

Response and Recovery

It is important to differentiate between minor emergencies and major emergencies. In general, minor emergencies involve only a few hundred books and can be dealt with by library staff operating in the building. Major emergencies would involve several thousand books and typically serious structural damage. For major emergencies outside help and facilities are usually needed.

Dealing with minor emergencies

Take the following steps in an emergency that can be handled on the premises and does not pose a threat to physical safety. That usually means an emergency involving fewer than 500 volumes, although the actual number depends on the drying space available and the staff able to participate.

Fire

1. Pull the fire alarm (the appropriate fire and rescue services should be automatically alerted).
2. Follow the emergency evacuation plan for your library (a copy of the plan should be in the institution's general safety manual).
3. Notify the institution's public safety office and contact the staff members in the disaster telephone tree.

Water

DO NOT ENTER A FLOODED AREA UNTIL MAINTENANCE AND SERVICE ELECTRICIANS HAVE DISCONNECTED THE ELECTRICITY—THERE IS EXTREME DANGER OF SHOCK.

1. Contact the staff members in the disaster telephone tree.
2. Once the area is safe to enter, cordon it off to prevent the general public from entering.
3. For water coming from above:
 - Cover the bookshelves with the plastic sheeting in the emergency unit supply box, or
 - Move books and any other library materials and property that might be damaged to a clean, dry area.
4. For water coming from below:
 - Move books off shelves to another location, or
 - Move books higher on shelves.
5. Contact the facilities manager if assistance is needed with building repairs or cleanup of the affected area. Be sure to provide your name and location and describe the problem. Meet the facilities manager at the door and stay with him or her to find out what action will be taken.

Dealing with major emergencies

Most library "disasters" are relatively minor, involving fewer than 1,000 volumes, and can usually be handled in-house by the library's disaster action team, with some advice and assistance from facilities management and a conservator.

For a major disaster—such as a hurricane, a large fire, or an explosion—it may be necessary to coordinate a large number of people and activities and commit significant amounts of money. The success of the recovery effort will depend on action that is quick but organized and deliberate. Clearly defined duties and a clear chain of command are essential to avoid confusion and to ensure the safety of the people working at the recovery site.

Guidelines

The following guidelines are designed to expedite the organization of the disaster action team. They also summarize technical information the team may need to plan and carry out the initial recovery operation. Since by far the most common library disasters involve water, the guidelines give special emphasis to salvaging wet material.

Checklist of immediate steps

The following description of salvage and recovery assumes that appropriate action has been taken to protect the safety of staff and patrons, as detailed in the institution's general safety manual.

- Alert appropriate staff members listed in the disaster telephone tree and name a meeting place.
- Make sure the emergency coordinator contacts disaster action team leaders.
- Contact the appropriate institutional offices of risk management and insurance and coordinate with emergency services to determine when and where it is safe to enter the building.
- Contain damage (for example, spread plastic sheeting over shelves).
- Reduce relative humidity and ensure good air circulation to control **mold** growth, keep air conditioning on if possible, and use fans and open windows to keep air circulating. Bring large commercial dehumidifiers into the facility if needed. Monitor temperature and relative humidity throughout the recovery process.
- Assess the nature and extent of the damage, and take photographs to document the damage.
- Identify a disaster command post, with telephones, desks, and supplies needed for directing the recovery effort.
- Take the time to make recovery plans; do not start removing material until a general plan of action is made.
- But make decisions and take action quickly: mold can start growing on wet material within 48 hours.

Plan for packing and removing materials

Care and organization at the removal stage can make the whole process of salvage and rehabilitation more efficient and less costly.

Organization

Identify and secure before any packing activities begin:

- Place to which materials will be moved (**air drying** location, freezer, storage).
- Packing area, with room to sort and pack materials.
- Loading area, accessible to vehicles bringing supplies and removing packed boxes.
- Route by which materials will be removed from the building.
- Means for moving packed **boxes**. Elevators may not be functioning, and electricity may be a problem. Consider pulleys, conveyor belts, and cranes.
- Rest area for workers, with refreshments and, if necessary, portable toilets.

- Transportation to freezer or freeze-dryer.

Workers

Salvage and recovery work can be dirty, exacting, and arduous. Supervisors should plan rest periods and refreshments about every hour and a half and bring on relief shifts as needed. Supervisors should have received training and should generally be members of the disaster action team.

- Identify library staff members who may have some experience and training in recovery.
- Consider other staff members who may be willing to assist with salvage.
- Appoint suitable temporary employees if necessary.
- Use volunteers for some of the recovery work (you may want to limit their involvement to nonrare materials).

Equipment

Under a well-organized disaster recovery plan, the following equipment should be either readily available or locally accessible.

- Plastic crates or cardboard boxes.
- Waxed paper or freezer wrap.
- Tags, paper, clipboards, and waterproof marking pens for labeling boxes and recording their contents and location.
- Protective clothing (aprons, hard hats, rubber boots, rubber gloves, respirators).
- Fans, lighting, dehumidifiers, and electric generators as necessary.
- Book trucks and hand trucks to help move boxes.

Sorting and packing

Following an initial strategy meeting with the disaster recovery director, the emergency coordinator organizes the workers into teams of three or four people and assigns the following tasks:

1. Bring, prepare, and assemble packing materials (boxes, cut waxed paper).
2. Remove and pack damaged material. During packing, sort the material (and label boxes) with advice from the library specialist and disaster recovery director:
 - For air drying
 - For freezing
 - For special processing
 - For direct return to shelves, when conditions permit
 - For discard
3. Label boxes and record a summary of what is being removed. Identify packed boxes by call number or by range of call numbers, make a chart of the shelves and code the boxes to that chart, or pack the boxes in shelf order and number the boxes sequentially.
4. Move crates and boxes to the loading point and load trucks.

Priorities

The library specialist or curator must decide issues of collection priorities, while the disaster recovery director and the emergency coordinator decide issues of conservation priorities.

- Consult the library's salvage priority checklist in organizing the order of removal.
- Discard easily replaceable materials unless damage is minimal.
- Assign a low priority to material with a low chance of recovery (books or periodicals on **coated paper** that has already dried, with irretrievably adhered pages).
- Start in the areas closest to the point of access and work back.
- Clear aisles and passageways first. Use a human chain to pass items out separately to a packing area. When the aisles are clear, bring the packing crates to the shelves.
- Remove the wettest books first. If water has come from above, start with the top shelves; if from below, start with the bottom shelves.
- If the packing and removal will take more than 10 hours, loosen tightly packed shelves or boxes so that the books and paper do not jam as they swell. Otherwise, leave material packed together on shelves or in record boxes where it will present less surface area for mold growth.
- Keep in mind that books submerged in water are likely to be in less danger than books that are wet but no longer submerged. Submerged books will remain more stable and be less vulnerable to mold attack than wet materials exposed to oxygen.

Washing off mud and dirt

Mud and dirt should be washed from library materials only under the direction of a trained conservation specialist. Skip the washing step if time or staff are short; the first priority is to remove the collection from further danger or from conditions that would promote mold growth.

If time and staff permit, some mud or dirt can be removed from water-damaged materials as they are assembled for packing. Once the mud and dirt dry, they will be difficult to remove. Set up an area with a source of clean running water, drainage, and a succession of nonrusting containers (such as plastic garbage cans) in which to rinse the material.

Handling wet materials

Derived from Betty Walsh, Western Association for Art Conservation Newsletter (May 1988)

Great care must be taken in handling wet library and archive materials. All materials are very fragile, including their **protective enclosures**. When wet, paper retains less than 10 percent of its tensile strength. If the original protective enclosures have disintegrated, replace them with new enclosures. Do not unpack structurally sound containers (although they may be reinforced by putting them in plastic crates). Fill cartons and crates three-quarters full with wet materials. Keep identification labels with objects. (Do not mark wet paper, but picture frames and reels can be marked with a grease pencil.) To prevent further damage, do not stack materials in piles or on the floor.

Paper

- Sheets of paper in folders. Do not try to separate the sheets, but interleave the folders every two inches with freezer paper and pack in boxes for freezing.
- Watercolors, maps, and manuscripts with soluble media. Do not blot the surface. Quickly freeze or air dry.

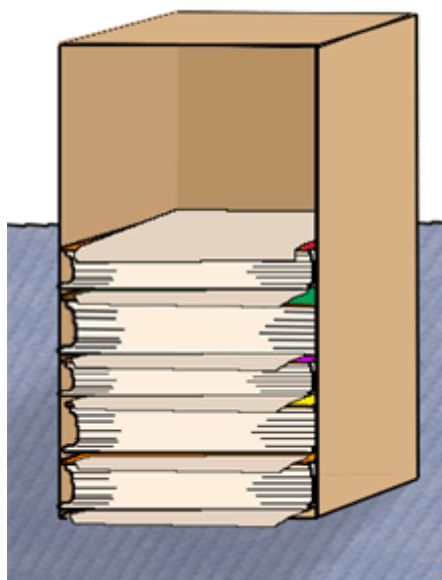
- Coated papers. Keep wet by packing in boxes lined with garbage bags, then freeze.
- Framed prints and drawings. If time and space permit, remove from frames and pack as for single sheets.
- Maps, plans, oversize prints, and manuscripts. Sponge standing water out of map drawers. Remove the drawers from the cabinet and ship and freeze them stacked, with 1 x 2 inch strips of wood between each pair of drawers. Pack loose, flat maps in bread trays, flat boxes, or plywood sheets covered in polyethylene. Bundle rolled maps very loosely to go in small numbers to the freezer, unless facilities are available for conservators to unroll them.

Books

Do not open or close wet books or remove wet book covers. If a book is stained with mud or dirt, wash the book before freezing. Do not wash open books and those with water soluble media. Wash closed books in tubs of cold running water and dab away (do not rub) mud with a sponge. Time and facilities may limit this treatment.

Lay a sheet of freezer paper around the cover and pack the book **spine** down in a milk crate or cardboard carton.

A good technique is to set the box on end and lay the books next to each other in the box, then tip the box onto its base when full.



Leather, parchment, and vellum bindings are an immediate priority because they become distorted and

disintegrate in water. Books with coated papers should be kept wet by packing them inside boxes lined with garbage bags, then freezing them.

Paintings

Drain the excess water off each painting and take it to a work area for immediate drying. Transport the painting horizontally if you can. If not, carry the painting facing toward you, holding the sides of the frame with the palms of your hands. Large paintings should be carried by two people. Remove and treat paintings in the following order: first, the most highly valued; second, the least damaged; third, the slightly damaged, and fourth, the severely damaged.

Floppy diskettes

If the diskettes are wet, pack them upright in containers of cold distilled water. Make arrangements to air dry them.

Sound and video recordings

- *Phonodiscs*. If the storage boxes are badly damaged, transfer the discs, up to five at a time, to milk crates. Pad the bottoms of the crates with ethafoam and interleave every 25 records with ethafoam to absorb shocks. Always support the discs vertically and hold the discs by their edges. Avoid shocks and jolts during transport.
- *Sound and videotapes*. Pack the tapes vertically into egg crates or cardboard cartons. Do not put excessive weight on the sides of the reels or cassettes.

Photographic materials

Salvage without delay these historical photographs:

- *Wet collodion photographs* (ambrotypes, tintypes, pannotypes, and wet collodion glass negatives). Salvage first and air dry immediately. Both immersion and freezing will destroy the emulsion.
- *Daguerreotypes*. Salvage and air dry.
- *Nitrates with softening emulsions*. Freeze immediately and make arrangements to freeze dry. Emulsions are water soluble and could be lost.

Other photographs should be kept wet in containers of fresh cold water until they are either air dried or frozen. If allowed to partially dry, they will stick together. Pack them in plastic garbage pails or in garbage bags inside boxes. Keep to a minimum the immersion time until treatment or freezing.

- *Prints, negatives, and transparencies*. Salvage color photographs first, then prints, then black and white negatives and transparencies. If facilities and personnel are available, air dry. If not, pack and freeze.

Motion pictures

Open the film can, fill it with water, and replace the lid. Pack the film cans in plastic pails or cardboard cartons lined with garbage bags. Ship them to a film processor for rewashing and drying.

Microforms

- *Microforms in rolls*. Do not remove the films from their boxes. Hold the cardboard boxes (and their labels) together with rubber bands. Fill the boxes with water, then wrap five boxes of film into a block with plastic wrap. Pack the blocks into a heavy duty cardboard box lined with three garbage bags. Label as wet film and ship to a microfilm processor. Alternatively, treat as for motion picture film by submerging the microfilm in plastic pails with water, ensuring that the pails have tightly fitting lids.
- *Aperture cards*. Pack and freeze.
- *Microfilm strips in jackets*. Pack and freeze.
- *Diazo microfiche*. Pack, freeze, and make arrangements to air dry.

Parchment and vellum

Separate parchment and vellum from other documents, pack in crates or flat boxes, and freeze

Recovery Methods for Other Media

Magnetic media

Consider all forms of magnetic media unsalvageable except possibly floppy diskettes. Routine backups give the best probability of saving data on magnetic media. *Never store the backups in the same location as the originals or they may be destroyed by the same disaster. Back up software programs as well as data disks.*

Diskettes should be removed from their jackets, washed, and dried. Cut the edge of the jacket with nonmagnetic scissors and remove the diskette with gloved hands. Wash the diskette in several water baths (photo trays) of distilled water and dry it with a lint-free towel. When the crisis is over, insert the diskette into a new jacket (cannibalized from a new diskette) and copy it using a disk drive. Clean the drive heads frequently as you copy diskettes.

Paintings

Ideally, paintings should be treated by a conservator. But as a first step, set up tables padded with blotters and covered with plastic.

Separate the merely wet paintings from those showing structural damage. Signs of structural damage include tears in the canvas and flaking, lifting, and dissolving of paint and ground layers. Put the structurally damaged paintings on the tables to dry, face up in a horizontal position.

To dry a structurally sound painting, put several more layers of blotter on a table, followed by a layer of tissue paper. Remove the painting from its frame but not its stretcher. Lay it face down on the surface, making sure that the tissue is not wrinkled. Cut blotters to the inside dimensions of the stretcher frame. Cut a sheet of plywood or thick masonite to the same dimensions, or smaller to fit inside the stretcher keys. Cover the back of the canvas with a blotter (if the canvas is large and more than one blotter is needed, butt the blotters end to end), then the board, and finally weights. Change the blotter until the canvas is dry. If the tissue on the front has any tendency to stick to the paint, leave it in place.

Sound and video recordings

- *Phonodiscs.* Remove the discs from their sleeves and jackets. If labels have separated, mark the center of the disc with a grease pencil and keep track of the label. Jackets, sleeves, and labels may be dried like other paper materials. If dirt has been deposited on the discs, they may be washed in a 10 percent solution of Kodak Photo Flo in distilled water. Air dry the discs on supports that permit free circulation of air.
- *Reel-to-reel tapes.* If the exterior of the tape is dirty, wash the tape (still on its reel) with lukewarm water. Support the tape vertically and air dry it, or air dry by laying it on sheets of newsprint spread over tables covered with plastic. The box can be air dried as well. If the reels are still dirty, remove the tape and wash the reel with detergent and water. (Alternatively, replace the reel.) Return the tape to its original box after the box has dried. Replace the box if badly damaged.
- *Videocassettes.* Dismantle the cassette and dry as for reel-to-reel tapes.
- *Audiocassettes.* If there are no master copies, dismantle the cassette and air dry the tape as above. Re-record the tape after drying. It is difficult to determine the condition of sealed cassettes. Copy them in any case.

Photographic materials

- *Wet collodion photographs and daguerreotypes.* Among photographic materials, the first priority is to dry

wet collodion photographs and daguerreotypes. The recovery rate may be low.

- *Case photographs.* Remove the assembly from the case. Carefully fold back the preserver frame, cut the sealing tape (if present) and take the assembly apart. Place daguerreotypes face up on blotters with the case components beside them. Wet collodion photographs should be dried in a similar way, emulsion side up.
- *Wet collodion glass negatives and unmounted case photographs.* Dry emulsion side up on blotters.
- *Prints, negatives, and transparencies.* In order of preference, the drying methods for these materials are air drying; freezing, thawing, and air drying; and freeze-drying. Vacuum drying is more likely than these methods to make the photographs stick together. Follow these procedures, as time and facilities permit:
- *Black and white prints and negatives.* Wash for half an hour in changes of cold water. Gently swab off stubborn dirt from the surface. Rinse with Kodak Photo Flo solution.
- *Color prints.* Wash as above, but for a shorter time.
- *Color negatives and transparencies.* Wash as above. A few varieties require bathing in a stabilizer before drying.
- *Color negatives.* Rinse for one minute using Kodak C41 stabilizer.
- *Ektachrome transparencies.* Rinse 10 to 15 seconds in Kodak E6 stabilizer.
- *Kodachrome.* No stabilizer required.
- *Eastman color film.* Send to a Kodak laboratory.

When air drying photographs, remember to keep them wet until they are separated from one another and their enclosures. If the photographs have been frozen, thaw them. If it appears that the photographs could dry and stick together during thawing, immerse them in cold water again. Dry the photographs emulsion side up on blotters, paper, or a nylon screen, or pegged by the corner to a fishing line.

Microforms

- *Aperture cards* Remove the film chips from their mounts, wash the chips, and remount them. This treatment is time-consuming, but it is the only one at present.
- *Microfilm strips in jackets* Cut the strips from the jackets with sleeve cutters. Wash and dry the film and insert it into new jackets.
- *Diazo microfiche and microfilm* Check for readability. If the photograph has blistered, discard it and replace it with a print from the security copy. If the photograph has not delaminated, wash it in cool water and dry it on blotters or a lint-free cloth.
- *Silver-gelatin-type microfilm* Label as wet film and ship to a microfilm processor.

[Printable plan for air drying wet books and records](#)

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