

# Getting Museums and Galleries Prepared for Disasters

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## AIM

WHAT IS A DISASTER?

WHEN DOES AN INCIDENT BECOME A DISASTER?

PREVENTION

POTENTIAL HAZARDS (RISKS) include:

NATURAL DISASTERS include:

INDUSTRIAL DISASTERS include:

ACCIDENTS include:

HUMAN ACTIVITY includes:

REDUCING THE RISK

GUIDELINES FOR BUILDING CONSTRUCTION OR RENOVATION

1. RISK ASSESSMENT

2. HAZARDS SURVEY

1 Internal Hazards

2 External Hazards

3. PROBABILITY

High probability

DISASTER PLANS

Characteristics of a good plan

EMERGENCY SUPPLIES

PREPARING PRIORITY LISTS

INSURANCE DETAILS

RESPONSE TEAMS AND RECOVERY

SALVAGE TECHNIQUES

GENERAL RECOVERY TECHNIQUES

FREEZING

ON-SITE DEHUMIDIFICATION

RINSING

VACUUM DRYING

VACUUM FREEZE-DRYING

AIR-DRYING

INTERLEAVING

SELECTED REFERENCES

SELECTED ON-LINE REFERENCES

## **AIM**

To provide workshop participants with the skills and knowledge necessary for disaster planning.

### **Outcomes include**

- understanding of the potential risks likely to cause damage in a museum or gallery collection
- for assessing and minimising the damage from these risks
- for Preparing for an emergency
- in developing a recovery plan
- for recovering wet objects

Collectively, these outcomes combine to produce a *collection's disaster plan*

## WHAT IS A DISASTER?

“a disaster is any unlooked-for incident threatening the structure or contents of a museum or galley which is beyond the immediate ability of the museum’s staff and normal management structure to control”[\[1\]](#)

“It is no coincidence that disasters strike mostly where there is no disaster plan in place. If disaster planning is effective, then often an incident is contained at an early stage instead of getting out of hand. These small contained incidents do not make news so the success of applications is often hidden”[\[2\]](#).

“Disasters do not discriminate. Unfortunately, all too often disasters *do* occur and usually to those without a disaster plan in place.”[\[3\]](#)

## WHEN DOES AN INCIDENT BECOME A DISASTER?

NOT all incidents become **disasters**

An incident may be considered an emergency when our ability to control the situation is challenged.

An emergency becomes a disaster when we lose control.

Tamara Lavrencic, Historic Houses Trust of NSW, collected the following information on unreported incidents causing damage to Trust collections during 1994-95.

Of The Total Of Unreported Incidents Causing Damage To Trust Collections in 1994-5

- were caused by roof leaks
- resulted from blocked drains/gutters
- were due to burst pipes
- were caused by fire
- were due to floods
- resulted from sprinklers, a further
- were the result of leaking window seals

In summary, the primary objectives of emergency planning are:

### 1.PREVENTION

To anticipate and, if possible, to avoid emergencies.

### 2.PREPAREDNESS

To retain control when an emergency occurs; and

### 3.RECOVERY

To recover control as quickly as possible[\[4\]](#).

## PREVENTION

**Prevention can be considered under three headings:**

1. assessment
2. practices
3. maintenance

**POTENTIAL HAZARDS (RISKS) include:**

natural disasters, industrial disasters, accidents and human activity

**NATURAL DISASTERS include:**

Cyclones, floods, severe storms, earthquakes & mud slides, hail, tidal waves, volcanic eruptions and bush/grass fires

**INDUSTRIAL DISASTERS include:**

utility failures (gas, water, electricity), sewer failures or blockages, structural collapse, internal fires, explosions, air pollution, chemical/fuel spills

**ACCIDENTS include:**

broken pipes, down power/phone, air plane crashes, construction equipment, vehicle crashes

**HUMAN ACTIVITY includes:**

Accidents - breakages, leaving taps on, theft, arson & sabotage, bombing/bomb threat, warfare, riot and civil disorder, vandalism, neglect

## **REDUCING THE RISK**

What could you do to reduce the risk from the hazards/risks above, for example:

- fire
- cyclone
- gutters & drains?
- contractors?

**REDUCING THE RISK- FIRES & their CAUSES**

**arson 72%**

**construction/renovation 25%[\[5\]](#)**

## **GUIDELINES FOR BUILDING CONSTRUCTION OR RENOVATION**

**Generally, your Organisation Is Responsible For:**

- awareness and training
- fire and smoke detection systems
- safety practices, detection systems & suppression systems BEFORE construction begins

- work areas to ensure safety precautions and preventive measures are in place.

*When work is complete it is recommended that a thorough shelf-by-shelf and item-by-item cleaning program is carried out for all affected areas.*

**Ensure that the Contractor understands that they are responsible for:**

- insurance
- work practices, trained workmen (*making sure their employees don't smoke in your building*)
- ventilation
- collections from dirt, fire and water with temporary barriers, securing the roof before work finishes each day - NEVER, EVER BELIEVE THAT IT WON'T RAIN OVERNIGHT!!!
- of special hazards while work is in progress
- removal
- work permit

## 1. RISK ASSESSMENT

What other hazards besides fires place your collections/buildings at risk?

- disasters include cyclones, floods, severe storms, earthquakes & mud slides, hail, bush or grass fires
- disasters include gas, water or electricity failure, sewer failure or blockage, structural collapse, internal fire especially during construction/renovation, explosion, air pollution, chemical or fuel spills
- include broken or blocked pipes, air conditioning malfunctions, water leaks
- activity includes theft, arson, vandalism, neglect, mishandling

## 2. HAZARDS SURVEY

A useful tool for assessing risk is to undertake a hazards survey.

For example, consider

### 1 Internal Hazards

- 1.1 Are the ceilings undamaged, unstained and in good condition?
- 1.2 Are the windows / skylights in sound condition, ie. no evidence of leaking?
- 1.3 Are the floors undamaged, unstained and in good condition?
- 1.4 Are the walls undamaged, unstained and in good condition?
- 1.5 Are all exits clear, including corridors, aisles, stairs and lift foyer? Are the fire doors and smoke doors closed where they should be, ie. except where held open by automatic release devices?
- 1.7 Are the smoke and fire detectors in sound condition?
- 1.8 Are the fire extinguishers correctly mounted and maintained? Are all materials and supplies stored according to Fire Regulations? Are all storage areas secure? Are collections off the floor and stored correctly, ie. physically secure?
- 1.11 Are all flammables stored safely, ie. in chemical storage cupboards?
- 1.12 Are evacuation floor plans and immediate action guidelines prominent?
- 1.13 Is emergency lighting operational?
- 1.14 Are there any other internal hazards?

## 2 External Hazards

1. Is the building exterior sound?
2. Is the roof sound? Are flashings present and intact?
3. Are the gutters, down pipes and drains sound and free of blockages?
4. Are overhanging trees and branches trimmed?
5. Is stop-cock for water supply readily accessible?
6. Is exterior lighting operational?
7. Is there any construction work being undertaken which could effect any part of the building?

## 3. PROBABILITY

After a risk assessment has been undertaken it is important to estimate the likelihood of the risk occurring. It is important to balance the probability of the disaster against its effect to be able to decide where to put your resources.

### High probability

Probability effect picture to go here

**Have you considered how likely, and how damaging the following incidents or disasters may be to your museum or collection?**

- Cyclones
- Floods
- Fires

**72% of fires are due to arson, 25% from construction/renovation**[\[6\]](#)

Blocked gutters & drains

**95% of all disasters result in some form of water damage**

**What could you do to reduce these risks?**

- Consult your local fire brigade
- do you have sprinklers - are they the wet or dry type, or other types of fire suppression?
- Is your equipment maintained?
- do you have smoke detectors? do they run on mains power or batteries?
- Necessity for vigilance and monitoring when renovations and maintenance are underway especially at the end of the work day. Your building managers may require a hot-work permit be issued for all operations involving welding and cutting
- Regular cleaning program for gutters and air-conditioning filters
- Regular cleaning and monitoring program

**YOUR BEST PROTECTION IS TO HAVE A WORKABLE DISASTER PREPAREDNESS PLAN IN PLACE BEFORE A DISASTER STRIKES!**

## DISASTER PLANS

**DISASTER PLANS may also be known as disaster preparedness plans, disaster contingency plans and emergency action plans**

“It is no coincidence that disasters strike mostly where there is no disaster plan in place. If disaster planning is effective, then often an incident is contained at an early stage instead of getting out of hand. These small contained incidents do not make news so the success of applications is often hidden”[7].

“Disasters do not discriminate. Unfortunately, all too often disasters **do** occur and usually to those without a disaster plan in place”[8].

### **Characteristics of a good plan**

- Simplicity, flexibility and adaptability
- Facilitates speed in response
- Identifies emergency priorities
- Identifies all necessary resources and sources of assistance[9]

### **PREPAREDNESS PLANNING INCLUDES**

1. supplies
2. priority lists
3. insurance details
4. response teams & recovery
5. practice

### **EMERGENCY SUPPLIES**

- materials & equipment could be useful to have if you had a disaster?
- would you put them in a room or have them portable?
- if you prefer portable supplies, where would you locate them?
- how many/much would you need?
- how will make sure that the supplies are always well stocked?

### **PREPARING PRIORITY LISTS**

- are the objects irreplaceable (this may be due to rarity, regional significance or cost)
- they are replaceable how readily and at what cost?
- they reproductions or props?
- the objects on loan or at risk

This information is most valuable and reliable when collected before an incident or disaster occurs.

Your collection Register should include a copy of this information & PRIORITY LISTS.

Do you have back-up copies of your REGISTER and PRIORITY LISTS?

Where is your REGISTER kept/located?

### **INSURANCE DETAILS**

Who is your insurer and what are the policy details.

What is covered by your insurance

- Your collections - make your insurer aware of priority lists (along with Statements of Significance)
- your staff (paid & volunteers)
- Costs of salvage & drying?
- replacement costs?
- Conservation or restoration costs?
- Other issues

## **RESPONSE TEAMS AND RECOVERY**

If all else fails, and at times it will, you will need to initiate the recovery stage of your disaster preparedness plan.

SUCCESSFUL RECOVERY REQUIRES

- PLANNING
- PREPAREDNESS
- TRAINING

## **SAFETY IS ALWAYS THE HIGHEST PRIORITY**

A RECOVERY PLAN ENSURES THAT:

- safety remains the highest priority
- damage is recorded for insurance purposes
- moisture content is reduced
- financial cost is minimised
- damage is minimised
- operations return to normal as soon as possible

**FOR DISASTER PLAN TO BE EFFECTIVE IT:**

- must be kept current & modified in response to experience and shortcomings
- be introduced to all staff as a regular part of their induction process.
- be trialled and practiced to increase familiarity and to minimise problems

# **SALVAGE TECHNIQUES**

## **GENERAL RECOVERY TECHNIQUES**

Recovery techniques are used to stabilise and dry collections. The list of publications and on-line references attached to these notes include references to disaster preparedness and salvage techniques. It is important to:

- Contact a conservator as soon as possible.
- Work on high priority collection areas first.
- In general, freeze items that cannot dry within 48 hours. However, not all materials can be frozen. Plate glass, some photographs and furniture may be exceptions to

freezing.

## **FREEZING**

If objects cannot be dried within 48 hours, freeze them until action can be taken. Freezing stabilizes collections for months; it stops mold growth, ink running, dye transfer and swelling. A sub-zero commercial freezer is best, but a home freezer works. A refrigerated truck keeps materials cool enough to slow mold growth.

## **ON-SITE DEHUMIDIFICATION**

Super-dry air is pumped into the building and moist air drawn out. A useful method for damp library and archival collections in place; may be used in modern buildings to dry carpeting, wallboard and furnishings. Do not use for historic structures of wood or plaster or most museum collections.

## **RINSING**

Rinse dirty or muddy items under a gentle stream of clean running water or gently agitate in containers filled with water. Do not scrub; it drives dirt in deeper. Use a sponge/soft cloth to blot off mud and debris.

## **VACUUM DRYING**

Also called "thermal drying." Items are dried in a vacuum chamber, often at temperatures above 1000 F. Caution: this method accelerates aging and causes damage to many materials: animal skins (leather, vellum), film media. Widely available; slower than vacuum freeze-drying, but less expensive.

## **VACUUM FREEZE-DRYING**

Items are dried in a vacuum chamber at below-freezing temperatures to minimize swelling and distortion. It generally provides the most satisfactory results; recommended for historic collection materials and glossy papers.

## **AIR-DRYING**

Use a cool, low-humidity area with good air circulation. Place absorbent material (see interleaving) under objects; replace it when wet. If possible, air dry materials on plastic racks (commercial bread trays or rust-proof screens) to increase evaporation. Exposure to light may reduce threat of mold, but prolonged sunlight can cause fading.

## **INTERLEAVING**

Use blotter paper, uninked newsprint, paper towels, waxed or freezer paper to keep items from sticking together and prevent dye transfer or running.

## **SELECTED REFERENCES**

Details on specific drying techniques for different materials are available in the following references.

An additional resource is [Emergency Response and Salvage Wheel](#), produced by the National Institute for the Conservation of Cultural Material. Contact Museums Australia Qld for

further information.

Australian Institute for the Conservation of Cultural Material Inc. *Code of Ethics and Guidance for Conservation Practice* Canberra 1986

Ambrose, T. & Paine, C. *Museum Basics* Routledge London 1993

Cassar, May *Environmental Management, Guidelines for Museums and Galleries*, Museum and Galleries Commission, Routledge London 1995

Coote, Karen (ed.) *Care of Collections- Conservation for Aboriginal and Torres Strait Islander Keeping Places and Cultural Centres* Australian Museum 1997

Gilroy, David & Godfrey, Ian (ed.) *Conservation and Care of Collections* Western Australia Museum 1998

Fahey, Anne (ed.) *Collections Management*, Routledge London 1995

Knell, Simon (ed.) *Care of Collections* Routledge London 1994

Marquis-Kyle, Peter and Walker, Meredith *The Illustrated Burra Charter* Australia ICOMOS Canberra 1996

Museums Australia Inc ( NSW) *Museum Methods – A Practical Manual For Managing Small Museums* 1994

[reCollections](#) - a training package - commissioned by the HCC's Collections Management and Conservation Working Party, designed to be a major point of reference for those caring for collections 1999

(One copy of the *reCollections* package is available free to every Australian collecting institution.)

Robins, Richard (ed.) *A Manual for Small Museums and Keeping Places* Queensland Museum 1992

Thompson, J.M.A (ed.) *A Manual of Curatorship: A Guide to Museum Practice* Butterworths London 1992

Thomson, G. *The Museum Environment* Butterworths London 2<sup>nd</sup> edit. 1986

## **SELECTED ON-LINE REFERENCES**

The Training and Professional Development Program (TPDP) of Museums Australia Qld (MAQ) and Regional Galleries Association of Queensland (RGAQ) website:  
<http://www.maq.org.au/profdev/>

Museum-L an email list for discussions on museum issues [listserv@home.ease.lsoft.com](mailto:listserv@home.ease.lsoft.com)

Conserve O Grams <http://palimpsest.stanford.edu/byform/serials/>

North East Document Conservation Centre <http://www.nedcc.org/>

Conservation On-line <http://palimpsest.stanford.edu/>

Australian Institute for the Conservation of Cultural Material Inc Address to be advised

Australian Museums on-line <http://www.amol.org.au/>

websites and news groups link [http://museum-security.org/restoration\\_conservation.html](http://museum-security.org/restoration_conservation.html)

Canadian Heritage Information Network <http://www.chin.gc.ca/>

The American Institute for Conservation of Historic and Artistic Works  
<http://palimpsest.stanford.edu/aic/>

International Council of Museums (ICOM) Australian server National Museum of Australia  
<http://www.nma.gov.au/icom/>

Getty Conservation Institute Newsletter <http://www.getty.edu/gci/>

American Association of Museums <http://www.aam-us.org/>

Henry Ford Museum & Greenfield Village <http://palimpsest.stanford.edu/misc/conslink.html>

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[1] Stewart Kidd, "First Principles of Disaster Planning for Museums and Galleries", SSCR Journal, November 1992, Vol. 3, No. 4

[2] John McIntyre, "Reaction to realisation" Redefining disasters: A Decade of counter-disaster planning. State Library of NSW 1995

[3] Margaret Pember, "The psycho-social (P-S) factor in counter-disaster planning: the human element". Redefining Disasters: A Decade of Counter-Disaster Planning. State Library of NSW, Sydney, 1995

[4] John Hunter "Preparing a Museum Disaster Plan" 1991 Disaster Preparedness Seminar Proceedings (Southeastern Museums Conference) pp. 52 – 66

[5] "Emergency Management: Protecting Collections During Renovation" Technical Leaflet published by the North East Document Conservation Centre

[6] Information from the Northeast Document Conservation Centre Technical Leaflet *Emergency management: Protecting Collections During Renovation*

[7] John McIntyre, "A Reaction To Realisation" **Redefining disasters: A decade of Counter-disaster planning**. State Library of NSW 1995

[8] Margaret Pember, *The Psycho-Social (P-S) Factor In Counter Disaster Planning: The Human Element*" **Redefining Disasters: A decade Of Counter-Disaster Planning**. State Library of NSW 1995

[9] John Hunter, *Preparing a Museum Disaster Plan* 1991 Disaster Preparedness Seminar Proceedings. Southeastern Museums Conference

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