
**2016–2017 CARLI Preservation Committee Annual Project:
Disaster Planning**

<https://www.carli.illinois.edu/products-services/collections-management/disaster-planning>

The CARLI membership told the CARLI Preservation Committee as part of our *2015 Preservation Survey*, https://www.carli.illinois.edu/sites/files/files/2015Preservation_Survey.pdf, that disaster planning was a topic in which help was greatly needed. Thus, for our 2016-2017 annual project, the Preservation Committee chose to outline the steps to create a disaster plan. Our theme for our disaster planning project was “Slow and Steady Wins the Preservation Race.”

Over the course of the year, Preservation Committee members wrote following blogs on disaster planning, which were shared in the CARLI Newsletter as Preservation Tips:

- “Driving Lesson for Library Disaster Planning: Slow and Steady Gets You There!”;
- “Types of Midwest Disasters”;
- “Watch Out for Midwest Disasters”;
- “Disaster Planning: Getting Started”;
- “Creating a Plan – Templates for Success”;
- “In-House Management of Disasters”;
- “Supplies and Tools for Library Disaster Response”;
- “Recovery from a Disaster – Salvaging Your Collection Materials”;
- “Midwest and Regional Vendors: In Case of Emergency, Call ?”;
- “The Wet and Wily World of Preservation Disaster Statistics”;
- “Conclusion to Disaster Planning Project”.

These blogs culminated in the creation of a *Disaster Planning* webpage on CARLI’s website: <https://www.carli.illinois.edu/products-services/collections-management/disaster-planning>.

2016-2017 Committee

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Disaster Planning



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→ Creating a Plan

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→ Tools / Emergency Kit

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Recovery from a Disaster – Salvaging Your Collection Materials

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COLLECTION MANAGEMENT COMMITTEE

The Collection Management Committee works with the CARLI staff and members to identify, develop, and encourage cooperation and collaboration in the development and management of collection in all formats and media.

[Minutes & Reports](#)

Submitted by long20 on Fri, 02/24/2017 - 9:04am

Bonnie Parr, Historical Documents Conservator, Abraham Lincoln Presidential Library and Museum

Fire, water, mold – what do you do when faced with collection materials affected by these types of disasters? The decision to undertake salvage efforts in-house or to use a vendor who provides recovery services depends on the severity of the damage, quantity of materials affected, and resources available. The following information provides basic considerations and guidelines for recovering burned, wet, or moldy library materials. For more detailed instructions, refer to the bibliography at the end of this article.

General Considerations

For all types of disasters, human safety must come first. When handling or cleaning burned, water-damaged, or mold-damaged materials, always wear protective gear. At the very least, wear masks or respirators to protect breathing, gloves to protect hands, and safety glasses or goggles to protect eyes. Wear clothing that will cover exposed skin, especially on the arms and legs.

When damaged by fire, water, or mold, the condition of paper-based materials is severely compromised. Assume these materials are very fragile. Always provide a support when moving the affected items and handle them with deliberate care.

Fire

The greatest likelihood of total loss is caused by fire. However, surviving materials may be salvageable, depending on their location in relation to the fire and the extent of damage. Items charred on the outside, such as book covers and boxes, may have been of sufficient thickness to protect their contents from burning. Items not directly burned will likely be covered in soot and ash. Any items exposed to the heat of a fire will be very dry and brittle.

To clean, use a vacuum equipped with a HEPA (High Efficiency Particulate Air) filter and a control for adjusting suction. Vacuuming at low suction power is safer for removing dirt and soot from fragile paper. Place a square of cheesecloth over the end of the vacuum nozzle to catch any errant pieces of paper or book that accidentally detach during cleaning. Because soot and ash can easily embed into paper materials, don't allow the vacuum nozzle to touch the damaged item. Rather, hold the nozzle slightly above the item as it is being cleaned.

For more thorough soot and ash removal, use a soot-cleaning sponge. This is a soft sponge made of vulcanized rubber that picks up soot and ash particles and holds them in its surface pores. Dab, do not rub, the sponge on areas to be cleaned. As the sponge

accumulates soot and ash, periodically trim off its dirty surface to expose a clean edge. The sponge can also be cut into small squares for convenient use.

Water

Most types of disasters will involve water – whether from a hose used to put out a fire, a flood, a leaky pipe, or high humidity. All these causes will require measures to dry out wet materials. The three most common drying options for salvaging water-damaged collections are air drying, freezing, and freeze drying/vacuum freeze drying.

Air drying is the best method when there are small quantities of items to dry and the items are damp or slightly wet. It is effective for most types of library materials and, because it is usually done in-house, the damaged materials are still accessible for use. The drawback to this method is that it is labor-intensive and requires a lot of space and supplies.

Freezing is appropriate when there are moderate to large quantities of materials to dry. Freezing wet materials prevents (but does not kill) mold and “buys time” to gather resources and make arrangements for the salvage operation. It requires access to freezer space and packing/interleaving supplies. Library materials are not accessible for use until they are thawed and dried.

Freeze drying/vacuum freeze drying is the most efficient method for drying large quantities of material. It requires prior arrangement with a vendor for freezing services or space, arrangement of transport of the materials to the vendor, and packing/interleaving supplies. The cost of using a vendor is offset by the savings in staff time and resources that would have been used for an in-house salvage operation. There is no access to collection materials until the treatment is finished.

How to dry wet books:

- Remove book jackets and plastic covers to speed drying and prevent mold growth on the covers.
- If cleaning is necessary, hold the book tightly closed, dip it in clean water, gently squeeze the book to remove excess water, and wrap it to freeze or interleave to air dry.
- To pack for freezing, wrap wax paper or freezer paper around the outside of the book. If transporting to a freezer, place the wrapped book spine down in a waterproof box (or a cardboard box lined with plastic). To prevent damage from crushing, pack only one layer of books in the box.
- To air dry a damp book, stand or support the book upright on absorbent material (blotting paper, paper towels, butcher paper, or cloth towels) and fan the pages open. Turn the book over every 2-3 hours.

- For slightly wet books (water damage confined to the edges), place blotting paper inside the covers, interleave every 25 pages or so with absorbent material (to prevent stress on the binding, interleave no more than a third of the book thickness), and stand the book upright (also on absorbent material). Change the absorbent materials as they become wet and turn over the book at intervals.
- For books that are oversize, heavy, or too wet to stand on edge, lay them flat on absorbent material and interleave them in the same way as slightly wet books.
- Always check for mold growth during the drying process.
- When the book is mostly dry, but still cool to the touch, lay it flat, gently reshape the book block (if needed), and place a light weight on top to prevent the covers from warping while the book finishes drying.
- For books with coated paper that are damp or slightly wet, every page must be interleaved. Wet coated pages stick together and cannot be separated without tearing apart if allowed to dry without interleaving. It is better to freeze this type of book or send it to a freeze drying facility.
- Books with leather or vellum covers are vulnerable to distortion and are very susceptible to mold when wet. They should be frozen as soon as possible, until arrangements can be made for drying them.

How to dry wet documents:

- Remove wet papers from enclosures, encapsulations, mats, or frames.
- Freeze documents that have blurry-looking inks. These inks are soluble in wet conditions. Freezing will halt further bleeding of the inks.
- To pack large quantities of documents for freezing, wrap wax paper or freezer paper around intact manuscript boxes or stacks of folders or documents (limit the stacks to no more than 2 inches thick).
- To air dry a document, lay it flat on absorbent material, change out the absorbent material when it gets wet, and turn over the document at intervals.
- For items with water-soluble media, dry them media-side up.
- For items with coated paper, it is important to separate the sheets while they are still wet to prevent them from sticking together. To separate the sheets, press a piece of polyester film on top of the stack and then carefully peel the film off with the top sheet attached. The sheet can then be air dried on top of the polyester film or sandwiched between two pieces of non-woven polyester fabric (like interfacing material). Repeat the process to separate the rest of the document sheets.
- For a document in good condition, an alternative method of air drying is to hang it on a line to dry vertically using plastic clothespins. If needed, sandwich the document between two sheets of polyester fabric for extra support.

Mold

Mold needs warmth and moisture to germinate. These conditions are all too common when water disasters strike or when the air handling system fails to control humidity.

Documents and components of books (paper, covering materials, and adhesives) serve as "food" for mold, which digests the organic material and breaks it up at the cellular level.

This is why severely mold-damaged paper is so fragile and seems to turn to dust when handled.

Active mold is fuzzy in appearance and usually, but not always, grows in a circular pattern.

In the active stage, mold will smear and embed itself into the surface in which it is growing if the surface is touched or brushed to remove the mold.

The mold first must be rendered dormant, by drying out the air and the affected item.

Place moldy papers and books in a space that is cool, with good air circulation, and where the humidity can be lowered to 45% or less. Alternately, moldy items can be frozen to stop (but not kill) mold growth. When the mold appears powdery, it has dried and can be removed from affected items.

Consider any mold as posing a serious health hazard. It is extremely important to use personal protective equipment to guard against respiratory and allergic responses to mold.

When removing mold from library materials, take steps to guard against spreading mold spores into the room air. Clean items in a fume hood, if available, or clean them near an open window, with a fan blowing the room air out the window. Weather permitting, mold removal can be done outside, which will avoid the problem of potential contamination of room air. Even outdoors, it is important to use personal protective equipment.

To remove dormant mold, use a vacuum equipped with a HEPA filter and adjustable suction and hold the nozzle above the item, as described for removing soot and ash particles. A brush can be used to loosen and sweep the dry mold into the nozzle. To protect a document from the suction of the vacuum, clean the document through a screen made of plastic or fiberglass mesh.

To remove mold from a book, vacuum or brush the entire cover. Then, holding the book tightly closed, vacuum or brush the edges of the book, cleaning from the spine edge to the fore edge. This will prevent mold and debris from falling down inside the spine.

Bibliography

Complete list of YouTube "chapters" from the [↗ Field Guide to Emergency Response](#)

Relevant "chapters":

[↗ Soot and ash](#)

[↗ Mold](#)

[↗ Water](#)

National Archives, [📄 Fire Recovery: A Case Study](#)

Northeast Document Conservation Center, Preservation Leaflet 3.6, [↗ Emergency Salvage of Wet Books and Records](#)

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National Park Service, *Conserv O Gram* 21/4, [📄 Salvage At A Glance, Part I: Paper Based Collections](#)

Minnesota Historical Society, [↗ Salvage Procedures for Wet Items](#)

Northeast Document Conservation Center, Preservation Leaflet 3.8, [↗ Emergency Salvage of Moldy Books and Paper](#)

Conservation Center for Art & Historic Artifacts (CCAHA), [📄 Managing a Mold Invasion: Guidelines for Disaster Response](#)

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Please view the full *Disaster Planning* webpage at:

<https://www.carli.illinois.edu/products-services/collections-management/disaster-planning>.