

Stabilize

If large numbers of books are water-damaged, it's important to stabilize them as soon as possible to prevent the growth of mold (which can occur within 48 hours). This will also buy time to assess the materials at a later date to see if they can be replaced or treated.

Freeze

Freezing is the best means of stabilization.

- If only a few books are affected, a home freezer may be used. Place each book in a plastic bag before freezing.
- If the weather is cold enough, books may also be packed loosely in boxes and place in a sheltered spot outdoors for freezing (covered porch, garage, etc.). Put each volume into a plastic bag or separate books with freezer paper to prevent them from freezing together and arrange the volumes on their spines or flat, placing like-sized volumes together. Packing too tightly will slow the freezing process. Alternatively, if no sheltered area is available, place the whole box in a plastic bag or encase it in a tarp for protection, and place the box in a location with freezing temperatures.
- Blast freezing is the best method and may be practical if, for example, a department has a huge number of water-affected, non-library volumes that can be treated as a batch.
- Central Storage and Warehouse in Madison has agreed to blast freeze materials in the wake of library disasters and may be willing to do it for personal collections as well, but would most likely prefer to do it in bulk, rather than for small numbers of volumes.
 - Inquire as to whether or not they will blast-freeze personal book collections, and ask how they would like to have the materials packaged.
 - Central Storage & Warehouse, Inc.
 - 4309 Cottage Grove Rd.
 - Madison 53716
 - 608-221-7600
 - contact Steve Sharratt, VP Sales & Marketing, steves@csw-wi.com

Replace

In general, for books that are water-damaged or moldy, it is usually more cost-effective to replace the volumes, rather than treat them.

- Good sources for searching out-of-print materials
 - Addall <http://www.addall.com/Used/> and Bookfinder <https://www.bookfinder.com/>
- Check *Books in Print* for in-print titles: <https://www.booksinprint.com/>
- Amazon is also an option for either category of material.

Vacuum Freeze Dry

For irreplaceable books, vacuum freeze drying is a good option. This salvage method results in far less distortion than other treatment methods and can be combined with cleaning.

- A nearby resource is Midwest Freeze Dry in Skokie, Illinois.
 - www.midwestfrezedry.com
 - 847-679-4756 (not toll-free)
 - mfd7326@sbcglobal.net
- Cost is dependent on pound of water extracted, so there is no real advantage to trying to separate saturated books from the minimally damaged.

Air Dry

If damaged items are minimally affected, e.g., wet along the edges, they may be air-dried, but the end product will most likely display a fair amount of distortion. Instructions attached.

Mold.

If mold has set in, salvage is very difficult. If the item cannot be replaced, vacuum freeze drying offers the best chance of reclaiming it. The bloom can be removed, but stains that have penetrated the paper will most likely remain.

BOOK SALVAGE: AIR DRYING

NOTE: Attempt air drying only when paper and/or covers are not very wet. Saturated materials will require blast freezing and subsequent vacuum-freeze-drying. For these, see PACKOUT INSTRUCTIONS.

1. GUIDELINES FOR AIR DRYING

- 1.1. Air drying requires a lot of time, a lot of table space, and frequent handling and monitoring. Attempt air drying only when there are very limited numbers of minimally affected materials.
- 1.2. Air drying usually results in some crinkling or distortion of the item. This cannot be fully corrected, even if the volumes are later pressed.
- 1.3. Do not attempt to air dry glossy/clay-coated paper. Pages will stick together and book will become unsalvageable.
- 1.4. Air drying should be reserved for materials that are only damp or very minimally wet, e.g., along the edges of the pages.

2. PREPARATION FOR AIR DRYING

- 2.1. Cover the table with plastic, if necessary.
- 2.2. Spread blotter paper or unprinted newsprint over the table.
- 2.3. Bring in fans to keep the air circulating during the drying process. Do not direct the air flow at the materials, but toward the ceiling.
- 2.4. D. Arrange for temperature and relative humidity to be kept low: 50-65 deg. F., and 25-35% RH. Use a dehumidifier if necessary, but be aware that the motor of the dehumidifier will also raise the temperature of the immediate area.

3. PROCEDURES

- 3.1. Stand books in an upright position, with covers open at not more than a 90-degree. angle. Allow

pages to fan open.

- 3.2. If one end of the textblock is clearly more dampened, e.g., the top edge, place the book with that edge down, in closest contact with the blotting paper or newsprint. An ***exception*** is if the fore-edge is most affected; in this case, do not stand the book on its fore-edge, but on the bottom or top edge. An alternative would be to lay it flat for drying (see instructions below).
- 3.3. Keep books upright with weights (e.g., buckram covered bricks or lead weights) or rust-proof bookends. It may also be possible to stand books in an “accordion” arrangement, with the spine of each book facing the opposite direction from the spines of its neighbors, and with the covers of neighboring books touching each other or tucked inside of each other for support.
- 3.4. Flat drying. If a damp volume will not stand easily for any reason, it is possible to lay it flat for air drying. In this case, interleave the pages with paper towels, waxed paper, or Zorbix sheets every 10-20 pages, being careful not to put in so much interleaving that the book becomes distorted.
Monitor carefully, and replace damp interleaving sheets with dry sheets placed at different positions in the book. Repeat until the volume is dry.
- 3.5. When books are dry, press them, if necessary, to help reduce crinkling or distortion.