



**Canadian Council of Archives
Conseil canadien des archives**

Basic Conservation of Archival Materials : Revised Edition, 2003

Chapter 5 – Disaster Planning and Recovery

Introduction

In spite of the best intentions and most diligent efforts of staff to improve conditions in the archives, things unfortunately can and will go wrong. Whatever the nature of the crisis, staff members will have to respond quickly, and their response must be the correct one if further damage or permanent loss is to be prevented. The development and implementation of disaster response and recovery plan and staff/volunteer education is the only way to guarantee a successful response to the crisis.

Obviously, the topic of disaster response and recovery planning is vast with entire books devoted to the subject. The focus of this chapter is to outline the primary components of a disaster plan, the composition and roles of the disaster action team (DAT) and finally to offer some suggestions for dealing with mould and insect infestation which can occur in the aftermath of a disaster.

An archives ability and effectiveness in dealing with a disaster, small or large, depends to a great degree on having staff trained in disaster recovery and having an effective, realistic disaster plan.

In the **10 Point Preservation Plan** outlined in Chapter 1, disaster planning is listed as the number three priority ahead of rehousing, reformatting and treatment of collections. This is because, by their very nature, disasters are unexpected and can put the entire collection at risk of total loss.

Disaster Preparedness

Although fire and water usually cause the greatest damage to collections, disasters can take many other forms in an archives. Prior planning for potential causes of disaster is essential if staff is to be prepared to act effectively when a real emergency occurs.

Preparedness planning will ensure that if a disaster should occur, it can be dealt with in a way that minimizes destruction and loss. Of course, it is imperative to do everything in your power to prevent a disaster from happening in the first place. The *CCI Notes 14/2, "Emergency Preparedness for Cultural Institutions: Identifying and Reducing Hazards,"* is a useful starting point when attempting to identifying risk.

Disaster planning is broadly comprised of three components:

1. Planning/prevention
2. Response
3. Salvage

Planning and Prevention

The approach to writing a disaster plan will vary among archives depending on their size, staffing, collection make-up and building type. The following overview of the disaster planning process can be used as a prototype to start a disaster plan in your institution.

1. Make writing a disaster plan the number one priority for the upcoming year.
 - Obtain consensus and commitment from staff/volunteers and/or board that this is a priority.
2. Designate one person to be responsible for seeing the plan through to completion.
3. Identify an individual or create an Archive Planning Team (APT) responsible for specific areas of the disaster plan.
4. Complete a “generic” disaster plan to function as an interim plan until the archive-specific plan is completed.

“Generic” plans can be found on the Internet at the following sites:

From the California Preservation Clearing House

<http://cpc.stanford.edu/disasters/generic/unit1.html#sect2>

From the Northeast Document Conservation Center

www.nedcc.org/plam3/tleaf34.htm

5. Identify members for the Disaster Action Team (DAT).
6. Review disaster planning and salvage literature and other similar institutions disaster plans. Excellent information on disaster planning and disaster plan examples can be found on the Internet at Conservation Online at <http://palimpsest.stanford.edu>. Look under Disaster Planning and Response.
7. If staffing is very limited consider applying to the Canadian Council of Archives under the CPCAR grant programme for assistance to contract a consultant to write a disaster plan. A positive aspect to this approach is that the disaster plan is written in a timely fashion by someone with disaster planning experience. A disadvantage to the approach is that no one on staff is ultimately responsible nor totally familiar with the plan. If this approach is taken, a training component should be added to the grant application to ensure that those staff/volunteers on the DAT team are aware of their responsibilities, understand how the plan works, and are confident in their abilities to meet a disaster.
8. Undertake a risk analysis of the building, surrounding area and collection. Discuss potential risks with colleagues, conservators, fire marshals, building maintenance, etc.
9. Arrange for disaster salvage training for all staff and volunteers.
 - Nothing is more useless than a plan that is written but never read.
10. Update plan annually.

Archives Planning Team (APT)

Depending on the size and structure of the archives, the APT may be an individual or a team. An APT is often comprised of the administrator/board head, the response/salvage coordinator and the supplies coordinator. The APT is charged with developing the following:

- Risk analysis – identify possible causes of emergencies, determine the effects that each might have on the collections and plan what to do in the event of an emergency.
- Preparing a floor plan of the building with the location of collections and of all rare and special materials. (For security reasons, this floor plan should have limited access.) The floor plan should also show the location of emergency equipment such as smoke detectors, fire extinguishers, sprinkler heads and emergency lighting.
- Preparing evacuation procedures for staff and researchers.
- Identifying collection priorities for recovery.
- Identifying appropriate recovery/salvage techniques for all collection media.
- Developing a contact list of volunteers, conservators and others with expertise in various aspects of disaster recovery.
- Liaising with emergency personnel such as the fire marshal and police in the planning stages – not during a disaster.
- Re-evaluating and updating the plan at regular intervals. (The plan should also be re-evaluated after a disaster, major or minor.)
- Identifying recovery/salvage supplies.

A “Basic Emergency Supplies and Equipment” list often has the following items included as outlined by (Patkus and Motylewski 1999:8).

Dehumidifier	Metal cart
Plastic (milk) crates	Flashlights
50-ft. extension cord (grounded)	Portable electric fan
Wet vacuum	Blank newsprint
Freezer or wax paper	Plastic trash bags
Plastic buckets and trash can	Paper towels
Sponges	Mop
Monofilament nylon (fishing) line	Broom
Gloves (rubber/leather)	Rubber boots and aprons
Safety glasses	Plastic sheeting (stored with scissors and tape)
First aid kit	Clipboards, paper, pens, markers
Emergency funds (cash and purchase orders)	

- Identifying commercial services in the community that could be called upon in the event of a disaster such as freezing facilities, dehumidification services and salvage companies.

Response

Disaster Action Team (DAT)

The DAT is the team that responds to a disaster. If this team is to respond effectively in an emergency, the team must have a clear chain of command and receive thorough training in how to carry out the plan.

The following DAT organization chart from the City of Vancouver Archives Emergency Plan represents a common DAT structure.

Title	Staff and alternate	Duties
Recovery Director	Name and telephone number	Directs all aspects of response. Makes final decisions regarding salvage. Deals with City officials, security and emergency services from a position of authority.
Emergency Coordinator		Assesses damage and danger to records. Assists in direction of recovery operations.
Scout		First on site to determine the nature of the problem and report to the Recovery Director. May take initial action, such as shutting off utilities. Makes a photographic record of the damage before beginning salvage.
Communicator		Contacts the rest of the staff and others indicated in Appendix A, as well as agencies or services requested by the Recovery Director.
Logistics Manager		Organizes supplies (bought, borrowed or rented) and services (truck rentals, cold storage). Keeps records of contracts, response, rental/loan agreements, etc.
Cataloguer		Keeps track of packing, transit and relocation operation.
Building Service Supervisor		Responsible for power supply and environmental controls.

Salvage

The salvage of your collections will depend on the type of damage and the type of media affected.

Basic Guidelines for Salvage of Collections

1. Do not enter the building until you have received approval to do so from the authorities on site.
2. Reduce the temperature.
3. Reduce the relative humidity by vacuuming up water with a wet/dry vacuum and install dehumidifiers.
4. Use fans to circulate the air.
5. Organize collection packing materials.
6. Assess scope of disaster and decide if you need off-site salvage recovery area.
7. Begin packing collections according to salvage priority.
8. Water-soaked paper and books should be frozen as soon as possible. Freezing halts the progressive deterioration caused by water and prevents mould growth. It also “buys” time to organize drying and conservation treatment. When materials must be frozen, try to work in consultation with a conservator.
 - Documents and manuscripts to be frozen should be grouped in bundles/ file folders not exceeding two inches in thickness. The bundles should then be separated with freezer paper or waxed paper so that each bundle can be separated from the one next to it when the time comes to treat it.
 - Individual bound volumes to be frozen will need to be interleaved with the freezer paper or waxed paper as well. When packing books, place them on their sides or spine down. Water-damaged books should not be opened or closed.
 - When you have large amounts of material to freeze, place the bundles or books in plastic milk crates or cardboard boxes. If only a small quantity of material is to be frozen then a home freezer can be used. In the event of a large-scale disaster commercial freezers will be needed.

An excellent article by Betty Walsh (1997) that outlines salvage operations and identifies salvage priorities can be found at:

<http://palimpsest.stanford.edu/waac/wn/wn19/wn19-2/wn19-206.html>

The pull-out chart “Salvage at a Glance” associated with this article has been reproduced in this book. This article and “Salvage at a Glance” chart can be used to form the basis of your institution’s salvage plan.

Fire

Fire prevention, detection and extinguishing is a broad and complex subject. Consultation with the fire marshal or fire prevention officer will assist your archives in designing the most appropriate system for your needs and resources. This consultation will also allow the fire marshal to become familiar with the archives building, collections and challenges.

Every archives should have some form of fire detection and suppression system.

Fire Detection

The two most common types of fire detectors are thermal/heat detectors and smoke detectors. Smoke detectors and heat detectors are both acceptable however, smoke detectors are considered preferable as they sound an alarm before a heat detector will. Two kinds of smoke detector are marketed today. Photoelectric detectors react faster to low-energy, smoldering fires, while ionization detectors respond more quickly to the smaller smoke particles of a high-energy open-flame fire. Fire department officials can advise you on which type would be advisable in your building. If possible, the archives should have a central alarm system for the detectors that is connected to a 24-hour security service or to the fire department.

Fire Suppression

Two common types of automatic fire suppression systems found in archives are the wet pipe and the dry pipe systems. A wet pipe system has water in the pipes at all times. Dry pipe systems, which are often installed to reduce the chance of an accidental discharge, do not have water in the pipes. The pipes of a dry pipe system are filled with pressurized air or nitrogen and water is only released into the system when needed. Both systems are considered appropriate for use in archives.

Hand-held fire extinguishers are also used to suppress fires but should not be the only system used. For hand held-fire extinguishers to be effectively used staff must be trained in their proper use.

Security

Theft is not at present a big problem for most archives when compared to harmful environmental factors such as poor handling and the natural deterioration of materials. Many thefts are “spur of the moment,” as stamps, postal cancellations, autographs and personal genealogical information prove too tempting to resist. Theft generally happens when the reading room is busy, so try to have enough staff/volunteers on hand to prevent such an occurrence.

To secure the building against theft:

- Have only one public entrance to the archives. This entrance should be supervised at all times.
- Install deadbolt locks and control the number of keys issued.
- Install burglar bars on low windows.
- Install 1/2" Plexiglas storm windows. Use Lexan if the security risk is very

high.

- If windows must be opened, be sure to shut and lock them when rooms are unoccupied.
- Install security alarms on doors and windows, or a complete security system if the archives budget allows it.

To protect collections from theft:

- Define staff-only areas (storage, work rooms, vaults) and do not allow researchers into these areas.
- Never leave researchers alone in the reading room.
- Ensure that anyone who is not archives employees are supervised in storage areas. This measure will help to prevent both losses and accidents to the collection.
- Train staff to know what to do if they should see someone in an unauthorized area, or in the process of stealing archival material.
- Have researchers sign in and out; ask them to show identification; keep a record of the materials they use and check that all the materials are returned. These procedures provide means of preventing and tracking losses, and it will be clear to researchers that your archives is serious about security.
- Consider installing a security mirror which gives a wide-angle view of the reading room from the main desk.
- Keep display cases locked.
- Provide photocopies on request at low cost.
- If original records are very valuable, keep them in storage and make a copy for researchers' use.

Finally, there is the "paperwork security" that helps the archives staff to identify, reclaim or obtain compensation for lost articles.

- Keep good accession records and inventories. These should provide enough information to indicate when records are missing from the collection, and to make a positive identification of records that have been stolen.
- Arrange for adequate insurance coverage, and make sure that at the time of annual policy renewal the coverage reflects any additions to the collection or appreciation in its value.

Mould and Insects

Insects, rodents and mould can cause irreversible damage to archival collections. Their presence in an archives is largely determined by environmental factors such as high temperature, high relative humidity, absence of light and abundant nutrient supply.

The best control method is to take preventive action on three fronts:

- Environmental Controls
 - Avoid conditions that nurture mould (relative humidity above 65–70%) and insects (slightly damp, dark locations for most species that attack collections.)
- Cleaning and Maintenance
 - Do not entice pests into the archives with food or damp and dirty areas.
- Regular Inspection
 - Inspect collections on a routine basis.
 - Isolate all incoming records, including loans, and carefully inspect them for signs of pest or mould damage before introducing them to your archival vault.
 - If you find mouldy or pest infested records, isolate them.

Mould

Mould spores are present in all surroundings, remaining dormant until favourable conditions for germination arise. Mould requires only nutrients and the right environmental condition to grow. Paper, leather, adhesives, dust – virtually all materials found in archives – will nourish mould under the right conditions. Mould thrives in an area with relative humidity levels above 65–70% and poor air circulation. To reduce the risk of mould:

- Ensure that the relative humidity remains below 65%.
- Ensure that there is air circulation in the archives.
- Do not store records against outside walls as they tend to be damp, cooler and can form areas of higher relative humidity.

Mould outbreaks are treated with either non-chemical or chemical methods depending on the size and reason for the outbreaks.

Mould Treatment: Non-Chemical Method

Non-chemical methods for mould are preferable to chemical methods in that the records are not subjected to chemicals/fumigants, health hazards for staff/volunteers are reduced and generally the cost is lower.

- Identify and isolate mouldy records by sealing them in polyethylene bags.
- When handling mouldy records appropriate particulate masks and gloves should be worn.

- Identify the moisture source (high relative humidity, damp wall, dripping tap, etc.) and eliminate it.
- The mould spores should be brushed or vacuumed off the record in an area away from the collection. A HEPA (high efficiency particulate air) filter vacuum is recommended for removing mould. Adaptors for HEPA filters are manufactured for some brands of standard vacuums.
- If the mouldy records cannot be dried or vacuumed immediately then they should be frozen to prevent further mould growth. Freezing will not kill mould but will inhibit its growth.
- Return the cleaned records to the storage area only when the conditions that caused the outbreak have been eliminated.

Mould Treatment: Chemical Methods

The use of chemical methods to control mould should only be used when all other methods have been exhausted. If the conditions which allowed mould growth to occur, such as high relative humidity, are not fixed then subsequent outbreaks will occur whether chemical methods to treat the mould are undertaken or not.

Chemical treatments and fumigation can be complex. Because the literature on this topic is regularly under revision and as new fumigants are registered and old ones de-registered it is advisable to contact the Canadian Conservation Institute or a conservator for detailed information.

Insects

Most insects that cause damage to an archival collection like a slightly damp, dark and somewhat dirty location. Common insects which attack archival collections include: silverfish, cockroaches, booklice, carpet beetles and other species of beetles. Many of these insects thrive on the same nutrients that sustain mould. Once insects have entered a building and find the conditions to their liking, they are difficult to eliminate.

Integrated Pest Management Programme (IPM)

An Integrated Pest Management (IPM) programme is undertaken to:

- Identify potential risks and prevent them.
- Establish a monitoring programme.
- Prepare plan to react to outbreak of a problem.

Each of these steps leads to preventive measures so that the insect/pest problem is eliminated and does not reoccur. A successful IPM programme should result in what Florian in *Heritage Eaters* (1997:105) refers to as “zero point.” (Florian uses the term “Integrated Insect Pest Control (IIPC)” programme rather than IPM.) Zero point is where all insects/pests have been eradicated. By their very nature, IPM programmes are archive-specific due to their individual sites, buildings, pest problems, collection types, etc. However, an excellent overview of an IPM programme is outlined in *Heritage Eaters* (1997:108–109).

Insect Treatment: Non-Chemical Methods

Freezing is an attractive method for dealing with infestation as it is non-chemical, can be done on-site and is inexpensive.

- Paper, leather, wood, books and some photographs can be frozen.
- Double bag the infested material in polyethylene bags and seal.
- Freeze the records at -20°C or below for at least 48 hours or longer.
- After removing the frozen records from the freezer let them thaw out and warm up to room temperature before unwrapping them. This is to reduce condensation buildup on the records.

Insect Treatment: Chemical Methods

The use of chemical methods to control pests should only be used when all other methods have been exhausted. Chemical treatments can be complex, difficult to administer and harmful to the records and staff. Any substance toxic enough to kill pests will be harmful to humans. Residual compounds of pesticides and fumigants can also be harmful to collections. Firms specializing in fumigation must be licensed, but that does not mean that they are necessarily expert in the requirements of archival records. Because the literature on this topic is regularly under revision and as new insecticides are registered and old one de-registered, it is advisable to contact the Canadian Conservation Institute or a conservator for detailed information.

Selected Readings

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