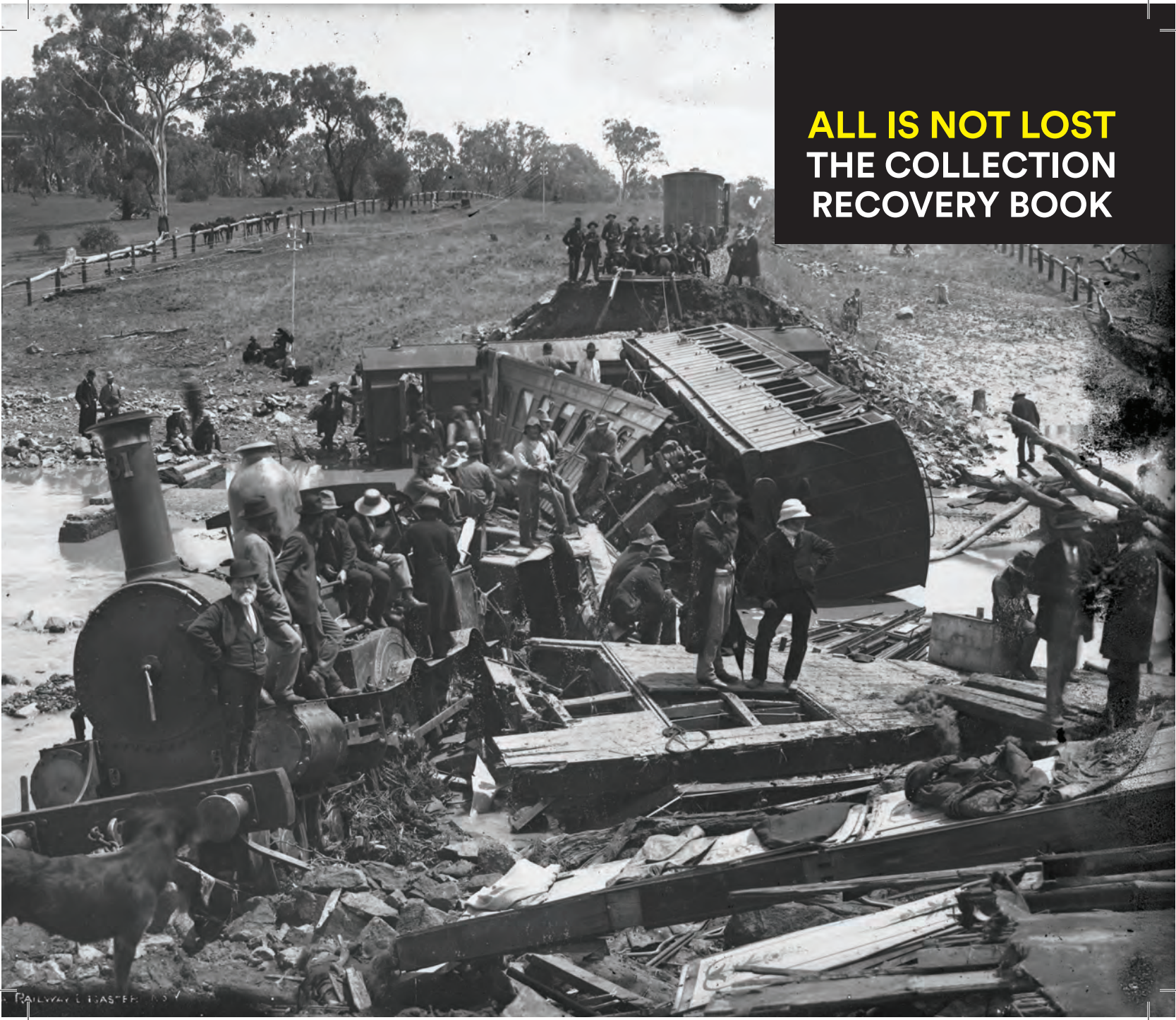


ALL IS NOT LOST
THE COLLECTION
RECOVERY BOOK





Disaster training at MAAS.

ALL IS NOT LOST
THE COLLECTION
RECOVERY BOOK

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Introduction

This publication is for museums, historical societies and anyone who has objects affected by a disaster. It provides basic advice on how to salvage treasured objects after a disaster has occurred. Although there is plenty of advice on the web about salvaging objects, you may not have electricity or access to a computer after a disaster. We felt there was a need for a booklet that provided quick, basic instructions on salvaging damaged objects. These guidelines cover objects that may have been affected by water, fire or impact. There are many different scenarios that may occur, so each situation will need careful assessment. For example, if there is water damage, is the water clean, contaminated or dirty? After a fire, do the materials have smoke, soot or water damage? These guidelines do not cover all situations but provide general information to be considered during salvage operations. Objects, such as large machinery, will need to be assessed on a case-by-case basis. Most salvage operations involve water so these guidelines focus on water-damaged objects.

The first 24–48 hours after an emergency are critical before mould grows. However, don't be too quick to declare an object 'unsalvageable' as many objects, such as muddy photos, can be rinsed and dried. Weigh up the risks of treating versus throwing away.

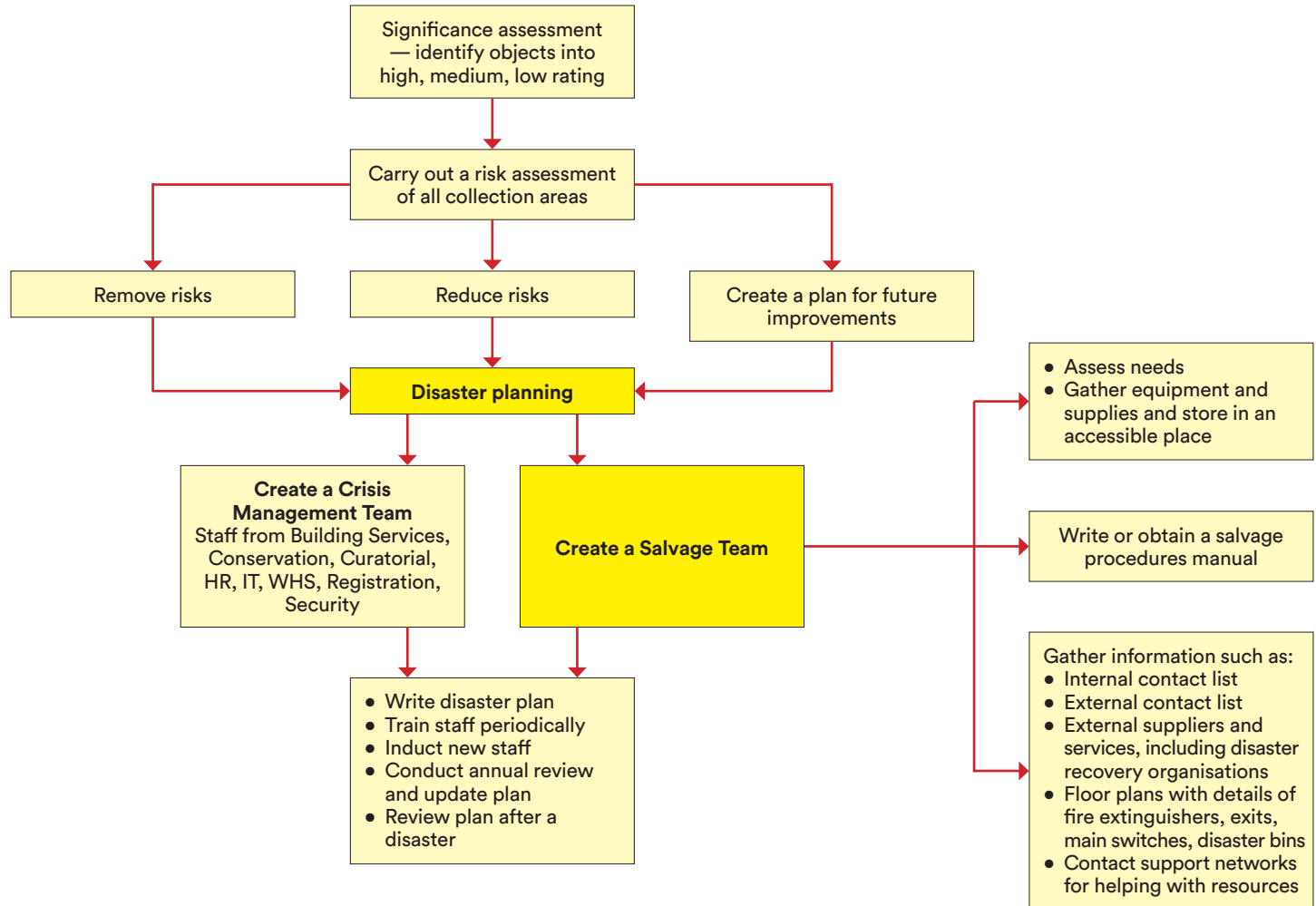
Disaster planning

There are many ways that disaster can strike — from a leaky tap to a cyclone ripping a building apart. Taking steps to prepare for a disaster can significantly reduce the impact it can have. Prioritising your collections and knowing which objects are most significant; carrying out a risk assessment; reducing identified risks; writing a disaster plan; training staff; gathering salvage equipment and materials, are all important steps to help minimise a disaster. (See 'Bibliography' on page 65 for more resources.)

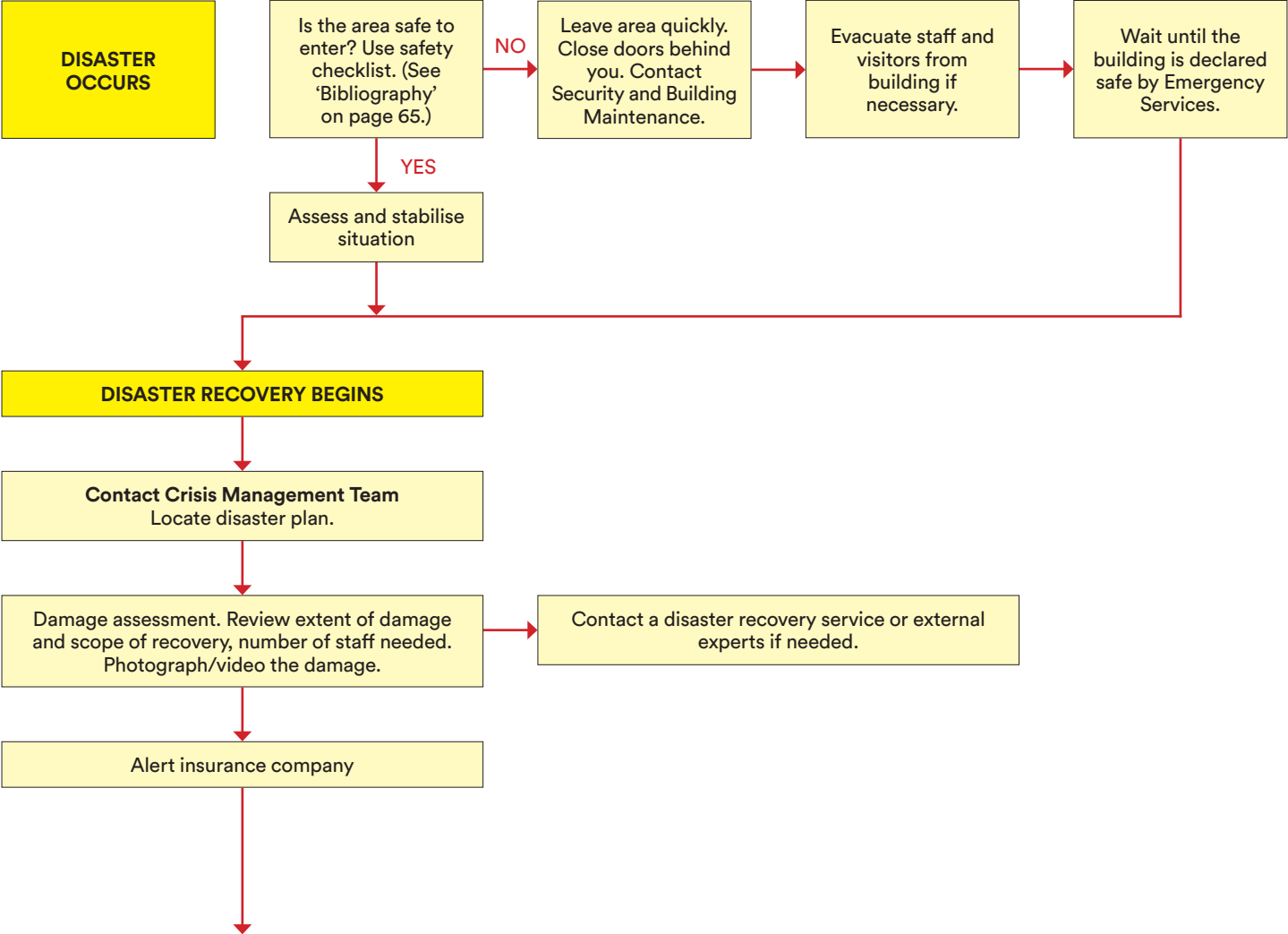
This booklet provides flow charts that outline what is involved in disaster planning, response and recovery actions. There are also general guidelines on controlling mould outbreaks, freezing objects to buy time, WHS precautions and salvaging fire-damaged materials.

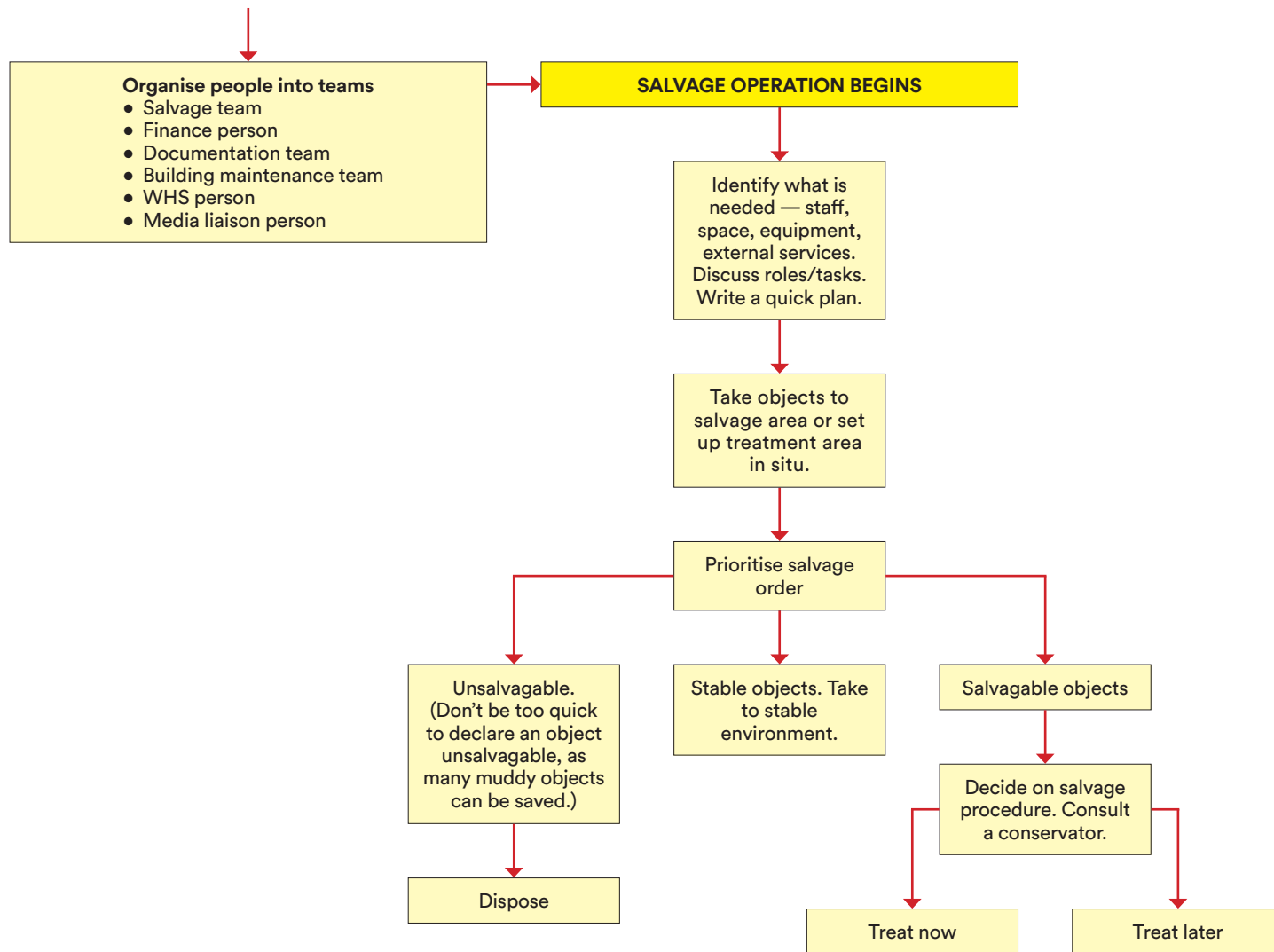
Remember to ask for help. The Australian Institute for the Conservation of Cultural Material (AICCM) website offers a lot of useful advice and a listing of private conservators. The National Film and Sound Archives (NFSA) also provide information and disaster support. They are listed in the bibliography. Please also ring your local museum or state institution to speak to a conservator for specific advice on salvaging damaged objects. There are also disaster recovery companies that offer a variety of services. It is a good idea to know who you will turn to in an emergency and establish contact before a disaster occurs.

Disaster planning



Response and recovery





Types of damage and salvage methods

Disasters can happen in many different ways, from minor water leaks to full-scale floods. In general, there are five different types of disaster damage. They are:

Water: reducing or preventing mould damage is the main issue you will face. Salvage usually involves draining, sometimes rinsing of soiled objects, and then drying material naturally, flat or on racks. Dehumidifiers, fans, blotting or interleaving can assist the drying process. If the volume is too big, you can consider freezing items to prevent mould. Mould growth can occur after 48 hours when the relative humidity (RH) is above 65%.

Fire damage, soot: salvage usually involves air-drying, dry surface cleaning but no wet cleaning. Soot particles are minute, very sticky and very abrasive. Keep touching and handling to a minimum. Beware of hazardous materials that may have been affected by the fire (eg asbestos, lead or chemicals may have been exposed because of fire damage).

Physical force/building collapse: involves removing rubble, debris and dirt. Salvage could entail retrieving and collating all broken pieces.

Insect infestation: salvage involves isolating affected materials, and thorough cleaning of objects and storage areas. Treat insect-affected objects. Freezing is a good solution for killing bugs if the objects are able to be frozen.

Chemical damage: suspected hazardous objects should be placed in an isolated area. Knowing the toxicity, reaction products and signs of adverse human reactions is useful. Contact the Poisons Information Centre on 13 11 26 if needed.



Prop objects awaiting salvage in a disaster training session.

Salvage terms

Air-drying: dry objects in a cool area with mid to low humidity and good air circulation. Use absorbent materials to interleave and replace them when they become damp. If possible, air-dry on plastic racks, commercial bread trays, cake racks or rustproof flyscreens to increase evaporation from underneath.

Assisted air circulation: use fans, hair dryers, open windows and doors or air conditioners to move air around salvage area.

Cold storage: this will stop mould growth. The colder the storage, the better it is for many objects, particularly photographs and film. RH needs to be below 45%. Wood is an exception.

Interleaving: use blotters, un-inked newsprint, paper towels, Reemay®, baking paper, or silicon Mylar® to keep items from sticking together and to stop dye running or transferring.

Freezing: some wet objects can be frozen, which will buy you extra time. It will prevent further mould growth, stop dyes running and prevent swelling. However, many composite objects can't be frozen. (See 'Freezing' on page 15 for suitable objects.)

On-site dehumidification: dry air is pumped into the room and moist air is drawn out with a dehumidifier.

Rinsing: dirty or muddy objects may be able to be rinsed under a gentle stream of clean running water or gently drawn through several rinse baths. Do not scrub dirt as that can drive it in deeper. Use a sponge or soft cloth to blot off mud. Test that there are no water-soluble substances (ink, paint, dye, adhesive etc) on the object if you are going to rinse it.

Sunlight exposure: mouldy material can be placed outdoors in sunlight to dry the active mould spores.



Plastic and other items air-drying on a flyscreen frame with air circulating underneath.

WHS issues

When you have been given the all clear from the Emergency Services and your Security staff to enter a disaster area, you need to be mindful of the potential health risks you may face.

After a flood, objects may be contaminated with a range of biological or chemical hazards. Be aware of the danger of breathing in microscopic mould spores. Staff with allergies or asthma and pregnant women should not enter a potentially mouldy area. Always wear protective clothing — gloves, face masks, protective eyewear, disposable clothing and sturdy shoes. If you don't use protective clothing, leave dirty clothes in a designated area and wash afterwards in hot water and bleach.

We recommend using a particulate respirator (known as N95 or P2) face mask that is specifically designed to protect people from breathing in mould spores. Respirators must fit well with good contact around the mouth and nose. Bearded men will need a full face respirator for a proper seal.



Correct safety gear, such as disposable gloves, face masks and protective clothing, is worn when inspecting an object known to contain asbestos samples.

Controlling mould outbreaks

Health risks

If there is an outbreak of mould, contact your local or state museum for advice or contact a disaster recovery company that specialises in dehumidifying and cleaning of buildings.

Salvage strategies

- Check for leaks, broken pipes or gutter overflow to find the cause of the mould outbreak.
- Monitor the environment regularly to check the relative humidity and take steps to reduce it to below 60%.
- Mop up, squeegee or use a wet/dry vacuum cleaner to remove any standing water.
- Use fans to circulate air and open windows (unless the humidity is higher outside).
- Use dehumidifiers to reduce humidity and drain them periodically.
- Do not turn up the heat unless it is needed for human comfort, as it will accelerate mould growth.
- Freeze objects after 48 hours if they are not dry. Freezing won't kill mould but it will stop further growth.
- Mouldy objects need to be isolated so that the mould does not cause further contamination (eg by entering the air conditioning system).

- Seal affected objects in plastic bags and relocate to a clean area where the relative humidity is lower than 60%, then remove objects from plastic bags immediately to stop further mould growth.
- In the case of large mould outbreaks where it may be impractical to move the objects, seal off the area from the rest of the building.

Cleaning mould off surfaces (not objects)

- Use white vinegar or a solution of 80% vinegar, 20% water.
- Use a solution of 50% tea-tree oil, 50% water (more expensive).
- Use a solution of 70% ethanol, 30% water in a spray bottle or as a disinfectant wipe.



An example of a mould outbreak on timber.

Drying mouldy objects

- Active mould is soft and fuzzy. It is much easier to remove inactive mould spores, which are dry and powdery.
- If possible, remove inactive mould residue outdoors rather than in an enclosed space. Wear protective gear (ie goggles, masks, gloves, protective clothing).
- Sunlight can cause some mould to become dormant. Objects can be dried outside but humidity must be low.
- If you have to work indoors, use a fume hood. Close the room off from other areas of the building (eg block air vents to prevent mould entering the air conditioning system).
- Large, wet objects should be dried in a cool space with good air circulation. Do not aim fans directly at objects as this may cause damage and could scatter mould spores.
- Place blotters or towelling under drying objects and change regularly. Dispose of used blotters in sealed plastic bags and wash used towels in hot water.
- Brush vacuum the mould spores from objects using a vacuum cleaner with a HEPA filter (a very fine filter). These filters are designed to contain the mould spores.
- Do not vacuum fragile objects.

- Use a plastic screen or brush and tube attachment on the nozzle of the vacuum cleaner to surface clean objects. Do not rub the mould into the surface.
- Dispose of vacuum bags or filters in sealed plastic bags.
- For more information on brush vacuuming, go to <https://maas.museum/research/conservation/conservation-resources/>



Brush vacuuming mould from a handbag.

Freezing

If objects can't be dried within 48 hours, freezing is a good alternative. Freezing will prevent mould growth, inks from running, dye transfer, swelling and distortion. Once time and resources are available, frozen materials can be thawed and dried in small batches. Chest freezers are suitable for larger quantities, or you may be able to borrow some freezer space from your local community. You can also hire portable freezers.

How to freeze items

- Bag objects in plastic. Garbage bags will do if they have no holes in them.
- Take as much air out of the bag as possible.
- Seal the bag with waterproof tape or a heat sealer.
- Some objects can be placed in boxes and then sealed in bags to prevent them from crushing.
- Label bag, then place in the freezer for later treatment. A domestic freezer is fine but chest freezers are needed to kill insects.
- To thaw, remove the bagged object from the freezer and allow it to thaw in the bag.
- Unwrap the object a day after it has come out of the freezer.

Materials unsuitable for freezing

Objects made up of composite materials are generally not suitable for freezing because materials dry at different rates, which can cause damage.

Objects that shouldn't be frozen:

- glass plate negatives and historic photographs
- canvas, acrylic and wood panel paintings
- painted or inlaid wooden items
- finished furniture
- lacquered wooden items
- objects containing ivory or teeth
- objects under tension (eg drums, strung parchments, most musical instruments)
- composite objects containing inorganic materials such as glass, high-fired ceramics and metal
- glossy paper/books — wet pages will stick together so freezing can be considered only if all glossy papers are interleaved with baking paper
- many audiovisual items
- ceramics

Fire-damaged objects — smoke and soot

- Fire-damaged materials will be extremely fragile and should be handled as little as possible. Soot consists of very fine particles that are sticky and abrasive. The oil from your hands will absorb soot particles and be transferred into anything you touch, so it is very important to use disposable gloves when handling fire-damaged objects. Change soiled gloves frequently. Contact a conservator as soon as you can for advice.
- Do not use water or any other cleaning solution to clean fire-damaged materials as this will lead to smearing, smudging or staining.
- Do not vacuum very fragile or paper objects.
- For a robust charred object, wait until it is dry before brush vacuuming. Use a vacuum cleaner with a HEPA filter on its lowest setting. Reduce the vacuum's suction by attaching a small plastic tube to the nozzle. Vacuum the outside first before doing the inside. Do not use a brush as this may force soot further into the surface.
- Use a soot sponge after you have vacuumed an object. It is made from natural rubber and is very effective as it absorbs dirt and soot into its pores. Start at the top of the soiled area and work downwards. Dab rather than rub the surface and do not wet the sponge. Cut the soot sponge into a convenient size, and once soiled, cut it away to reveal a clean working surface. After use,

vacuum the crumbly particles of the sponge away from the object, as they can become sticky over time.

- If you do not have a soot sponge, you can use document cleaning pads, eraser dust or white vinyl erasers used for dry-cleaning.
- For a listing of suppliers of soot sponges and erasers, go to https://maas.museum/app/uploads/2017/02/products_and_suppliers.pdf



Vacuuming loose soot from fire-damaged paper.

Salvaging materials

Books



To rinse a book, gently dip and draw it through a tub of water, draining on the way out, then interleave with blotting paper.



Fans can be used to help dry more robust books. Do not point them directly at the books nor put them too close.



To prepare books for freezing, place spine down, wrapped in baking paper.

1. Books

| | Handling | Treatment | Freezing |
|---------------------|--|--|---|
| General tips | <p>Use both hands to move wet books or support books on a board.</p> | <p>Begin air-drying or assisted drying within 48 hours. Freeze objects if this is not possible.</p> <p>Dirty or soiled books may need to be rinsed in cool, clean water before they are dried. Do not rinse vellum, leather or parchment bindings/pages or swollen volumes.</p> <p>Line a drying table with thick blotters or towels and change when they become wet.</p> <p>It is important to have good air circulation (use desk fans placed at a distance) and plenty of blotters.</p> <p>The insides of book spines should be checked regularly for mould growth during the drying process.</p> | <p>Wrap every second book in baking paper.</p> <p>Pack the books with their spines facing down, in a sturdy container and put into a freezer.</p> <p>Do not freeze leather or vellum-bound objects. Vacuum freezing is good for coated paper.</p> |

| | Handling | Treatment | Freezing |
|-----------------------------|----------|---|----------|
| Partially wet or damp books | | <p>Stand books on their top edge with covers opened to a 90° angle to air-dry. To prevent pages from sagging, place a small spacer of blotting paper under them to give extra support.</p> <p>Change blotting paper regularly. When book is half dry, turn it upside down.</p> | |
| Very wet books | | <p>Lie flat on a clean surface. Interleave less than 20% of book with absorbent paper (eg blotting paper). Any more than 20% will place strain on the spine. Replace interleaving material when damp.</p> <p>Replace blotters when damp and change interleaving position so that drying will be even.</p> | |
| Books with glossy paper | | To prevent the pages sticking when very wet, first blot every glossy page, then interleave with baking or wax paper and change regularly. | |
| Pamphlets | | Pamphlets can be dried on a washing line (indoors) if they are strong enough. | |

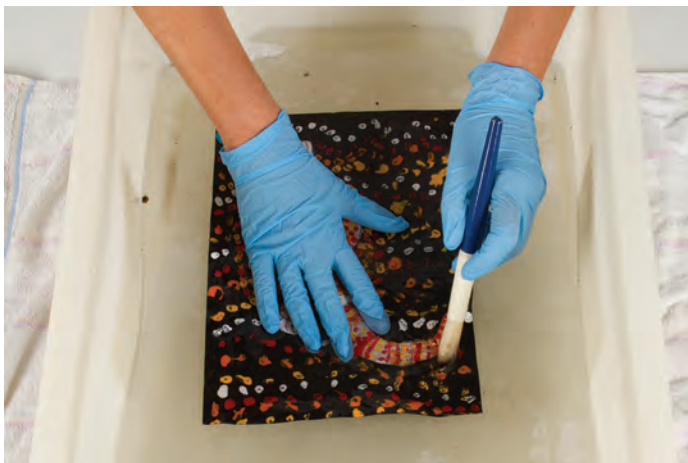
Paper



Placing baking paper between glossy pages of a wet magazine helps to prevent the pages sticking.



Salvaged objects from a disaster training session.



Reemay® is used to support this artwork during treatment. A brush is used to gently remove loose dirt in the rinse bath. The artwork is then placed on a drying rack or blotters.



2. Paper

| | Handling | Treatment | Rinsing | Freezing |
|---------------------|---|---|--|---|
| General tips | <p>If the material is rolled, leave it rolled. If it is flat, leave it flat.</p> <p>Transport the material using its housing (ie folders, boxes, drawers, boards). Where this is not possible, transport flat or rolled on a board.</p> <p>Handle wet material with extreme care.</p> | <p>Air-drying is best achieved with cool, ventilated or dehumidified air. Create maximum airflow circulation to reduce mould growth.</p> <p>Air-dry paper flat on blotting paper as individual sheets or in small piles (up to 5mm) interleaved with blotting paper. Ensure blotting paper is larger than the object. Replace interleaving blotter when damp.</p> | <p>If paper objects are dirty or stained from the disaster, they may be rinsed in cool, clean water. Support wet paper on Reemay®* sheets.</p> <p>Do not rinse if you are freezing for later treatment.</p> <p>Do not rinse paper with water-soluble components, fragile or brittle paper.</p> | <p>Generally, freezing is the best method for stabilising masses of water-damaged paper. If paper is hand-coloured or if ink appears to be bleeding, interleave with baking paper and freeze.</p> |
| Wet paper | <p>Wet paper found in piles may be separated if the paper is strong enough and the condition is good.</p> | <p>Lay a Mylar® sheet over each individual sheet. The Mylar® will 'grab' the paper and you can lift the Mylar® and sheet of paper together.</p> | | <p>Freeze or dry within 48 hours to prevent mould growth.</p> |

* See 'Products and suppliers list' on page 65 for information on Reemay®

| | Handling | Treatment | Rinsing | Freezing |
|---------------------------|---|--|---------|--|
| Wet paper (cont) | | <p>Do not blot the surface of an artwork or paper that has water-soluble materials on it. Place object on blotting paper to remove excess water from the back.</p> <p>Do not press to remove water and do not wipe mud or mould from paper item.</p> | | |
| Glossy paper | | Place sheets of baking paper on either side of the paper or allow it to dry flat with nothing on top. | | |
| Fire-damaged paper | <p>Likely to be very fragile.</p> <p>Transport fire-damaged artworks in their containers (ie solander boxes, map drawers).</p> <p>Wrap material in clean unprinted paper and place between cardboard sheets for protection. Clearly label all packages.</p> | (See 'Fire-damaged objects' on page 16 for treatment information.) | | Burned and/or wet paper can be frozen for later treatment. |

Framed artworks



A wet backing board is removed from a frame and then the small nails that hold the mount in place are taken out.



Without the nails, the artwork and mount can be lifted out of the frame and then treated and dried.

3. Framed artworks

| | Handling | Treatment | Rinsing | Freezing |
|---|---|---|---------|-----------------|
| General tips | Use two people to carry artwork or place artwork on a trolley to move artwork to safe area. | | | Not recommended |
| Works on paper or photos with glass fronts | | <p>Remove from frames in clean, dry area to prevent mould growth.</p> <p>Dry artwork slowly with the image side up.</p> <p>If the image sticks to glass, dry it with the glass side down.</p> | | |
| Paintings | | <p>Paintings should be removed from their frames.</p> <p>Do not take paintings off their stretchers.</p> <p>Keep wet paintings horizontal, paint side up with nothing touching the surface.</p> | | |

Photographs



To remove photos from sticky albums, use a knife or spatula heated in hot water to loosen the adhesive.



Place photos on a cake rack to dry.



When nearly dry, place cockled photos in a large book for several days to flatten them.

4. Photographs

| | Handling | Treatment | Rinsing | Freezing |
|--|--|--|---|-------------------------|
| <p>General tips</p> <p>The greatest threat for wet photographs is mould and bacteria.</p> <p>Seek advice from the National Film and Sound Archives (NFSA) or the Australian Institute for Conservation of Cultural Material (AICCM). (See 'Bibliography' on page 65.)</p> | <p>Handle negatives and photos by the edges only. Avoid touching the front surface of wet or damp photographic prints or negatives.</p> <p>If prints or negatives are stuck together, or the emulsion is damaged, contact a photographic conservator or your local or state museum for advice.</p> | <p>Remove photos from frames or enclosures. Save any tags or labels. These elements should be bagged and labelled with the object number, date and location. Store with the photo where practical.</p> <p>Do not touch or blot photo surface.</p> <p>Most prints, negatives and colour slides can be air-dried. The emulsion (image) side should be face up.</p> <p>Lay out photos on blotting paper or on racks. When partly dry, place them in small stacks interleaved with baking paper.</p> | <p>If photographic items are covered with mud or dirt and are still wet, they may be gently rinsed in a bucket of cold, clean water and then dried.</p> | <p>Not recommended.</p> |

| | Handling | Treatment | Rinsing | Freezing |
|--|----------|--|--|----------|
| General tips (cont) | | <p>Photos will cockle as they dry. When nearly dry, photos can be flattened between the pages of a large book or in a press for a few days.</p> <p>To speed up drying time, hang photos from a clothes line using wooden or non-abrasive plastic pegs.</p> | | |
| Colour photographs The emulsion is much more sensitive on colour photos than black and white photos. | | | If the inks appear stable, dirty photos can be rinsed in cool, clean water. A protective coating may be removed with rinsing, so copy the photo as soon as possible. | |
| Historic photographs Seek advice from the NFSA as soon as possible. | | | | |

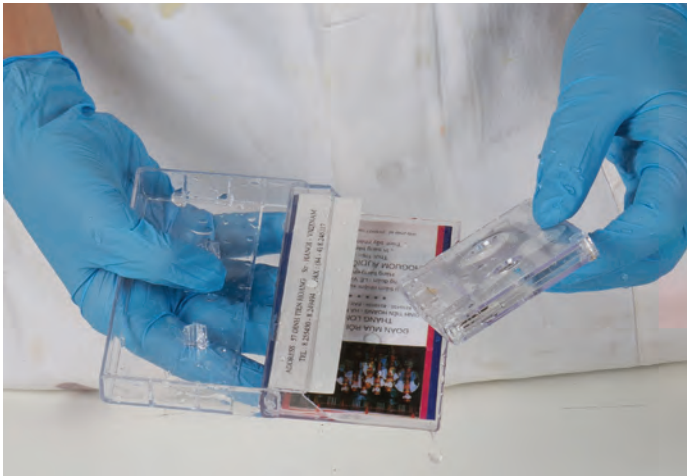
Electronic materials



Surface clean a CD by gently brushing from the centre to the outside.



Rinse and drain a water-damaged video in clean water.



Remove components to dry separately but label each part and keep with the object.



5. Electronic materials

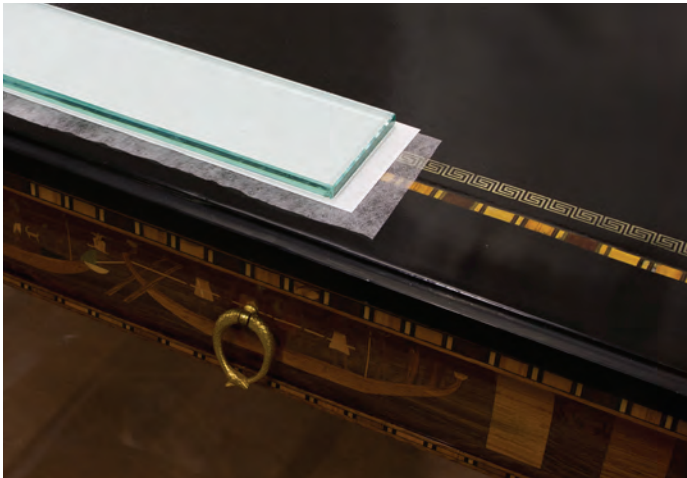
| | Handling | Treatment | Wet treatment | Freezing |
|--|---|---|---|--|
| General tips If any labels are detached from the electronic material, it is important to relabel them. | Handle with nitrile gloves. Do not disassemble cassette or videotapes. Do not unwind or tighten spools (eg films or tapes). Use zip-lock plastic bags for short-term storage before treatment is started. | Seek advice from the NFSA or the AICCM as soon as possible. (See 'Bibliography' on page 65.) Do not attempt to play any electronic material. | | |
| Film | Use nitrile gloves and always hold film by the edges to avoid touching the emulsion (dull side of the film) because it is easily damaged. Do not try to unwind the film or dry the film until you get advice from a conservator. | Place film in cold conditions to slow down threat of mould or bacteria. Gently brush loose dirt from surface. | If wet, remove dirt or mud by rinsing with clean water. | Put wet film inside two sealed plastic bags. Label the bag and place in a freezer. If you don't have a freezer, keep the film wet in a bucket of water for a maximum of two weeks (change water daily) until you take it to an expert. |

| | Handling | Treatment | Wet treatment | Freezing |
|---|---|---|--|----------------|
| Magnetic tape (audio, video and reel-to-reel) | Use nitrile gloves and carry reels of tape by their hub or centre. Discs should be held only on their edge. | Act quickly. Gently brush loose dirt from surface. Keep item cool. | Rinse with clean, distilled or bottled water if possible as tap water has chloride in it. Drain any water from the cases. If possible, send the tape for conservation treatment before it dries out. | Do not freeze. |
| Vinyl discs, CDs, DVDs, Blu-rays | Use nitrile gloves to handle. | Gently brush loose dirt from surface. Duplicate non-commercial CDs and DVDs as soon as possible. | Rinse in clean water. Air-dry in a dust free environment. Do not wipe or rub surfaces because they are easily damaged or scratched. | Do not freeze. |

Furniture



To move this 32-drawer collector's cabinet that has many heavy and fragile items in it, each drawer needs to be taken out in order, tagged and moved separately.



Lifting inlay can be held down with protected weights.



Use two people to remove heavy items.

6. Furniture

| | Handling | Treatment |
|--|--|---|
| <p>General tips</p> <p>Animal glue is a traditional adhesive in furniture making. Joints will soften and become unstable when exposed to high humidity and water.</p> <p>Gilding and gesso are susceptible to water damage.</p> <p>Cold storage is more suitable than freezing due to the composite nature of many furniture items.</p> | <p>Handle with extreme care and as little as possible.</p> <p>If a piece is too large and heavy to move, block it off the floor.</p> <p>Move an object by its lowest structural member (not by its handles) and avoid handling upholstery or loose elements.</p> <p>Move tables by their aprons; non-upholstered chairs by their rails or legs and upholstered chairs by their legs.</p> <p>For cabinets, remove drawers before moving body.</p> <p>Some objects can be dismantled into pieces for transport. Before moving, examine side panels, tops and plinths to see if they are dry fitted. Dismantle before moving. Bag any loose elements.</p> | <p>Objects should be air-dried slowly.</p> <p>Depending on individual elements, treatment may require weights or pressure to hold elements together.</p> <p>Surface dirt is more easily removed once an object is dry.</p> |
| Solid wood | | <p>Rinse or sponge surfaces to clean.</p> <p>Blot or air-dry slowly to prevent warping and shrinking.</p> <p>If water has penetrated the piece, leave it to air-dry. If water has soaked through, wrap it in a clean cloth to slow down the rate of drying.</p> |

| | Handling | Treatment |
|-----------------------|----------|--|
| Veneer | | <p>Use protected weights or clamps to hold the veneer or inlay in place while drying.</p> <p>Finishes may develop a white haze but this doesn't require immediate action.</p> <p>If there are iron or steel fittings, dry them quickly before they rust.</p> |
| Upholstered furniture | | <p>Brush off loose dirt, dust or soot particles. Remove cushions, lift out seats and other pieces. Remove covers if practical, as fastenings under tension may tear fabric.</p> <p>Note the location of each element that is removed.</p> <p>Some objects may be rinsed to remove mud but do not rub.</p> <p>Wrap upholstered materials in sheeting or towels to air-dry and replace towelling when damp.</p> <p>Blot wood sections and air-dry.</p> |

Musical instruments



This vocal horn, case and various pieces are being kept together for moving. Use padded cushions and acid-free tissue paper to stop pieces touching.



This flute is dismantled to help it dry thoroughly. Do not force pieces apart.



An example of a damaged piano castor that cannot be rolled. The centre pin is loose.



Take the weight off the castor by placing the piano on blocks.

7. Musical instruments

| | Handling | Treatment | Freezing |
|---|--|--------------------------------------|--|
| <p>General tips</p> <p>Instruments may be made from many different organic and inorganic materials.</p> <p>Sound-producing elements may be extremely thin (eg the body of a violin) and prone to warping, splitting and fragmentation. Joints may be unstable as they are often held together with water-soluble animal glue.</p> <p>Some elements may be dry fitted or held in place by string tension (such as bridges on violin family instruments) and may fall off.</p> | <p>Move instruments only if it is safe to do so.</p> <p>Handle with extreme caution, using support cushions, and padded trolleys/trays as necessary. Tag loose or detached pieces with the object number, location and date. Where practical, store with the object.</p> | <p>(See 'Furniture' on page 37.)</p> | <p>Not recommended as musical instruments are usually made from several different materials, some of which may be under tension. Paint, varnish finishes and adhesives may be incompatible with freezing. Cold storage may be more appropriate if available.</p> |
| <p>Large instruments</p> | <p>Large instruments, such as pipe organs and keyboards, are usually made in sections designed to come apart. This means that parts can fall off if handled incorrectly. If a pipe organ needs to be moved, consult a conservator for advice.</p> | <p>(See 'Furniture' on page 37.)</p> | |

| | Handling | Treatment | Freezing |
|--------------------------|--|-------------------------------|----------|
| Large instruments (cont) | Before moving a keyboard instrument, ensure that any latches and the centre pin for the lid hinge are in place (this is removable), so that the lid does not fall off. | | |
| Pianos | <p>Pianos may be much heavier than they appear due to an internal iron frame. Extra people may be required to move safely.</p> <p>Never roll a keyboard instrument on its castors as these often don't work and place strain on the legs. Instead, lift flat, using several people and one extra person to spot for detachment of parts, such as the instrument's stand.</p> | (See 'Furniture' on page 37.) | |

Ceramics



Rinsing mud off a high-fired ceramic.



Drying a bowl with a soft towel.



Leave objects to dry on towelling.



Use both hands, with nitrile gloves, to move ceramics.
Do not use the handle.

8. Ceramics

| | Handling | Treatment | Fire damage |
|---|---|---|---|
| <p>General tips</p> <p>If broken, collect all shards — check under furniture etc, as broken pieces may travel a long way on hard surfaces.</p> <p>Freezing is not recommended for ceramic objects.</p> | <p>Check objects for damage (eg lifting glaze, cracks, breaks, old repairs). If lifting glaze is present, avoid touching those areas.</p> <p>Do not wear cotton gloves because objects can slip and cotton can catch on rough surfaces.</p> <p>Do not lift ceramics by handles, spouts etc.</p> <p>Place packing trays/tubs as close to the damaged objects as possible. Label all trays.</p> <p>Place objects in padded trays/tubs. Avoid contact between objects/shards. Shards can be placed in labelled polyethylene bags. Cover to protect from dust and dirt.</p> | <p>If the ceramic has previous repairs, lifting glaze, cracks or mineral deposits — place in a labelled tray or polyethylene bag and consult a conservator for advice about treatment.</p> <p>If in sound condition: carefully remove contaminants from inside, brush off or brush vacuum the surface. Use a soft brush.</p> <p>If there is water inside, remove it carefully. Pour or siphon water out using plastic tubing.</p> | <p>Handle with extreme care as there may be cracks and breaks in the affected object, which may collapse when touched. Vacuum soot or ash off surface when the object is dry.</p> |

| | Handling | Treatment | Fire damage |
|--|----------|---|-------------|
| Unglazed, unfired and low-fired ceramics | | <p>Unfired ceramics are water-soluble and may become extremely soft when wet.</p> <p>Treat within 24 hours to stop mould growth. Blot dry — do not rub. Wrap in paper towels, air-dry or use fans. When dry, brush off residue.</p> | |
| High-fired ceramics | | <p>Treat within 48 hours.</p> <p>Rinse gently to clean — pat dry, do not rub. Air-dry or use fans.</p> <p>High-fired ceramics are a lower priority than those listed above.</p> <p>Rinse in clean water if needed.</p> | |

Metal and stone



It is important to remove as much water as possible after rinsing a metal.



Drying a metal jug with a soft cloth.



The jug is drying upside down to remove all moisture from the interior; however, no pressure is on the hinged lid.



A piece of Mylar® is used to prevent possible corrosion from the metal buckle transferring onto the shoe fabric.

9. Metal and stone

| | Handling | Treatment |
|---------------------|--|---|
| General tips | Use nitrile gloves to prevent the oils in your hands from degrading the metals or stone. | |
| Metal | | <p>Rinse/sponge and blot wet metal dry.</p> <p>Drain water, place upside down if possible to remove water from crevices. Be mindful of pooling within these areas and do not place pressure on hinged lids if they are placed upside down. Dry thoroughly with a microfibre soft cloth. Dismantle the object if possible to speed drying process. Leave to air-dry or use fans for assisted drying.</p> <p>For mixed components, place a piece of Mylar® or plastic under the metal to prevent corrosion products affecting other material.</p> |
| Stone | Use nitrile gloves. | <p>For smooth surfaces, blot gently, then air-dry.</p> <p>For rough surfaces or applied finishes, do not blot. Air-dry or assisted air-dry on a clean towel.</p> |

Organic materials



To help retain the original shape, place towelling or tulle inside to fill the bag while it is drying.



A damp sponge is used to remove dirt from a leather belt.



Moisture and dirt is removed from a wooden container with cotton buds.

10. Organic materials

| | Handling | Treatment |
|-----------------------------|--|--|
| Leather | Handle with care as it may be very fragile and need full support underneath. | <p>Rinse/sponge with clear water to remove mud.</p> <p>Drain and blot to remove excess water.</p> <p>Pad with towelling, tulle or un-inked paper to maintain shape.</p> <p>Air-dry.</p> <p>Manipulate tanned fur skins during drying to keep skins flexible.</p> |
| Vellum and parchment | Handle with care and support on a board when wet. | Tension-dry to retain dimensions. |
| Woven items | Handle with care and support on a board when wet. | <p>Rinse, drain and blot to remove excess water.</p> <p>Stuff with clean paper towels, cotton sheets or tulle to retain shape and absorb stains. Cover with clean towels. Air-dry slowly.</p> <p>Change padding material when it becomes wet.</p> |
| Bone, shell, ivory | Handle with nitrile gloves. | <p>Rinse, drain and blot to remove excess moisture.</p> <p>Place on blotters on non-rusting screens.</p> <p>Air-dry slowly.</p> |

Plastics



Blotting moisture off a wet plastic plate.



Using tulle to help a plastic purse retain its shape while drying.



Formaldehyde plastic (white bakelite) from this 1947 Astor mantle radio is extremely sensitive to water.



The battery acid in these metal and plastic batteries has caused them to degrade.

11. Plastics

| | Handling | Treatment | Freezing |
|--|---|---|-------------------------|
| <p>General tips</p> <p>A deteriorated plastic will have increased sensitivities to moisture and temperature.</p> <p>Degraded plastic gives off acidic vapours that can contaminate nearby objects, so keep it isolated.</p> <p>Store in a cool, dark room. Degraded plastics should be stored in cold storage (2–5°C, 20–30% RH).</p> <p>Wear P2 masks, nitrile gloves and lab coats to protect yourself against possibly dangerous plastic toxins.</p> | <p>Wear nitrile gloves.</p> <p>If there are signs of deterioration, change your gloves to avoid transfer of degradation to other objects.</p> | <p>If objects are broken, keep pieces grouped. Do not let the edges touch. Separate with Mylar®. Store in inert plastic containers.</p> <p>For composite objects, wrap, cover or use a Mylar® sheet to separate the different materials.</p> <p>Pack objects onto a tray or flat surface and air-dry.</p> <p>Do not rinse and never use solvents.</p> <p>Remove excess moisture from the surface by blotting.</p> <p>Clean with cotton swabs and lint-free cloth. If necessary, use a slightly dampened cloth (bottled water) to remove dirt.</p> <p>Do not use water on some old plastics, such as white bakelite (casein formaldehyde), as it can damage the surface.</p> | <p>Not recommended.</p> |

Textiles



Supporting a dress on a board when relocating it.



Water-soluble dyes need to be dried quickly. Use a hair dryer on the cool setting.



Drying the dress on a table with tulle padding to maintain its shape.



Using suction from a laminex table, realign the wet lace pattern into its original shape and leave it to dry.

12. Textiles

| | Handling | Treatment | Freezing |
|---------------------|--|---|---|
| General tips | <p>Provide support (eg corflute, board or tray) underneath a wet or damaged textile when moving, as it will be more fragile than when it is dry.</p> <p>Do not fold or stack delicate, wet textiles.</p> | <p>If textiles are wet, muddy or dirty, rinse in cool, clean, water, unless there are water-soluble dyes.</p> <p>Air or assisted air-dry textiles within 24 hours.</p> <p>Place wet textiles on a table, dry with towelling or blotters. Change absorbent material regularly.</p> <p>Dry small quantities using slow air movement across the surface of a wet textile.</p> <p>Dehumidifiers, fans and hair dryers (on cool setting) can be used.</p> <p>If dyes are running, dry quickly with a hair dryer (on cool).</p> <p>Water-soluble dyes may bleed onto their neighbouring material, so place Mylar® or a baking paper barrier behind the fabric to prevent dyes transferring.</p> | <p>Before freezing, check all material types to ensure it can be frozen. Glass beads, sequins or metal threads shouldn't be frozen.</p> <p>Separate objects with baking or waxed paper to prevent dye transfer, pack flat and freeze.</p> |

| | Handling | Treatment | Freezing |
|-------------|----------|---|----------|
| | | <p>Dry flat pieces of textile — lace, doilies etc on a table. Use the suction of the wet fabric sticking to a laminex table to gently align the threads back into their original positions.</p> <p>3D textiles can be shaped and padded out with tulle during the drying process.</p> | |
| Fire damage | | <p>Allow to dry, then vacuum to remove as much loose dirt and soot as possible. Don't use a brush. Then gently dab the surface with a soot sponge. If the object is strong and stable, it may be able to be washed or dry-cleaned. Contact a textile conservator for more advice.</p> | |

Bibliography and useful websites

Bibliography

- Australian Institute for the Conservation of Cultural Material
<https://aiccm.org.au>
- Australian War Memorial
<https://www.awm.gov.au/collection/conservation/>
- Be Prepared
https://aiccm.org.au/sites/default/files/docs/CAN_resources2014/beprepared.pdf
- Canadian Conservation Institute
<http://canada.pch.gc.ca/eng/1454704828075>
- MAAS conservation resources
<https://maas.museum/research/conservation/conservation-resources/>
- National Film and Sound Archives
<https://www.nfsa.gov.au/>
- Conserve O Grams
https://www.nps.gov/Museum/publications/conservoogram/cons_toc.html
- Conservation Online
<http://cool.conservation-us.org/>
- Museums and Galleries NSW
<https://mgnsw.org.au/sector/resources/online-resources/>

Useful websites

- Safety checklists by ICOM, International Committee on Museum Security. Offers a comprehensive yet clear checklist on disaster planning for fire, floods, chemical spills, theft, vandalism, earthquake, building structures, and terrorism
http://icom.museum/uploads/tx_hpoindexbdd/ICMS_Handbook_eng.pdf
- Examples of disaster plans
 - State Records of South Australia — Records management disaster planning guideline and toolkit
<http://archives.sa.gov.au/content/planning>
 - Te Papa — Disaster planning and recovery
<https://www.tepapa.govt.nz/learn/for-museums-and-galleries/how-guides/collection-management/disaster-planning-and-recovery>
- Products and suppliers list
https://maas.museum/app/uploads/2017/02/products_and_suppliers.pdf
- Correct use of fire extinguishers
<https://www.fireandsafetyaustralia.com.au/wp-content/uploads/2013/05/Fire-Extinguisher-Selection-Chart.pdf>

The websites listed in this manual were available and suitable at the time of publication.

Suggested disaster preparedness supplies

Baking paper
 Batteries
 Blotting paper
 Boards — cardboard, corflute
 Brooms
 Buckets and squeegee mops
 Chamois, Chux® wipes
 Data loggers
 Dehumidifiers
 Dustpan and brush
 Extension cords and power boards
 Fans
 Freezer
 Garbage bags — heavy duty
 Gloves — nitrile and rubber
 Hair dryers
 Paper towels
 Pens, pencils, markers
 Plastic sheeting — polyethylene
 Pump — diesel
 Rechargers
 RH monitors
 Scissors
 Spill kit
 Sponges — car sponge, soot sponge
 Squeegee broom
 String
 Tags — labelling objects
 Tape — gaffer, masking

Tarpaulins
 Tissue paper — acid-free
 Torches
 Towels and towelling pieces
 Tubs and crates
 Vacuum cleaner — wet/dry

Personal Protection Equipment

Aprons
 Disposable overalls, booties
 Face masks — N95 or P2
 Gum boots
 Hard hats
 Safety glasses
 Torches — head, dolphin



Part of disaster preparedness is gathering supplies.



MAAS conservator Kate Chidlow gives 'Pink Ted' a wash during disaster training.

Notes

First published 2012
Revised edition published 2017
Museum of Applied Arts and Sciences
500 Harris Street, Ultimo NSW 2007

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This publication was developed by the MAAS Conservation Team.

MAAS offers a range of outreach workshops for the collecting sector through its Regional Programs. For more information, go to <https://maas.museum/about/regional-program>

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Printing Playbill Printing

Front cover Cootamundra Railway Disaster, Henry King, 1885, glass plate negative. Tyrrell Collection, MAAS Collection

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'Pink Ted', a disaster prop for a training workshop, awaiting treatment. (See 'Textiles' on page 61.)

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Acknowledgment

We would like to acknowledge the AICCM (Australian Institute for the Conservation of Cultural Material); NFSA (National Film and Sound Archives); Preservation Australia; and Karen Coote, Antiquities Conservation, for their contributions to this booklet.

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