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**Guidelines for best practice in the event of a disaster**

**Part 1**

**Number 53**

**December 2016**

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**Guidelines to help with salvaging your collections in the event of a disaster**

## If you are first on the scene

These suggestions may help you respond to an emergency.

**These are only guidelines and as each disaster is different it may be necessary to modify these procedures.**

It's tempting to "get right to work," but planning and initial organization will save you stress, work and possibly additional loss.

Contact local, regional, or institutional conservation facilities and local conservators,

Remember that safety comes first; don't endanger yourself or your staff

### Initial Reaction:

Control or eliminate the source of the problem

- Turn off the electricity and gas; Inform appropriate authorities; Inform proper civil authorities; Find the person in charge of the building

### Assessment

This will begin after the building is declared safe for re-entry.

- Officials may prevent re-entry for several days if not weeks or months.
- Consult your emergency plan if you have one.
- Take time to coordinate and plan activities.

### Priorities:

Human safety ensure that staff and volunteers have been inoculated against such as tetanus and obtain masks for mould.

Obtain equipment, records, forms and any information needed to manage salvage and reopen institution.

Make a thorough photographic and written record of emergency conditions and salvage activities.

Assemble collections records: shelf lists, inventory, registrar's logs, etc.

stabilize building

Prioritize collections, from important (valuable; heavily used; significant; vulnerable to irreparable damage) to least important.

### Designate:

Emergency coordinator

Liaison with civil authorities

Individual with financial authority

Volunteer coordinator

Journal keeper and photographer to keep detailed records of damage and -Recovery activities

Individual who can authorize object movement and treatment

### *Secure the site perimeter*

### Establish a communications network

### Inform your insurance company:

- Document all stages of response regularly and with a diary And photographs
- Accompany the insurance adjuster and all investigating persons and contractors, taking notes of

conversations. Such records may be required in court

### Prevent Further Damage:

#### Water

- Turn off electricity, blocking entry until done. The power company may have to do this
- Switch off, divert, or sandbag the water source
- Cover drains as soon as possible
- Cover places where water is entering
- Move collections up if water is rising
- Allocate staff and volunteers for work, tea breaks, and food
  
- Locate supplies: containers, blank newsprint, clean sheeting, blotter paper, toweling, flashlights, batteries, fans, extension cords, work lights, ladders, padding materials, mops, buckets, sponges, hand tools, plastic bags, boots, aprons, tags and labels, scissors, pencils and paper, clipboards, filament tape, waterproof markers, rubber gloves, and a source of clean water
- Contact engineer if your building is a historic structure, or if a great deal of water has been absorbed. Contact a commercial dehumidification firm if your building is large, based on the advice of a conservator
- Locate pump and fans, and use only if you know the area is dry
- Plan mud or silt removal, remembering that it may be contaminated

- Raise objects out of water
- Cover objects. Check every 24 hours, uncovering if there is a threat of mould.
- Secure floating objects.

#### Fire Damage

**Please note that there will also be extensive water damage caused by the sprinklers going off or by the firemen putting the fire out so please read in conjunction with water damage.**

In the aftermath of a fire you need to move quickly, decisively and knowledgeably in order to save as much as can be saved.

If you've had a fire there will be a number of problems. You will most likely have a quantity of charred, sooty and fragile material, but you may also have a lot of wet material: most fires are put out with water, either from overhead sprinklers, hose reels or fire trucks. The presence of water further complicates an already difficult recovery operation.

What to expect when you've had a fire affecting your records

After a fire, there are several types of damage you may encounter, including items that are:

- completely burned and beyond salvage
- partially burned, but dry
- partially burned, but wet
- smoke or soot damaged
- unburned but wet
- physically damaged from the firefighting effort
- just heat affected

Any material in the first category – that has been turned black by the fire – is generally past help. It is usually so weak as to fall apart with the slightest handling and has often lost any information it carried. Unfortunately there is no easy way to bring this back. In extreme cases carbonised images can sometimes be read using special forensic techniques but these are very expensive and difficult to source.

#### **Prevent Further Damage:**

- Block off areas that have been damaged from all but the salvage teams
- Cover or remove undamaged objects as soon as possible
- Cover places where water is entering from dowsing of fire
- Move collections up if water is rising
- Allocate staff and volunteers into teams for work, tea breaks, and food
- Locate supplies: containers, blank newsprint, clean sheeting, blotter paper, toweling, flashlights, batteries, fans, extension cords, work lights, ladders, padding materials, mops, buckets, sponges, hand tools, plastic bags, boots, aprons, tags and labels, scissors, pencils and paper, clipboards, filament tape, waterproof markers, rubber gloves, and a source of clean water
- Contact engineer if your building is a historic structure, or if a great deal of water has been absorbed. Contact a commercial

dehumidification firm if your building is large, based on the advice of a conservator

- Locate de-humidifiers, wet and dry vacuums and fans, and use only if you know the area is safe
- Plan removal of objects into categories of soaking wet, damp and dry  
Cover objects. Check every 24 hours, uncovering if there is a threat of mould

#### **Earthquake/ Tsunami**

**Please note that there will also be extensive water and fire damage caused by the sprinklers going off or by the firemen putting the fire out so please read in conjunction with water and fire damage.**

#### **Prevent Further Damage:**

- Block off areas that have been damaged from all but the salvage teams
- Cover or remove undamaged objects as soon as possible
- Allocate staff and volunteers (if you can remember all other areas of the city will be affected as well) into teams for work, tea breaks, and food
- Locate supplies: containers, blank newsprint, clean sheeting, blotter paper, toweling, flashlights, batteries, fans, extension cords, work lights, ladders, padding materials, mops, buckets, sponges, hand tools, plastic bags, boots, aprons, tags and labels, scissors, pencils and paper, clipboards, filament tape, waterproof

markers, rubber gloves, and a source of clean water

- Contact engineer if your building is a historic structure, or if a great deal of water has been absorbed. Contact a commercial dehumidification firm if your building is large, based on the advice of a conservator
- Cover places where water is entering
- Move collections to a safe area if in danger but safe from falling masonry
- Locate de-humidifiers, wet and dry vacuums and fans, and use only if you know the area is safe
- Plan removal of objects into categories of soaking wet, damp and dry if affected by water
- Cover objects.
- Check every 24 hours, uncovering if there is a threat of mould

### **Mould infestation**

**It is vital that all team members are equipped with gloves, masks and adequate clothing to protect themselves against the spores**

#### **Prevent Further Damage:**

- Quarantine areas that have been affected from the rest of the building to ensure spores do not spread
- Cover or remove undamaged objects as soon as possible to another isolated area unaffected by the attack  
Locate supplies: containers, blank newsprint, clean sheeting, blotter paper, toweling, fans, extension cords, work lights, ladders, padding materials, mops, buckets,

sponges, hand tools, plastic bags, boots, aprons, tags and labels, scissors, pencils and paper, clipboards, filament tape, waterproof markers, rubber gloves, and a source of clean water

- Move collections to a safe area if in danger from mould growth or pest infestation.

**However do not place in an area with other objects in case infestation or mould spores are already present**

- Locate de-humidifiers and fans, and use only if you know the area is safe
- Consult a conservator on methods of dealing with the damage caused by this problem
- Plan removal of objects into safe isolated areas for conservation treatment  
Check regularly

### **Pest outbreaks**

**It is vital that all team members are equipped with glove, masks and adequate clothing to protect themselves against the spores**

#### **Prevent Further Damage:**

- Block off areas that have been effected from the rest of the building
- Remove undamaged objects as soon as possible
- Contact your pest control firm and a conservator as soon as possible
- Allocate staff and volunteers into teams

- Locate supplies: containers, blank newsprint, clean sheeting, blotter paper, toweling, flashlights, batteries, fans, extension cords, work lights, ladders, padding materials, mops, buckets, sponges, hand tools, plastic bags, boots, aprons, tags and labels, scissors, pencils and paper, clipboards, filament tape, waterproof markers, rubber gloves, and a source of clean water
- Contact a pest control firm if your building is large, based on the advice of a conservator
- Move collections to a safe area if in danger from the pest infestation.

**However do not place in an area with other objects in case infestation or mould are present**

- Consult a conservator on methods of dealing with the damage caused by this problem
- Plan removal of objects into safe isolated areas for conservation treatment  
Check regularly.

### Basic Drying Procedures

AIR DRY means find a cool, dry space with fans. **DO NOT USE HEAT**

FREEZE DRYING means the use of specialized freeze drying equipment that is set up specifically for the freeze drying of artifacts

VACCUM DRYING is the specialized equipment that is set up specifically for the drying of artifacts.

FREEZING is a process used to inhibit mould growth as a temporary measure before other processes are used to remove moisture.

GENERAL:

Use absorbent material (un-inked newsprint, blotters, and paper towels) under objects. Replace absorbent material as it becomes wet.

For wet books, documents, photographs, textiles: if these cannot be air-dried within about 48 hours, freeze.

If freezer is unavailable, keep as cool as possible with air circulation until air drying is possible.

Expect mold growth.

Since most materials become significantly weaker when wet, do not hang wet objects without a conservator's advice.

### Salvaging Water Damaged Collections

**Before:**

1. Designate a salvage co - coordinator. It is easier to do this as part of the pre produced disaster plan
2. Know how to find recovery specialists or use a conservator or other staff member trained in dealing with emergency salvage.
3. Do not enter the building until it has been designated as safe. Discuss with the maintenance manager, fire and police departments.

4. Salvage co -coordinator assembles the Disaster Team.
5. The salvage co -coordinator and recovery specialists, accompanied by a recorder and a photographer, will assess the scene of disaster. The latter three will survey and photograph the damage.
6. Decide whether the building will stay open, or closed so staff can participate in salvage operations.
7. The salvage co -coordinator ensures that there is an office or desk near the site and is accessible by phone or walkie-talkie.
8. The logistics manager arranges for emergency facilities and supplies. Arrangements should be made for team members - coffee, portable toilets, etc.
9. The salvage co -coordinator will liaise with the maintenance manager.
10. Reduce the temperature to less than 18°C (65°F) by turning down the heat.
11. Lower relative humidity by adjusting the humidification system or installing dehumidifiers.
12. Set up fans to ensure circulation of air
13. Monitor environment.
14. The salvage co -coordinator will delegate teams for salvage.
15. Team members to be briefed and sent to their assigned teams
16. Prepare packing materials (cutting freezer paper, assembling cardboard boxes) and move to packers.

#### **During:**

It is almost always important to call in preservation and conservation experts to assist in the salvage of collections.

***The suggestions offered here are not intended to be a replacement for the advice of individuals who have the opportunity to examine the damaged or affected collections and develop treatments specifically for those items.***

- This information, however, may be of assistance when preservation/conservation assistance is not immediately available.

<h4><b>Packing the damaged collections.</b></h4>
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1. Begin with the wettest objects and items on the floor.
2. Move crates and boxes by hand trucks and pallet movers if possible.
3. The recorder numbers the crates and records their contents. If catalogue numbers aren't evident, note the location where the object was found. Record the condition of the contents as wet, partially wet, or damp.
4. Label crates with Tyvek tags and mark cardboard boxes directly.
5. If the damage is substantial and salvage will take more than 10 hours, loosen tightly packed document boxes, books and pamphlets so they do not jam into the shelves.
6. Do not separate the remaining dry books and documents when the relative humidity is high.

7. If the RH remains high during cleaning and repairing of the storage areas, remove to an air conditioned room.
8. Evacuate undamaged diskettes because they are sensitive to a high relative humidity.
9. Meetings will be held at the beginning and end of each day to review strategy and to keep up morale.
10. The shelves will be repaired and cleaned after the collections are removed.

### Handling

Be extremely careful when handling wet materials as some of them will very fragile.

- If the storage boxes have disintegrated replace them with new containers.
- Don't unpack structurally sound containers (although they may be reinforced by packing inside plastic crates).
- Fill cartons and crates three-quarters full.
- Keep identification labels with objects. (Don't mark wet paper, but picture frames and reels can be marked with a grease pencil.)
- To avoid mechanical damage, do not stack materials in piles or on the floor.

### Specifics

#### PAPER

##### Single sheets of paper (untreated and uncoated)

Do not try to separate if in one block but interleave every five centimetres with freezer paper and pack.

##### **Watercolours, maps, and manuscripts with soluble media:**

Do not blot the surface.

Don't separate single sheets if stuck together without the advice of a paper conservator

Air, vacuum, or freeze dry within 48 hours

##### **Coated papers:**

Keep wet by packing in boxes lined with garbage bags, then freeze.

Immediately pack, then freeze or dry within 48 hours

Freeze dry only

##### **Framed prints and drawings:**

If time and space permit, de frame and pack as for single sheets.

If not air dry vertically. It is possible that the paper will stick to the glazing.

Consult a paper conservator

##### **Maps, plans, oversize prints, and manuscripts:**

Remove standing water out of drawers.

Don't separate single sheets if they are attached together

Remove the drawers from the cabinet, ship and freeze them stacked up with 5 cm – 10 cm strips of wood between each drawer.

Pack loose, flat maps in bread trays or flat boxes, covered in Tyvek with the breathable side inwards.

Bundle rolled maps very loosely to go in small numbers to the freezer, unless facilities are available for conservators to unroll them.

Freeze or dry within 48 hours

Air, vacuum, or freeze dry ASAP

##### **BOOKS** (including magazines and journals)

Don't open or close wet books or remove wet book covers.

Leather, parchment and vellum bindings are an immediate priority because they distort and disintegrate in water.

If the water is dirty, wash the books before freezing.

Do not wash open books and those with water soluble media.

Books with coated papers should be kept wet by packing inside boxes lined with garbage bags, and then frozen.

### **Open books**

Don't attempt to close books that have fallen open and are wet. The paper will have expanded. To dry wet books that are open lay them out on absorbent paper and insert paper towelling about every 10 pages to begin taking up moisture.

### **Closed Books**

Books that are closed should be stood on absorbent paper, on their bottom edges and fanned open. Come back to the books regularly and separate a few pages as they begin to dry out and regain strength.

If the book is closed the spine may break under pressure so extreme care is needed in handling

### **Freezing Books**

- Books can also be frozen and attended to later.
- Each book should be wrapped in non-stick paper and placed in a commercial freezer.
- Books that are open should be laid in the freezer horizontally, on their backs.
- Books that are still closed, but wet should be wrapped in crepe bandages and stood in the freezer vertically.

### **Coated Paper books**

Books with glossy, coated papers (e.g. large format picture books) have a low recovery rate as the pages permanently stick together when they become wet and then start to dry. If it is possible to replace the book, do so, and don't worry about trying to salvage it. If you need to salvage the book, freeze it as soon as you can.

When you have the time, defrost the book and separate *every* page while they are still wet and interleave them with greaseproof paper or baking paper.

### **FLOPPY DISKETTES**

If the diskettes are wet, pack them upright in containers of cold distilled water.

Make arrangements to air dry.

Procedure:

- The diskettes should be removed from their jackets, washed, and dried.
- Cut the edge of the jacket with non-magnetic scissors and remove the diskette with gloved hands.
- Wash in several water baths (photo trays) or distilled water, and dry with lint free towels.
- When the crisis is over, insert the diskettes into a new jacket (cannibalized from a new diskette; this can be reused) and copy with a disk drive.
- The drive heads should be cleaned frequently.

## **SOUND AND VIDEO RECORDINGS**

### **CDs and DVDs (including Phonodiscs)**

Don't try and salvage CDs that are easily replaced.

Wipe the case dry and clean and then open it up.

If the CD inside the case is dry and clean, leave it to air for a couple of hours, and then return it to the case.

If it is wet or dirty, gently rinse it in clean water and stand it vertically to air dry. If necessary, blot dry with a lint free cloth – do not wipe the disk, as you may scratch it.

Glossy paper CD inserts need to be treated as for glossy paper books. Freeze them immediately or separate each page, interleave and dry it immediately.

If the CDs are warped from heat exposure, they may not be salvageable.

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 with Ethafoam every 25 records to absorb shocks.

Always support the discs vertically and hold the discs by their edges.

Avoid shocks and jolts during transport.

### **Phonodiscs:**

Remove the discs from their sleeves and jackets.

If labels have separated, mark the center of disc with a 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, consult a photography conservator

Air dry the discs on supports that permit free circulation of air.

### **Sound and video tapes:**

Pack vertically into egg crates or cardboard cartons.

Do not put excessive weight on the sides of the reels or cassettes.

Do not attempt to unwind.

### **Reel to reel tapes:**

If the exterior of the tape is dirty, wash the tape (still wound 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 plastic covered tables.

The box can be air dried as well.

Return the tape to its original box, after the box has dried.

Replace the box if badly damaged.

### **Audio cassettes:**

If there are no master copies, air dry the tape.

Do not attempt to unwind.

Re-record the tape after drying. It is difficult to determine the condition of sealed cassettes. Copy them in any case.

## **PHOTOGRAPHIC MATERIALS**

### **Salvage without delay:**

### **Salvage in this order:**

#### **Modern photographs**

- Colour photographs first, then prints
- Black and white negatives and transparencies.

If facilities and personnel are available air dry pack and freeze if not.

#### **Older 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 and keep to a minimum the immersion time until treatment or freezing.

The first priority is to dry wet collodion photographs and daguerreotypes.

- Black-and-white photographs can be kept wet in cold, clean water until there is time to separate and dry them all individually. They can be kept this way for up to 48 hours and still be salvageable. When you can deal with them, remove bundles of prints from the water, and gently separate each print.
- Colour photographs need to be separated and dried immediately or the dyes that make up the image may begin to run. Other photographic media such as colour and black-and-white negatives, transparencies and glass negatives are also too vulnerable to be left wet for long periods. These should also be carefully separated and dried.
- If there is not the time or space to immediately dry wet photographs, both colour and black-and-white photographs can be frozen provided they are first separated and are interleaved with greaseproof paper before being frozen.
- Transparencies in glass mounts need to be removed from the mounts, as they won't dry behind the glass.
- Once the negatives and transparencies have been separated, they can be pegged on an inside 'clothes line' made of

nylon fishing line, or similar material, to air dry. Paper photographs can be laid out to dry individually, face up, on absorbent paper. Photographs may tend to curl a little as they dry but this is unavoidable. If, on drying, the photographs curl to an extreme degree contact the National Archives for advice on how to flatten them out.

### **Cased photographs:**

Remove the assembly from the case.

Fold back the preserver frame, cut the sealing tape if present evident and take the assembly apart.

Place glass plates 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 un-mounted case photographs:**

Dry emulsion side up on blotters

### **Prints, negatives and transparencies:**

In order of preference, the drying methods are:

- air dry,
- freeze,
- thaw and air dry
- freeze dry.

NB Vacuum drying will make the photographs stick together into a lump.

If photographs have been immersed in dirty water keep immersed in clean water until a photography conservator can advise

### **If Air drying:**

Remember to keep the photographs wet until they are separated from each other and their enclosures.

If the photographs have been previously frozen, thaw them.

If it appears that the photographs could dry and stick together during thawing, immerse again in cold water.

Dry the photographs emulsion side up on blotters, paper or nylon screen

### **Motion picture film:**

Open the film can,

Fill it with water, and replace lid.

Pack into plastic pails or cardboard cartons lined with garbage bags.

Send to a film processor for rewashing and drying.

## **MICROFORMS**

### **Microforms in rolls:**

Do not remove the films from their boxes.

Hold cardboard boxes (and their labels) together with rubber bands.

Fill boxes with water, and then wrap 5 cartons of film into a block with plastic wrap.

Pack the blocks into a heavy duty cardboard box lined with 3 garbage bags.

Label as wet film and send to a microfilm processor.

#### **Aperture cards:**

Pack and freeze.

Consult a photography conservator

#### **Microfilm strips in jackets:**

Pack and freeze.

#### **Diazo microfiche:**

Pack, freeze, and make arrangements to air dry.

- Check for readability. If the photograph has blistered, discard and replace with a print from the security copy.
- If it has not delaminated, wash in cool water and dry on blotters or a lint free cloth.

#### **PARCHMENT AND VELLUM**

Separate from other documents pack in crates or flat boxes and freeze immediately. Consult a specialist conservator immediately.

#### **PAINTINGS**

Typically paintings will need to be unframed so they can be cleaned

separately from the frames themselves. Be careful, however, to inspect each painting for loose or flaking paint.

- **It is recommended that a paintings conservator is contacted immediately**

Drain off excess water and take to a work area for immediate air drying.

Transport horizontally if you can. If not, carry the painting facing toward you, holding the side of the frame with the palms of your hands.

Larger paintings should be carried by two people.

The suggested order of removal and treatment is:

- The most highly valued;
- The least damaged;
- Slightly damaged
- Severely damaged.

Ideally, this treatment should be done by a conservator:

- Separate the merely wet paintings from those showing structural damage.
- De frame the painting, but don't remove it from its stretcher.
- Lay the painting face up on this surface
- Change the blotter regularly until the canvas is dry.

#### **GILT FRAMES**

Frames will most likely require cleaning, but again it is essential that care be taken not to remove fragments of the gesso on the frames.

- Consult a conservator

