start cleaning from the top floor or upper limit of flooding and work downward toward the first floor or basement.
- Wash out mud, dirt and debris as soon as possible with a hose and mop, cloth or sponge. Clean walls and floors before silt or mud dries. Use low-suds household cleanser or laundry detergent. Rinse with 1 cup of unscented chlorine bleach per gallon of water. Scrub with a brush. Rinse again with clean water.

- Check walls with a level or plumb bob.
- Brace walls where necessary.
- Check mudsills, plates, soles and anchorage. Replace or repair where necessary, using redwood, cedar or treated lumber.
- To speed up drying of flooded studs and insulation, remove all siding strips or plaster from upper and lower parts of the walls.
- Leave walls open for up to four weeks or until they have thoroughly dried.
- Remove loose plaster. After house is completely dry, repair damaged plaster on walls and ceilings. Badly damaged plaster walls can be resurfaced with gypsum board or plywood.

## Inner walls

Walls must dry from the inside out.

Drill several holes in the walls near the inside floor line. If water drips out of the hole, drill or cut a larger hole to allow the water to drain out.

The total drying time will depend partially on the amount of dry air that can circulate through the studding.

## Insulation

Many types of insulation will be ruined if water-soaked and will need replacing.

**Loose-fill insulation**, such as vermiculite, will settle to the bottom of walls and can be removed as it dries. If not removed, loose-fill insulation will create odors and eventually cause studding to decay.

**Rock-wool batting insulation** will bunch and settle. If it is absorbent, it will create odors and could cause studding to decay.

**Fiberglass batting** will bunch but will not develop odors. Its insulating value will be greatly reduced.

**Reflective surfaces**, such as aluminum foil, probably will lose their reflective ability, thus decreasing their insulating effectiveness. The material itself should be undamaged.

## Wall finishes and coverings

**Plaster** will take weeks or even months to dry but may not be ruined by water. Old plaster, however, may disintegrate after being wet for a long time.

**Drywall** (plaster board) will warp and disintegrate in water. It will warp even above the water level. Submerged drywall must be replaced.

**Laminated paneling** (plywood or Masonite) will separate and warp above and below the water level. The extent of damage will depend on how long the paneling was submerged and how quickly moisture is removed from the studding. Slow drying decreases the possibility of studs delaminating.

## Floor coverings

### Carpets and rugs

Carpets and rugs may be cleaned best by professionals. To clean them yourself:

1. Pull up water-logged carpets, rugs and pads.
2. Dry them outside on a clean, flat surface, such as a concrete driveway. If a rug is placed face down, stains will wick to the back instead of to the face yarns.
3. Hose off and, if badly soiled, add detergent. Work detergent into carpet with a broom and rinse well. Remove as much water as possible quickly using steam, fans or water-extraction equipment. Take care to avoid electrical shock.
4. To discourage mildew and odors, rinse with a solution of 2 tablespoons of unscented chlorine bleach per gallon of water. If the carpet is wool, do not add bleach.
5. Dry carpet and floor thoroughly before carpet is replaced. If carpet is put down wet, it may mildew. Drying may cause carpet and backing to shrink.
6. Discard all padding.

### Subfloors

Layers of submerged plywood subfloors may separate. Sections that separate must be replaced to keep floor covering from buckling.

When floor coverings are removed, allow subflooring to dry thoroughly — this may take several months. Check for warping before installing new flooring.

### Wood floors

Carefully remove a board every few feet to reduce buckling caused by swelling. Consult a carpenter about removal techniques for tongue-and-groove boards.

Clean and dry floors thoroughly before replacing boards and attempting repairs. Drying may take several weeks or months.

### Tile and sheet-vinyl floors

If the submerged subfloor is wood, floor covering probably should be removed so the subflooring can be replaced. If floor has not been soaked, loose tiles may be re cemented after floor is thoroughly dry.

If subflooring is concrete, removing the floor covering will hasten the drying of slab. Removal may not be necessary if it would ruin an otherwise unharmed material.

If water has seeped under loose sections of sheet flooring, remove entire sheet.

Contact a reputable dealer to find out what solvent and technique will loosen the adhesive with the least damage to the floor. Ease of removal depends on the type of material and adhesive.

## Furniture

- Take furniture outdoors to clean. Hose or brush off mud. All parts, such as drawers and doors, should be removed. To push out stuck drawers and doors, remove or cut a hole in the back.
- Dry slowly out of direct sunlight. Heat from the sun will warp furniture. Drying may take several weeks to several months.

### Upholstered furniture

Upholstered furniture that has been submerged in flood waters may be impossible to salvage if it has been badly soaked. If the piece seems worth the effort, clean and oil the springs, replace stuffing and clean the frame.

#### *Stuffing and covering*

- Remove furniture coverings using a ripping tool, hammer, tack puller, screwdriver or chisel.
- Remove all tacks from the frame.
- Wash coverings as described above for carpets.
- Throw away all cotton stuffing. You can dry, fumigate and reuse padding made of other materials.

#### *Springs and frame*

- Wipe off springs and frame.
- Dry all metal parts and coat with rust-inhibiting paint.
- Oil springs.
- Store wood frames where they will dry slowly.

### Mattresses

- Good innerspring mattresses should be sent to a commercial renovating company. Ask about cost, because buying a good reconditioned or new mattress might be less expensive.
- If a mattress must be used temporarily, scrape off surface dirt and expose mattress to sunlight to dry as much as possible. Cover mattress with a rubber sheet before using it.
- Flood-soiled mattresses must be sterilized by a professional. Ask the public health department for information on mattress sterilizing plants in your area.
- Dry mattresses as much as possible before taking them to be sterilized. Crop-drying fans or household fans can speed up the drying process.

### Pillows

If pillows have been badly soaked, removing all objectionable odors may not be possible.

#### *Feather pillows*

If ticking is in good condition, wash feathers and ticking together, as follows:

1. Brush off surface dirt.
2. To circulate water through pillows, open a few inches of the seam in opposite corners of the pillow; turn edges in; sew loosely with strong thread or fasten with safety pins.

3. Wash in machine or by hand in warm (not hot) suds for 15 to 20 minutes. Use a disinfectant in the wash cycle. If using an automatic washer, do not wash more than two pillows at a time.
4. Rinse at least three times in clear, warm water.
5. Spin off or gently squeeze out as much water as possible. Do not put pillows through a wringer.
6. Dry either in an automatic dryer on moderate heat, in a warm room with a fan, or across two or three clotheslines. Shake up feathers occasionally to hasten drying. If using a dryer, put several bath towels in with pillows to speed up drying, and allow at least 2 hours.

If ticking is not in good condition or if pillow is badly soiled, wash feather and ticking separately, as follows:

1. Transfer feathers into a muslin bag 2 to 3 times larger than the ticking. Open one edge of ticking and sew the open edges to the ticking and bag together. Shake feathers into muslin bag and close the seam on the bag.
2. Wash bag of feathers in lukewarm, sudsy water and disinfectant. Repeat if necessary.
3. Rinse in lukewarm water, changing water several times.
4. Squeeze out as much water as possible by hand. Do not use a wringer.
5. To air-dry the feathers, hang the bag on a line by two corners. To speed drying, occasionally change positions end to end and shake feathers.
6. Finish drying pillows by laying them on a flat surface or pinning them to a clothesline.
7. Wash the ticking.
8. With a sponge, apply a starch solution to the inside of the ticking.
9. Transfer clean feathers to sanitized, starched ticking, using the same methods as for emptying.
10. Close seam of ticking.

#### ***Polyester fiberfill pillows***

1. Brush off surface dirt.
2. Wash by hand in warm water and low-suds detergent. Add a disinfectant to the wash water. Flush water through pillow by compressing it. (Twisting and wringing will tear filling). Change water and repeat if necessary.
3. Rinse three times in clear, warm water.
4. Spin off water in automatic machine. Tumble dry in dryer at moderate setting with several bath towels, or press out as much water as possible by hand and hang on clothesline outdoors to dry.

#### ***Foam rubber or urethane pillows***

1. Remove cover and brush off surface dirt.
2. Follow manufacturer's directions if available. Pillows can be machine-washed on gentle cycle with lukewarm water and a disinfectant. To hand wash: Soak pillow in cool water, then wash in warm suds by pushing down on pillow, releasing and pushing down again.
3. Rinse well in lukewarm water following the same method for washing.
4. Gently squeeze or spin out excess water. Blot with towels.
5. Dry away from heat and sunlight. Do not dry in dryer unless on an air-only setting. Pillows may dry very slowly in the air.

## **Information and referrals**

For information on cleaning clothing and textiles, see *Reducing Bacteria in Clothing and Textiles* by Kansas State University Cooperative Extension Service on page 20.

Your local MU Extension center can help with food and water safety, cleanup and restoration questions or referrals. See page 24 for a list of county extension centers.

# Financial Recovery and Risk Management

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As you attempt to restore your life and home after a storm, you will face many decisions. In many cases, the decisions will involve large investments. Naturally, you will want to recover as much as possible through your homeowner's insurance policy. Where insurance falls short of your needs, other types of assistance may be available, especially in a place the president has declared a disaster area. Uncovered claims are tax-deductible if they exceed 10 percent of your adjusted gross income. Part of your financial recovery involves making good business decisions when contracting for repairs.

## Documenting losses and claims

Whether you are 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 cannot take pictures, describe the situation accurately, listing the specific items that have been lost or damaged. Keep damaged materials for proof of loss until your insurance adjuster authorizes their disposal. It is OK to remove the damaged articles from their original location to prevent further damage to the building, but do not throw them away without insurance company approval.

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. Some homeowner's insurance policies cover debris removal.

- Save all receipts for temporary lodging and food if your home is not livable. Some policies pay the difference between normal living expenses and the cost of living elsewhere.
- Save receipts for temporary repairs you made to protect your property from further damage.
- Save receipts for any materials you bought and for other items you needed to protect your building or its contents from further damage. You may be able to claim

these on your homeowner's insurance policy.

- Keep a copy of all letters and receipts that you send to insurance companies or relief agencies.
- Keep a record of all phone calls you made to get reimbursement or aid.

## 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. If phone service is not available, work through disaster assistance workers from the Federal Emergency Management Agency (FEMA) or the American Red Cross for assistance in reaching your insurance adjuster.
- If possible, wait for an adjuster to survey damage. Meanwhile, carefully document losses and begin cleanup and salvage to prevent further damage to your home. Keep damaged materials in an isolated spot as far from the building as possible.
- Follow up on your insurance call with a letter detailing your problems. 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 claim within the policy's imposed time limit. 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.

The Missouri Department of Insurance (MDI) can help if you feel you are being treated unfairly by your insurer. Examples of unfair treatment include the company not contacting you within 48 hours after the claim was reported and the company refusing coverage that is specified in your policy.

For more information about MDI, call 800-726-7390.

## 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 does offer some protection from loss caused by wind, rain, hail, snow, lightning and freezing temperatures. 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 to update your policy, if necessary, to include coverage you need for the future.

Be sure your coverage amount is at least 80 percent of the current replacement cost of your home. Otherwise, you will not be paid the full cost of replacing a partial loss. Also, many homeowner's policies pay for losses to your contents, such as furniture, appliances and clothes, 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 premium costs are a little higher, the extra protection is usually worth it.

## Tips

The following 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 that friends have lent to you that you are keeping on your property.
- Your living expenses if your house is not fit to live in because of damage.
- Rental payments if you normally rent part of your house but no longer can because of damage.

Many policyholders 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 to update your policy, if necessary, to include the coverage needed for the future.

A standard homeowner's policy does not cover 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. Most policies do not cover sewer back up unless you purchase a sewer-backup endorsement.

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 predamage condition is 50 percent or more of its predamage 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 also may be partially reimbursed for steps you take to prevent flood damage, even if the flood never reaches your building.

Flood insurance policies written or renewed on or after June 1, 1997, include an endorsement called Increased Cost of Compliance (ICC). This coverage will pay up to \$15,000 for elevating or relocating an insured dwelling so that it is above the flood protection elevation required for new construction. For nonresidential structures, flood damage prevention using other methods also may be covered. The coverage may be used toward the cost of demolishing the flood-prone structure and building a new structure at the required elevation.

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, the eligibility requirements for this coverage are less stringent.

The flood insurance adjuster may submit a damage assessment form to the flood insurance program indicating that substantial damage is suspected. However, final responsibility for determining whether a structure has been substantially damaged rests with the community. In most Missouri communities, the determination will be made by or through the floodplain administrator, who is usually the building or permit official.



## Credit and other sources of relief

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

- The Red Cross 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 U.S. Small Business Administration offers medium- and long-term loans for rehabilitation of nonfarm homes and small business if overall damage in the community meets certain criteria. Borrowers may obtain 20 percent over the damage-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.
- Insurance companies offer long-term loans at relatively high interest rates for home repair, improvements, land, equipment and livestock.
- Uninsured losses should be reported as an additional itemized deductions on federal income tax form Schedule A under casualty losses. To be deductible, losses must exceed 10 percent of adjusted gross income.

## 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 (FEMA) will set up a disaster registration hotline and will usually work with the Missouri State Emergency Management Agency to establish local disaster recovery centers. The hotline and recovery centers will be sources of access to the various federal assistance programs.

In addition to the SBA loans mentioned in the *Credit and other sources of relief* section above, these types of assistance usually are available:

- Individual and family grants for those who do not qualify for a loan
- Temporary housing assistance
- Unemployment assistance
- Assistance with recovery planning and 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 also may be available in some communities through the U.S. Department of Housing and Urban Development (HUD) programs administered by local and state agencies.

Recipients of federal assistance for flood damage are

required to purchase and maintain flood insurance on their property. Owners of that property may not receive federal assistance in future floods unless the property is protected by flood insurance during those future floods.

## Contracting for repairs and rebuilding

### Selecting a contractor

As you attempt to restore your life and home after a storm, you may find only a few local companies and individuals that perform the necessary services, and they are likely to be very busy. Depending on the damage, you may want to make temporary repairs and wait for local contractors who will be there to guarantee their work long after the storm is over. If the repairs cannot wait, however, take care to ensure you receive good quality work or major deterioration may appear later.

After a disaster, out-of-town contractors and companies will enter the area to offer their services. Some are honest and will do an adequate job, but take precautions when working with outside contractors.

- If possible, check with the Better Business Bureau, either in Missouri 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 Missouri. Determine if they have performed in a timely and adequate manner.
- 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 let the contractor begin work until you have a signed contract.
- Do not pay in advance. When the job is complete to your satisfaction, pay by check or credit card — do not pay cash.
- Before making the final payment, ask the contractor for proof that all suppliers have been paid. Otherwise, unpaid suppliers can legally put a lien on your property for settlement of bills if the property is sold.
- 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

A contract is 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 home rebuilding contract should also state that materials and

procedures used will follow the 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. 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. The payment 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 and all change orders.

### **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 or your inspector.
- The contractor has provided you with releases of lien from him- or 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 or her 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 or did you initiate the call?
- Were you pressured to sign 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 800-392-8222.

*Adapted from Financial Recovery and Risk Management, LSU AgCenter.*

*Special thanks to Calvin Call, executive director of the Missouri Insurance Coalition, who reviewed this publication.*

# Children Need Special Attention

**Sara Gable**  
**Human Development Specialist, MU Extension**

Crisis-related stress can take its toll on young children, especially when parents are preoccupied with day-to-day survival.

Any change can be stressful for children, but prolonged changes can be especially so.

## Signs of stress

Parents can tell a lot about their child's mental wellness by observing their behavior. Signs of stress may include:

- Changes of habits — eating, sleeping, anything out of the ordinary
- Regressive behavior
- Sleeplessness
- Trouble concentrating
- Irritability
- Poor eye contact
- Fidgeting

Parents can take steps to reduce stress and help their children cope by talking about the family's situation.

Determining how much information to share with children is up to individual families. A good rule of thumb is to not overwhelm children with too much information at once.

Allow children to handle the loss in small doses, but be honest about what is happening.

## Tips for talking with children

While talking with children, keep these points in mind:

- Only offer information the child is capable of understanding. A teenager will be able to handle more facts about the consequences of the disaster than a small child.
- Listen to what children say and accept their feelings. Acknowledge children's feelings and give their feelings names.
- Emotional responses differ among children, depending on their experiences and temperament. Some children may be good at hiding their fear and grief, so parents

and other adults must take time to talk with children about their emotions.

## Helping children cope with change

Here are some other ways parents can help children cope with the changes brought about by a disaster:

- Try to remain positive. Although we cannot control the weather, we can control our reaction to it.
- Maintain a regular schedule and routine. Children need to know who is going to feed them, help them get dressed and put them to bed at night. Keeping a routine helps children feel that they are supported and safe, so let them know what is going to happen and stick to a schedule whenever possible.
- Make room for one-on-one time with children. This lets children know the parents are still there for them, despite the stress and chaos.
- Remember that play is a child's work. It might not seem appropriate in the middle of a disaster to organize games or other activities, but play is an important outlet for children to relieve their stress.

Counseling is available to families and individuals impacted by flooding through the Missouri Department of Mental Health Crisis Assistance Line at 800-811-4760. Services are confidential.

Additional information on coping with a disaster is available from MU Extension's MissouriFamilies website at [missourifamilies.org/coping](http://missourifamilies.org/coping) and from the American Red Cross at [www.redcross.org](http://www.redcross.org).



## Reentering Your Flooded Home

When returning to a home that's been flooded after natural disasters such as hurricanes, tornadoes, and floods, be aware that your house may be contaminated with mold or sewage, which can cause health risks for your family.

### When You First Reenter Your Home

- If you have standing water in your home and can turn off the main power from a dry location, then go ahead and turn off the power, even if it delays cleaning. If you must enter standing water to access the main power switch, then call an electrician to turn it off. **NEVER turn power on or off yourself or use an electric tool or appliance while standing in water.**
- Have an electrician check the house's electrical system before turning the power on again.
- If the house has been closed up for several days, enter briefly to open doors and windows to let the house air out for awhile (at least 30 minutes) before you stay for any length of time.
- If your home has been flooded and has been closed up for several days, presume your home has been contaminated with mold. (See "Protect Yourself from Mold" at [www.bt.cdc.gov/disasters/mold/protect.asp](http://www.bt.cdc.gov/disasters/mold/protect.asp).)
- If your home has been flooded, it also may be contaminated with sewage. (See "After a Hurricane or Flood: Cleanup of Flood Water" at [www.bt.cdc.gov/disasters/floods/cleanupwater.asp](http://www.bt.cdc.gov/disasters/floods/cleanupwater.asp).)

### Dry Out Your House

If flood or storm water has entered your home, dry it out as soon as possible. Follow these steps:

- If you have electricity and an electrician has determined that it's safe to turn it on, use a "wet-dry" shop vacuum (or the vacuum function of a carpet steam cleaner), an electric-powered water transfer pump, or sump pump to remove standing water. If you are operating equipment in wet areas, be sure to wear rubber boots.
- If you do not have electricity, or it is not safe to turn it on, you can use a portable generator to power equipment to remove standing water. **Note: If you must use a gasoline-powered pump, generator, pressure washer, or any other gasoline-powered tools to clean your home, never operate the gasoline engine inside a home, basement, garage, carport, porch, or other enclosed or partially enclosed structures, even if the windows and doors are open. Such improper use can create dangerously high levels of carbon monoxide and cause carbon monoxide poisoning.**
- If weather permits, open windows and doors of the house to aid in the drying-out process.
- Use fans and dehumidifiers to remove excess moisture. Fans should be placed at a window or door to blow the air outwards rather than inwards, so not to spread the mold.
- Have your home heating, ventilating, and air-conditioning (HVAC) system checked and cleaned by a maintenance or service professional who is experienced in mold clean-up **before you turn it on**. If the HVAC system was flooded with water, turning on the mold-contaminated HVAC will spread mold throughout the house. Professional cleaning will kill the mold and prevent later mold growth. When the service determines that your system is clean and if it is safe to do so, you can turn it on and use it to help remove excess moisture from your home.
- Prevent water outdoors from reentering your home. For example, rain water from gutters or the roof should drain away from the house; the ground around the house should slope away from the house to keep basements and crawl spaces dry.
- Ensure that crawl spaces in basements have proper drainage to limit water seepage. Ventilate to allow the area to dry out.

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

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Page 1 of 1

# Cleaning and Repairing Flooded Basements

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[www.ag.ndsu.edu/extension](http://www.ag.ndsu.edu/extension)

## Getting out water and preventing future problems

### Before you enter a flooded basement, take time to:

1. Turn off the electricity.
2. Check outside for possible wall cave-ins, evidence of structural damage or other hazards.
3. Turn off gas or fuel service valves.
4. Open doors and windows or use blowers to force fresh air into the basement.

### Pumping

For safety reasons, do not use an electric pump powered by your own electrical system. Instead, use a gas-powered pump or one connected to an outside line. Fire departments in some communities may help with pumping services.

More damage may be done by pumping flooded basements too soon or too quickly. Water in the basement helps brace the walls against the extra pressure of water-logged soil outside. If water is pumped out too soon, walls may be pushed in or floors pushed up. To help prevent this kind of structural damage:

- Remove about 2 to 3 feet of water. Watch for signs of structural failing.
- If the outside water level rises again after the day's pumping, start at the new water line.
- Don't rush the pumping; the soil may be very slow to drain. Whatever is submerged in the basement will not be damaged further by delaying the pumping.

### Cleaning

After water has been pumped from the basement, shovel out the mud and debris while it is still moist. Hose down walls to remove as much silt as possible before it dries. Scrub the floors and walls with a detergent. Floors and walls may need sanitizing, particularly if sewage has entered the basement. Scrub walls and floors with a disinfecting solution of 1 cup chlorine bleach per gallon of water.

Oil stains caused by overturned or damaged oil tanks also may be a problem following basement flooding. Commercial products, available from fuel-oil suppliers, will help neutralize fuel oil. The products come in powder form or an aerosol spray for hard-to-reach places. To remove oil stains and destroy odor, wipe up excess oil, shake or spray product on the spot according to manufacturer's directions, let it set, then sweep it up.

### Inspection and repair

Before beginning repairs, make a thorough inspection of supporting columns, beams, walls and floors. Unless you have structural expertise, hire a contractor to make a professional survey. (Consider joining with neighbors for a group-rate inspection.) Repairs may extend to the following:

*Buckled walls.* Signs of buckling include horizontal cracking and areas that have moved out of vertical alignment. When this condition is minor, you need not repair the wall immediately.

However, any noticeably buckled wall will eventually collapse from normal ground pressures and seasonal temperature changes. When buckling has seriously weakened the wall, the damaged parts should be rebuilt immediately. Pilasters (vertical reinforcements) may need to be constructed into walls over 15 feet long.

*Settled walls and footings* are indicated by vertical cracks either in small areas or throughout the structure. Repairs are difficult without special equipment. Contact a reliable contractor for this work.

*Heaved floors* are those that have not returned to their original level or have cracked badly. The floor may have to be removed and a new floor constructed. If a floor is badly cracked, but has returned to its original level, a new floor may be placed over the old one. A vapor barrier should be added between the two floors. The new floor should be at least 2 inches thick.

In houses without basements, the area below the floor may be completely filled with mud. Shovel out the mud as soon as possible and dry the area to avoid rotting joists or foundation wood.

*Related information:*

*Repairing Your Flooded Home*, the American Red Cross/Federal Emergency Management Agency,  
[http://www2.redcross.org/static/file\\_cont333\\_lang0\\_150.pdf](http://www2.redcross.org/static/file_cont333_lang0_150.pdf)

*Creating a Healthy Home: A Field Guide for Clean-Up of Flooded Homes*, Enterprise Community Partners Inc. and the National Center for Healthy Housing, <http://www.ndhealth.gov/flood/FloodCleanupGuide.pdf>

# 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

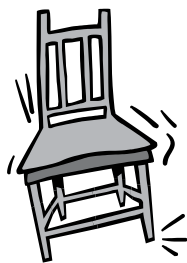
If the appliance was damaged by floodwaters which were less than 2-feet deep, you can help prevent future damage by installing the repaired or replacement appliance on a platform.

- 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.

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[www.lsuagcenter.com](http://www.lsuagcenter.com)

## 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, powdered 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

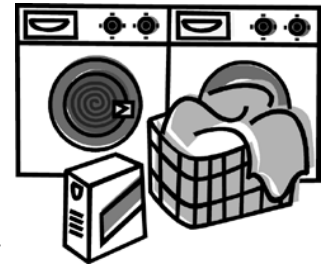
Cleaning water-soaked carpets and floors is difficult in itself, but in the aftermath of a storm or flood, contamination by mud, silt, sewage and mildew can compound the problem.

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)

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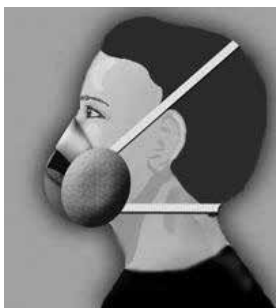
# Avoiding Mold Hazards in Your Flooded Home

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**Mold on wall extends above flood level because the moisture wicked up the drywall.**



**Wear an N95 or better respirator to reduce your exposure to mold spores disturbed during cleanup.**

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

Mold can damage materials and health. The longer mold is allowed to grow, the greater the risk and the harder the cleanup. So as soon as the floodwaters recede and it is safe to return, don't delay cleanup and drying.

Take photographs to document damages for insurance purposes, and get started. It is not wise to wait for the adjuster to see it in person. Most homeowners' insurance policies do not cover mold damage or mold remediation costs.

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. It may suppress the immune system or have other effects. Some types of mold in certain conditions can produce mycotoxins, which can be present in spores and fragments in the air. "Black mold" is a misleading term since many mold types are black.

Mold testing is not usually needed and is rarely useful to answer questions about health concerns. Some insurance companies and legal services may require sampling for documentation. Professional mold remediation contractors may test before and after cleanup to assess their efforts.

The best way to avoid mold hazards is to hire a licensed, trained and reputable water damage and mold remediation firm. After a flood, that may be difficult. Since many homeowners' insurance policies do not cover mold damage or mold remediation costs, many residents face having to do the cleanup themselves.

## Preventing Mold Growth after Flooding

- Remove wet carpeting right away. It's best to discard it. If the carpet is salvaged, clean, disinfect and dry it quickly. Never reuse flooded padding.
- Cut away wet wallboard and remove all damp insulation right away — even if wallboard appears to be dry. Wet insulation will stay wet far too long, leading to the growth of hidden unhealthy mold and decay fungi inside the walls.
- Clean with non-phosphate detergents (any phosphate residue is mold food). If you disinfect, follow directions carefully and never mix bleach with ammonia or acids (vinegar). Disinfectants can kill molds, but they do not prevent regrowth.
- Do all you can to speed the drying of subfloors, slabs and wall framing **before** replacing insulation, wallboard and flooring. Use air conditioning, heaters, fans or better yet, a dehumidifier. Water damage restoration contractors with special equipment (dehumidifying blowers) can provide the fastest drying.
- If possible, test the moisture content of studs and sheathing (using a moisture detector) before replacing insulation. Wood should drop below 20 percent moisture content by weight before you close the wall.
- **DO NOT** use vinyl wallpaper. It will prevent further drying on the inside.

### **Mold Cleanup Guidelines**

To clean up mold, follow these steps and refer to the EPA guidelines: *A Brief Guide to Mold, Moisture, and Your Home* or *Mold Remediation in Schools and Commercial Buildings*. Both are available online at [www.epa.gov/mold](http://www.epa.gov/mold).

### **Minimize Your Exposure During Cleanup**

People are exposed to mold by breathing spores or fragments. Exposure can also occur through skin contact. Wearing gloves and a respirator that can filter mold spores (N-95 or better is recommended).

### **Isolate Work Area and Ventilate to Outdoors**

Disturbing mold colonies can cause a massive release of spores, so seal off the contaminated area from the rest of the house. If power is on, use a fan to exhaust air to the outdoors.

### **Remove and Discard Moldy Materials**

Porous moldy or sewage-contaminated materials should be removed, bagged and thrown away. This includes gypsum wallboard, insulation, plaster, carpet/carpet pad, ceiling tiles, processed wood products and paper. To minimize the spread of spores, cover moldy material with plastic to contain spores before removal.

### **Clean Surfaces**

Surface mold on non-porous materials such as hard plastic, concrete, glass, metal and solid wood can be usually cleaned. Cleaning must 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. In the case of sewage contamination, disinfection must be performed. Contact your local health department for appropriate advice.

On colorfast, nonmetal surfaces, you may disinfect with a solution of ¼ to ½ cup bleach per gallon of water. Do not use in the air system. Milder, less-corrosive disinfectants include alcohols, disinfecting cleaners and hydrogen peroxide. Always handle bleach with caution. Never mix it with ammonia; test on a small area before treatment.

### **Speed Dry**

Dry all wet materials as quickly as possible. If possible, use air conditioning or heat with fans and dehumidifiers. New mold colonies can form in as little as three days if materials stay wet. Wood and other materials that look dry can still be wet enough to support regrowth.

### **Remain on Mold Alert**

Continue looking for signs of moisture or new mold growth. If mold returns, repeat cleaning and consider using speed drying equipment and moisture meters. Regrowth may signal that the material was not dry enough or should be removed. Rebuilding and refurbishing should wait until all affected materials have dried completely.

For more information on restoring a flooded home, see *Storm Recovery Guide for Homeowners* booklet or *Cleaning Flood-damaged Homes* fact sheet available from LSU AgCenter office or [www.lsuagcenter.com](http://www.lsuagcenter.com). For more comprehensive flood recovery guidelines, see the U.S. HUD publication, *Rebuild Healthy Homes: Guide to Post-disaster Restoration for a Safe and Healthy Home*, available as a free online pdf at [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/healthy\\_homes/disasterrecovery](http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/disasterrecovery) and as a mobile app.

# Reducing Bacteria in Clothing and Textiles

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Clothing and textiles that have been in contact with floodwater need to be sanitized because floodwater may be contaminated with sewage wastes. Bacteria from floodwater can remain alive on fabrics for a long time. A disinfectant destroys harmful bacteria. For disinfecting, use only products that display an EPA Registration Number on the label and have laundering instructions for disinfecting. Wash items in small loads in full water levels in our washing machine. Two types of disinfectants are effective on fabrics. Use whichever is appropriate for the particular fabric.

## Quaternary Compounds

Quaternary compounds are safe for fibers, will not damage wool or silk, but may cause some color change.

- Common brands commonly available in Kansas are Roccal<sup>1</sup> and Zephtrin<sup>1</sup>.
- Add at the beginning of the rinse cycle — 4 tablespoons Roccal or 2 tablespoons Zephtrin for top-loading automatics; 2 tablespoons Roccal or 1 tablespoon Zephtrin for front-loading automatics.

Quaternary compounds are available at dairy or janitorial supply houses or some drug stores.

## Chlorine Bleaches

Liquid chlorine bleaches are safe for most fibers except wool, silk or resin-coated (waterproof or water repellent) fabrics, but may cause color fading.

- Be sure that your colors are colorfast; best on white fabrics.
- Add bleach to water before putting in clothes or dilute bleach in 1 quart water before adding to the wash cycle.
- Use 1 cup in top-loading automatics; ½ cup in front-loading automatics.
- Do not use bleach in the rinse cycle.
- Be certain that the percentage of hypochlorite is 5.25%. Read the label.
- Some brands commonly available in Kansas:

Always Save Chlorine Bleach, Purex Bleach<sup>1</sup>, Best Choice Bleach, Top Crest Bleach or Fresh Scent Bleach, Blue Ribbon Chlorine Bleach, Value Time Liquid Bleach, Clorox Regular or Fresh Scent Bleach<sup>1</sup>. (Bleach labeled “color safe” is not a chlorine bleach and will not sanitize.)

<sup>1</sup>Contain both EPA Registration Number and laundry instructions for disinfecting.

## **The following cleaners will reduce bacteria, but not completely disinfect:**

### **Pine Oil Cleaners**

Pine oil cleaners are safe for washable clothing to help remove odors and help sanitize. Do not use them on wool or silk because the pine odor will linger in these fabrics. A pine oil cleaner should be at least 70% pine oil to disinfect. The higher the percentage of pine oil (19% or above) the more bacteria they kill.

Check for colorfastness by testing on a hidden area of the item.

- Add pine oil at the beginning of the wash cycle, preferably before the clothes are in the machine. Otherwise, dilute in one quart water before adding to machine.
- Use ½ cup with your regular detergent.
- Some brands commonly available in Kansas:

King Pine, Pine Plus, Pine-Sol, Spic and Span Pine, Lysol Pine Action, Pine Power, Real Pine  
Available in grocery stores, discount stores, hardware stores and drug stores.

### **Phenolic Cleaners**

Phenolic cleaners are safe for washable clothing.

- Avoid wool and silk, because the odor will remain.
- Use 1 cup in top-loading automatics; ½ cup plus 2 tablespoons in front-loading automatics.
- Add in either the wash or rinse cycle.
- Common brands available in Kansas:

Lysol Disinfectant Liquid Concentrate (a phenolic/quaternary mixture)  
Available in grocery and discount stores.

Deanna Munson, Extension Textiles Specialist  
Artyce Hedrick, Extension Clothing Specialist

July 1993

Notes

Lined area for notes.



# University of Missouri Extension Centers

County	Address	Telephone	County	Address	Telephone
Adair.....	503 E Northtown Rd, Kirksville, 63501.....	660-665-9866	Linn.....	Courthouse, 108 N High, PO Box 81, Linneus, 64653.....	660-895-5123
Andrew.....	Courthouse, 2nd Fl, PO Box 32, Savannah, 64485.....	816-324-3147	Livingston.....	2881 Grand Dr, Ste 2, Chillicothe, 64601.....	660-646-0811
Atchison.....	201 Highway 136 East, Rock Port, 64482.....	660-744-6231	Macon.....	404 N. Missouri St., Suites AB, Macon, MO 63552.....	660-385-2173
Audrain.....	Courthouse, 101 N Jefferson, Rm 304, Mexico, 65265.....	573-581-3231	Madison.....	137 W Main, Fredericktown, 63645.....	573-783-3303
Barry.....	700 Main St, Ste 4, Cassville, 65625.....	417-847-3161	Maries.....	Courthouse, PO Box 116, Vienna, 65582.....	573-422-3359
Barton.....	801 E 12th St, Lamar, 64759.....	417-682-3579	Marion.....	100 S Main St, Rm 201, Palmyra, 63461.....	573-769-2177
Bates.....	Courthouse, 1 N Delaware, Butler, 64730.....	660-679-4167	McDonald.....	306 Harmon St., P.O. Box 336, Pineville 64856.....	417-223-4775
Benton.....	1623 Commercial St, PO Box 969, Warsaw, 65355.....	660-438-5012	Mercer.....	807 E. Hickland, Princeton, 64673.....	660-748-3315
Bollinger.....	302 Union St., P.O. Box 19, Marble Hill 63764.....	573-238-2420	Miller.....	134 Second St, PO Box 20, Tusculumbia, 65082.....	573-369-2394
Boone.....	1012 N Highway UU, Columbia, 65203.....	573-445-9792	Mississippi.....	109 N First St, Charleston, 63834.....	573-683-6129
Buchanan.....	4125 Mitchell Ave, St Joseph, 64507.....	816-279-1691	Moniteau.....	Courthouse, 100 E Newton St, 4th Fl, Versailles, 65084.....	573-378-5358
Butler.....	614 Lindsay, Ste 3, Poplar Bluff, 63901.....	573-686-8064	Monroe.....	208 N Main St, Paris, 65275.....	660-327-4158
Caldwell.....	Courthouse, 102 N Main St, Ste 1, Gallatin, 64640.....	660-663-3232	Montgomery.....	310 Salisbury St, Ste E, Montgomery City, 63361.....	573-564-3733
Callaway.....	5803 County Rd 302, Fulton, 65251.....	573-642-0755	Morgan.....	Courthouse, 100 E Newton St, 4th Fl, Versailles, 65084.....	573-378-5358
Camden.....	44 Roofener St, PO Box 1405, Camdenton, 65020.....	573-346-2644	New Madrid.....	420 Mott St, New Madrid, 63869.....	573-748-5531
Cape Girardeau.....	684 W Jackson Trl, PO Box 408, Jackson, 63755.....	573-243-3581	Newton.....	18728 Hwy 59, Neosho, 64850.....	417-455-9500
Carroll.....	111 N Mason, Carrollton, 64633.....	660-542-1792	Nodaway.....	403 N Market St, Room 308, Maryville, 64468.....	660-582-8101
Carter.....	710 Main, PO Box 459, Van Buren, 63965.....	573-323-4418	Oregon.....	Courthouse, PO Box 97, Alton, 65606.....	417-778-7490
Cass.....	201 W Wall St, Harrisonville, 64701.....	816-380-8460	Osage.....	205 E Main St, PO Box 795, Linn, 65051.....	573-897-3648
Cedar.....	Crthse Bsm, 113 South St, Stockton, 65785.....	417-276-3313	Ozark.....	536 Third St, PO Box 187, Gainesville, 65655.....	417-679-3525
Chariton.....	Courthouse, 306 S Cherry, Keytesville, 65261.....	660-288-3239	Pemiscot.....	111 E 3rd St, PO Box 1001, Caruthersville, 63830.....	573-333-0258
Christian.....	105 N 2nd St, Ozark, 65721.....	417-581-3558	Perry.....	321 N Main, Ste 1, Perryville, 63775.....	573-547-4504
Clark.....	111 E Court St, Ste 10, Kahoka, 63445.....	660-727-3339	Pettis.....	1012A Thompson Blvd, Sedalia, 65301.....	660-827-0591
Clay.....	Crthse Annex, 1901 NE 48th St, Kansas City, 64118.....	816-407-3490	Phelps.....	Courthouse, 200 N Main, Rolla, 65401.....	573-458-6260
Clinton.....	101 S Main St, PO Box 294, Plattsburg, 64477.....	816-539-3765	Pike.....	Courthouse, 115 W Main St, Bowling Green, 63334.....	573-324-5464
Cole.....	2436 Tanner Bridge Rd, Jefferson City, 65101.....	573-634-2824	Platte.....	11724 NW Plaza Cir, Ste 300, Kansas City, 64153.....	816-270-2141
Cooper.....	510 Jackson Rd, Ste A, Boonville, 65233.....	660-882-5661	Polk.....	110 E Jefferson St, Bolivar, 65613.....	417-326-4916
Crawford.....	302 Water St, PO Box 190, Steelville, 65565.....	573-775-2135	Pulaski.....	203 North St, Waynesville, 65583.....	573-774-6177
Dade.....	2 N Main St, Greenfield, 65661.....	417-637-2112	Putnam.....	Courthouse, 1601 Main St, Rm 104, Unionville, 63565.....	660-947-2705
Dallas.....	Courthouse, PO Box 1070, Buffalo, 65622.....	417-345-7551	Ralls.....	311 S Main, PO Box 540, New London, 63459.....	573-985-3911
Daviess.....	102 N Main St, Ste 1, Gallatin, 64640.....	660-663-3232	Randolph.....	509 W Reed St, Moberly, 65270.....	660-269-9656
DeKalb.....	4125 Mitchell Ave, St Joseph, 64507.....	816-279-1691	Ray.....	1015 W Royle St, PO Box 204, Richmond, 64085.....	816-776-6961
Dent.....	Judicial Bldg, 112 E 5th St, Salem, 65560.....	573-729-3196	Reynolds.....	2319 Green St, PO Box 33, Centerville, 63638.....	573-648-1035
Douglas.....	Courthouse, 203 SE 2nd Ave, PO Box 668, Ava, 65608.....	417-683-4409	Ripley.....	100 Courthouse Square, Ste 7, Doniphan, 63935.....	573-996-2921
Dunklin.....	233 N Main St, PO Box 160, Kennett, 63857.....	573-888-4722	Saline.....	353 S Lafayette Ave, Marshall, 65340.....	660-886-6908
Franklin.....	116 W Main St, Union, 63084.....	636-583-5141	Schuyler.....	110 W Washington, PO Box 310, Lancaster, 63548.....	660-457-3469
Gasconade.....	1106 West Hwy 28, Owensville, 65066.....	573-437-2165	Scotland.....	117 S Market St, Rm 105, Memphis, 63555.....	660-465-7255
Gentry.....	1109 S Birch St, Albany, 64402.....	660-726-5610	Scott.....	6458 State Hwy 77, PO Box 187, Benton, 63736.....	573-545-3516
Greene.....	2400 S Scenic Ave, Springfield, 65807.....	417-881-8909	Shannon.....	P.O. Box 337, Eminence 65466.....	417-226-3268
Grundy.....	Courthouse, 700 Main, 1st Fl, Trenton, 64683.....	660-359-4040	Shelby.....	PO Box 230, Shelbyville, 63469.....	573-633-2640
Harrison.....	Courthouse Bsm, 1505 Main St, Bethany, 64424.....	660-425-6434	St Charles.....	260 Brown Rd, St Peters, 63376.....	636-970-3000
Henry.....	Crthse Bsm, 100 W Franklin, Rm 16, Clinton, 64735.....	660-885-5556	St Clair.....	655 Second St, 1st Fl, PO Box 523, Osceola, 64776.....	417-646-2419
Hickory.....	203 Cedar St, Hermitage, 65668.....	417-745-6767	St Francois.....	1 W Liberty, Ste 101, Farmington, 63640.....	573-756-4539
Holt.....	101 E Missouri St, PO Box 407, Oregon, 64473.....	660-446-3724	St Louis City.....	4207 Lindell Blvd, Ste 400, St Louis, 63108.....	314-200-2705
Howard.....	600 W. Morrison, Ste 17, Fayette, 65248.....	660-248-2272	St Louis.....	132 E Monroe, Kirkwood, 63122.....	314-400-2115
Howell.....	1376 Bill Viron Blvd, West Plains, 65775.....	417-256-2391	Ste Genevieve.....	County Svcs Bldg, 255 Market St, Ste Genevieve, 63670.....	573-883-3548
Iron.....	123 W Wayne St, Ironton, 63650.....	573-546-7515	Stoddard.....	316 S Prairie, PO Box 169, Bloomfield, 63825.....	573-568-3344
Jackson-Blue Springs.....	1600 NE Coronado Dr., Blue Springs 64014.....	816-252-5051	Stone.....	Courthouse, 108 E 4th St, PO Box 345, Galena, 65656.....	417-357-6812
Jackson-Kansas City.....	105 E. 5th St., Suite 200, Kansas City 64106.....	816-482-5850	Sullivan.....	Courthouse, 109 N Main St, Ste 30, Milan, 63556.....	660-265-4541
Jasper.....	Crthse Bsm, 302 S Main, Carthage, 64836.....	417-358-2158	Taney.....	122 Felkins Ave, PO Box 598, Forsyth, 65653.....	417-546-4431
Jefferson.....	301 Third St, PO Box 497, Hillsboro, 63050.....	636-797-5391	Texas.....	1114 W Main St, Ste 2, Houston, 65483-2130.....	417-967-4545
Johnson.....	135 W Market, Warrensburg, 64093.....	660-747-3193	Vernon.....	Courthouse, Grnd Flr, 100 W Cherry St, Nevada, 64772.....	417-448-2560
Kansas City.....	2700 E 18th St, Ste 240, Kansas City, 64127.....	816-482-5850	Warren.....	107 W Walton, Warrenton, 63383.....	636-456-3444
Knox.....	110 N 4th St, Edina, 63537.....	660-397-2179	Washington.....	113 N Missouri St, Ste A, Potosi, 63664.....	573-438-2671
Laclede.....	186 N Adams Ave, Ste D, Lebanon, 65536.....	417-532-7126	Wayne.....	110 Walnut St, PO Box 200, Greenville, 63944.....	573-224-5600
Lafayette.....	14 E 19th St, Ste 102, Higginsville, 64037.....	660-584-3658	Webster.....	800 S Marshall St, Marshfield, 65706.....	417-859-2044
Lawrence.....	Courthouse, PO Box 388, Mt Vernon, 65712.....	417-466-3102	Worth.....	Courthouse, 11 W 4th, PO Box 219, Grant City, 64456.....	660-564-3363
Lewis.....	104 E Jefferson, PO Box 68, Monticello, 63457.....	573-767-5273	Wright.....	9740 Red Spring Rd, Mountain Grove, 65711.....	417-547-7545
Lincoln.....	880 W College, Troy, 63379.....	636-528-4613			

The above list was accurate when this guide was updated. However, county centers occasionally move, so please call to confirm the address or check our locations list on the Web at <http://extension.missouri.edu/locations>.



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