

# Cambridge Colleges' Conservation Consortium Disaster Training Day, King's College, 29 August 2017

## Follow-up notes on practical triage sessions

### How to deal with wet documents

If your documents, books or photographs are wet following an accident or flood, immediate action needs to be taken to prevent mould growth and physical distortion of the paper. Where other damage is also present (e.g., fire damage), addressing wetness in materials is the priority need. Although water damage to some items may be irreversible, following the steps below can give your collections a good chance of survival. Most small or medium-sized events can be easily and cost-effectively treated by air drying.

In the event of water damage to larger or valuable collections, or if in doubt about the best course of action, contact your conservator for advice. Your objective is to have all affected material dry, drying or stable (e.g., frozen) within 72 hours of the event.

### Mould growth

Immediately remove wet items from flooded or damp places, as mould will begin to grow within 48 hours. Mould spores flourish in warm, damp, stagnant conditions, and in the dark, so make sure the items are moved to a suitable environment before starting the drying process.

### Paper distortion

Paper-based collections will immediately begin to show signs of physical distortion, which makes the paper extremely fragile and easily torn or damaged. As no drying method can completely restore a collection, some cockling should be expected.

### Handling

General principles:

- Always wear gloves
- Support and minimise direct handling – use crates/support boards, melinex, or existing drawers/containers/boxes
- Push from behind/lift from underneath - never pull
- Place items on the palms of hands
- Let water drain away if possible at scene
- Use crates – don't overfill and place heavy items at bottom

The following handling precautions should always be observed:

Wet books	<ul style="list-style-type: none"><li>• Do not open wet volumes or close those that have fallen open</li><li>• Do not separate covers from text blocks</li><li>• Handle one item at a time</li><li>• Do not press water out of wet books</li></ul>
Unbound documents	<ul style="list-style-type: none"><li>• Keep all documents in order and in or at least with their folders if possible</li><li>• Do not blot surfaces of documents that have water-soluble inks</li></ul>
Photographic material	<ul style="list-style-type: none"><li>• Do not allow wet photographic materials to dry in contact with one another</li></ul>

	<ul style="list-style-type: none"> <li>• Do not touch the emulsion (print) side of photographic materials</li> <li>• If photographs are stuck together, do not try to separate them and seek assistance from your conservator</li> </ul>
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### **Air-dry or stabilise?**

Air-drying has high success rates after water-damage. Drying removes water only, but the faster intervention minimises the need for conservation/post-drying treatment.

Speeds for air drying

- Fast (48 hours) – wind tunnel, non porous surface
- Medium (5-7 days) – table top, porous surface (e.g., blotting paper)
- Slow (14-21 days)– dehumidifier in the room, non-porous surface

Your decision may be to stabilise and prevent escalation of damage by

- Freezing (paper, books, textiles. Not glass)
- Keeping wet (AV, microfilm, photographs/microfiche)

To extend decision-making time regarding salvage and replacement, freezing is the most viable option for most collections. Because it inhibits mould growth, freezing allows the time to determine if value, use, and format of the original are important, or to de-accession or purchase replacement materials or materials in a different format. Freezing also provides a respite to review insurance policies and vendor contracts, and will allow time to find space for air drying, determine if there is adequate staff and time to air dry, and to handle large incidents in a smaller, more controlled atmosphere.

### **Triage**

Degrees of wetness can be considered with these main categories in mind:

- Damp: Cool to the touch, having been exposed to high humidity; can be identified after the event by mould formation.
- Slightly wet: Noticeably wet with staining to the textblock, binding, folder, or pages, no more than ½” in from the edges. These areas will have been in immediate contact with water.
- Wet: Noticeably wet with staining more than ½” in from the edges up to saturation; can be based on the length of time exposed to water.

Categorise material

- Dry (or in wet enclosure)
- For air-drying in house (slow/moderate/fast in wind tunnel)
- For stabilisation (freeze or keep wet; saturated material/bulk volume)
- For second opinion/further intervention (e.g., semi-saturated/adhered items)

Red flag items requiring special attention or freezing

- Saturated – will go mouldy before dry
- Too large – can’t support itself to dry
- Too labour intensive – needs lots of attention
- Too fragile – can’t support itself
- Mould contamination
- Foul water

*(And then what?)*

### **How to air-dry**

General principles:

- Keep area cool, air moving, dehumidify
- Don’t overhandle material

- Increase the surface area if possible – fan open/place on blocks
- Interleave if that will help
- Monitor for distress

First, place absorbent material, such as blotting paper, unprinted newsprint paper or undyed paper towels underneath the drying documents to absorb excess moisture. Circulating air will dry most materials, and fans can safely be used as long as the airflow is directed slightly away from the documents (see wind tunnel diagram below).

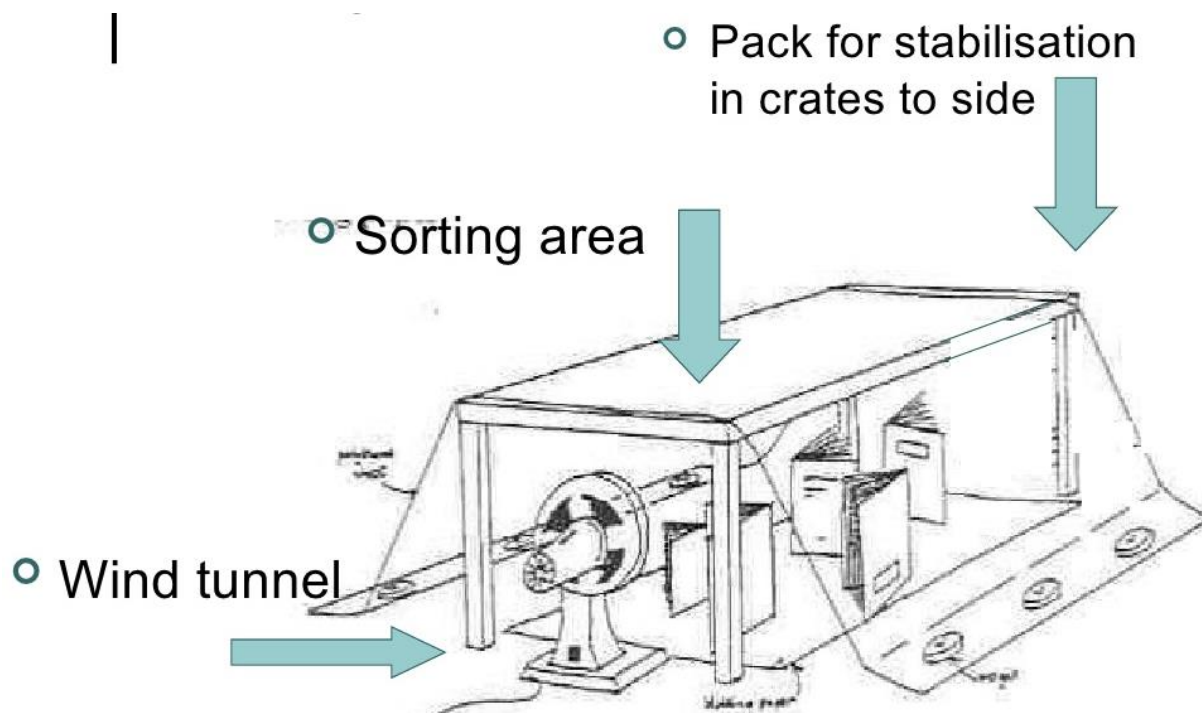
Saturated Books	Stand on head on absorbent paper with covers open slightly; place absorbent paper between text block and covers; change absorbent paper as soon as it becomes wet and turn books alternately to rest on head and tail each time the paper is changed.  If saturated books are unable to bear their own weight, or risk severe distortion, consider bandaging and bagging to be frozen and dried later.
Partially Wet Books	Interleave absorbent paper every 20 pages with interleaving extending beyond the head (or tail) and text block; lay book flat; change interleaving when wet.
Damp Books	Stand on tail fanned open in a current of air. Consider constructing a wind tunnel (see diagram below). heWn almost dry lay book flat and place absorbent paper between covers and text block; reshape if possible; place light weight (covered in clean paper to prevent marking) on top until completely dry.
Bound Coated Papers/ Glossy Magazines	Interleave between each page with waxed paper; damp books should be stood on their heads and fanned open; fan through pages frequently to prevent sticking. If stuck together, refer to your conservator.
Unbound Coated Papers	Every sheet of coated paper should be separated from each other before drying; spread documents on table or floor and change absorbent paper beneath as it becomes wet. If stuck together, refer to your conservator.
Saturated Documents	Spread documents on table or floor and change absorbent paper beneath as it becomes wet.
Damp Documents	Flatten by placing between two sheets of absorbent paper and applying even pressure with weights until dry.
Photographic Prints	Remove from frame or mat; place on absorbent paper with face up and change paper when wet; if print appears to be stuck to glass do not remove and refer to your conservator.

Extracted from: <http://www.nationalarchives.gov.uk/documents/information-management/wet-documents.pdf>

You can aid drying of bound materials by setting up a wind tunnel in which to dry them.

Diagram of a wind tunnel:

Image courtesy of Emma Dadson, Harwell Document Restoration Services



Further reading:

“Salvage Procedures”, US National Library of Medicine,  
<https://www.nlm.nih.gov/hmd/preservation/pdfs/printableinstructions.pdf>

“Emergency Management Leaflet”, Northeast Document Conservation Centre,  
<https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.6-emergency-salvage-of-wet-books-and-records>

“The Efficacy of Various Drying Methods”, by Hilary A. Kaplan and Kathleen A. Ludwig,  
Document Conservation Laboratory, National Archives and Records Administration  
<https://www.archives.gov/preservation/conservation/drying-methods-01.html>  
and  
<https://www.archives.gov/files/preservation/records-emergency/pdf/drying-techniques.pdf>

The freeze dryer in action, <https://www.youtube.com/watch?v=LwbQhVUJPqU>