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Cultural Affairs and Sport

How to organise, manage and care for your archive:
A guide for community organisations in South Africa

This guide to archiving for community organisations has been compiled by the Western Cape Archives and Records Service (WCARS) Cape Town, South Africa. This guide has been made available free of charge as part of WCARS public programming activities. It is made freely available for non-commercial use, display, broadcast, performance and distribution. Attribution in the event of copying, display, broadcast, modification or reuse is requested.

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How to organise, manage and care for your archive:

A guide for community organisations in South Africa.

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Part Two

How to safeguard and care for archival materials:

Preserving the archive's records for the future, managing the storage environment, pest control and other threats to archival materials; disaster preparedness and planning.

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Understanding the concept of archival preservation

What is archival preservation?

Preservation is an integral part of a cultural heritage institution or collection's mission. Preservation planning should be part of its overall strategic plan.

Preservation is the protection of archival materials through activities that minimize the deterioration of archival materials. It works to minimise the effects of agents of deterioration.

There are 10 recognised agents of deterioration:

1. Physical forces (e.g., damage from dropping items or items falling, etc.)
2. The human element: thieves, vandals, displacers
3. Fire
4. Water
5. Pests (e.g., rodents, mould and fungi, insects, etc.)
6. Pollutants (e.g., gasses, dust, etc.)
7. Light
8. Incorrect temperature
9. Incorrect relative humidity
10. Disassociation – the loss of context or information about the item (e.g., un-/ or mislabelled records, misfiled items, etc.).

A preservation program takes a holistic view of the care of archival materials: how they are stored, used, exhibited, etc. Elements of an archival preservation program include:

- Ideal storage environment (temperature, humidity, light levels, storage furniture, etc.)
- Good housekeeping (keeping the storage areas free of clutter and clean)
- Pest management (Integrated Pest Management, or IPM)
- Protective enclosures: encapsulating, folders, boxes, etc.
- Security
- Digitisation and reformatting
- Disaster management
- Conservation treatment and repair

Planning for preservation

Preservation planning is a process by which the overall and more specific needs for the care of collection materials are determined, priorities are established, and resources for implementation are identified. Its main purpose of preservation planning is to define a course of action that will allow an institution to set its present and future preservation agendas.

It identifies the actions to take that will take to prevent loss and harm to the collection as a whole.

Preservation policy and planning

A preservation policy will outline the areas of preservation concern. These include storage and handling of archival materials, good housekeeping, pest control measures and monitoring, disaster preparedness, etc.

A preservation plan must dovetail with other key management tools in the institution, such as the collections management policy. The preservation plan cannot be drafted in isolation but needs to be composed within the same frame of reference that is used for all collections' policies and plans. This frame of reference is the institution's mission statement. All policies and management documents should flow from the mission statement and be understood and implemented within its parameters.



What is archival preservation?

- Preservation is the protection of archival materials from any further loss or damage, through activities that minimize the deterioration of those materials.
- Even if a record is already damaged, it seeks to prevent any further harm or loss occurring to the record.
- Any and all activities to prevent loss or harm to archival materials and to ensure the continued survival of archival materials.
- Focusing on prevention, that is eliminating or mitigating (or limiting the harm) to archival materials: "doing the greatest amount of good for the greatest number of records."

What preservation management?

- Preservation management takes a holistic look at the environment that archival materials are in.
- It looks at the storage area, how the records are handled and used, how they are exhibited.
- It does risk assessments to identify any threats or potential harm that can occur from pests and biological agents (for example, mould), or disasters such as fire and flooding. Please see the following page for more information on risks to archival materials.

Planning for preservation

- Elements of an archival preservation plan include storage, protection in handling and use, security, digitisation, disaster management, and repair.
- A preservation policy and plan must dovetail with other key management tools in the institution, such as the collections management policy.

Areas that preservation planning and management take a close look at include:

- Building maintenance
- Pest management
- The storage environment, and "good housekeeping" inside the storage environment.
- Disaster preparedness
- The use of records by both staff and external researchers

Understanding risks to archival materials

Risk to the archival materials and the collection as a whole cannot be avoided completely, but there is much that can be done to manage (or mitigate) these risks.

The first step in managing risks to archival materials is to know and understand what the risks are. Below is an introduction to risks for archival materials. Keep in mind that many risks can overlap and create an even more aggravated risk to the materials in an archive.

The first thing to do is to look at what steps you can take to either eliminate or greatly reduce the risk-factor. For major risks such as fire and flooding, the following section on disaster planning will help you to plan to avoid, and if necessary to respond to a disaster featuring these risks.

Fire and fire prevention

Fire prevention is the first line of defence in preventing destruction or irreversible damage to archives.

Areas where archives are stored should be solidly built and must avoid the risk of fire. Storerooms should be assessed for risks from fire and suitable counter measures put in place. This includes fire-resistant doors, walls, ceilings, floors and windows. All of this is supported by the fire-prevention measures needed for any place of work or public building.

Fire prevention measures include:

- Never using open fires, stoves, gas, radiant electric or paraffin heaters in an archive building.
- The storage area should have fire-resistant doors, walls, ceilings, floors, and windows.
- Most offices have twenty-minute fire resistant doors. Archives need more protection than this. The ideal would be four-hour fire-resistant doors.
- Electric wiring circuits should be routed through metal conduits (tracking which holds the wires clear of other materials.)
- Master switches for electrical circuits should be outside the storage area.
- Smoke detectors should be fitted inside and outside the storage area.
- Smoke detectors should link to the building's main alarm system and where possible, the Fire Service.
- Clean gutters and roofs of any plant matter to reduce the risk of fire ignition from sparks from a nearby fire.
- "Firescaping" or landscaping to reduce fire risk. Remove any trees and large bushes growing near the building. Plant succulents instead of grass close to the building. Use gravel, rockery, or paving to break up planted areas close to the building.

Water: flooding and moisture

Water will cause major damage to archives. Flooding can be caused by water coming into the building from outside or by water leaking from tanks or pipe work inside the building. The presence of water / moisture in storage areas can result in secondary risks to collection materials, such as the growth of mould in humid conditions, and water as a drinking source can attract pests that can cause damage to the collection materials.

Prevention measures include:

- If the building is in an area known to be at risk of flooding, archives should be stored on the first floor or above. Ideally, they should be relocated to another building less at risk.
- Shelving should be raised off the ground to avoid damage from minor flooding or leaks. The standard height recommended for the lowest shelf is between 15 cm to 20 cm.
- Roofing, guttering and drains for rainwater should be in good condition and regularly checked and maintained to prevent water entering the building.
- Water tanks and pipe work inside the building should be in good condition and regularly checked and maintained to prevent leaks.
- Pipe work should not run through storage areas. This includes all plumbing and central heating water pipes.
- Storage areas should not be directly below water tanks, boilers or pipe work.
- No records should be allowed to be stored (even temporarily) on the floor.
- Basement storage should be avoided. Where used, it needs special attention to prevent flooding. If possible, it should not be near to storm drains or sewage pipes.
- The impact of climate change will alter flooding risk.

Theft or unauthorised access

Protecting archives from theft, deliberate damage or disorder ensures that they remain complete, intact, and usable. "Security" includes a range of actions and measures that work together to provide protection for an archive. Security is often broken down into layers: (1) security risks outside the archives, (2) in the grounds of the archives building, (3) inside the building including risks posed by staff activity, (4) inside the storage room. Looking at security in layers helps break the issue of security issues into smaller areas to tackle. Do not forget to think about unusual events such as a disaster and the use of the archives building and grounds for purposes other than the normal course of business, for example hosting a reception in the building's public areas and grounds.

Archival records need to be protected from unauthorised access. This means that people who should not have access to the records and the information they contain should be prevented from gaining access. Secure storage applies to all types of records: paper and parchment; digital records; video and sound recordings and any copies made of them. Protecting archives and records in this way is sometimes called 'information security'.

Security measures include:

- Storage must be lockable and kept locked when not in use.
- Access to the storage area must be controlled and monitored.

- Only the people responsible for caring for the archives should access these areas.
- If storage areas have to be shared, archives should be clearly separated and only handled by people responsible for their care.
- No item should be moved or removed without the permission of those people responsible for their care.
- If an item is moved or removed, a note must be left with details of where it is and who has it. A requesting slip or printout filled in by the researcher / staff member can be placed in the spot on the shelf where the records was removed from while the record is away from the shelf.
- Keys to storage and other areas of an archive should not be left lying around. Keep keys in a secure and lockable cupboard, ideally with a register for signing keys in and out. Any master keys should be kept secure and entrusted to a senior member of the archive's management for safeguarding.
- A register of withdrawals and returns should be kept. Requesting slips filled in by the researcher are a useful means to gathering this information, as is the requirement for researchers to register and provide personal contact information and any professional affiliation (for example, as being a registered post-graduate student at the university pursuing archival research).
- A separate area for viewing and using the archives should be set aside if possible.
- All areas should be monitored when in use.
- Any unusual activity in the building (for example contractor's work) needs to be monitored by archives staff. Contractor movement should be confined to the area immediately being worked upon; they should not be given the run of the building just because it is convenient to them. This requires planning and coordination with the project manager, contractor firms and sub-contractors appointed, and should ideally be something that is discussed during the contract negotiations and included in any finalised contract documents. Consider drawing up a policy and procedure for contractor work in the building and in the grounds for the archive in advance to present to any project manager and primary contracting / engineering firm appointed to do the works.

Pest infestation

Pest management involves a range of measures to limit the ease by which insects and other pests can enter establish themselves in the building. The management of pests takes a holistic approach, as many interrelated factors work to either keep pests away, or invite them in. All aspects of the grounds, building, storage rooms, staff conduct, etc., play a role and need to be accordingly managed. The current holistic approach to managing pests also aims to prevent the use of toxic chemicals to manage pests as much as possible. This approach is called "integrated pest management" and is often known by its acronym "IPM". The indiscriminate use of toxins is not only detrimental to the natural environment, they can also have a negative effect on human health and well-being.

Measures to limit pest activity frequent checking and monitoring of storage span help to detect the presence of any insects. If and when detected, the important thing is to respond quickly. Insect activity can be identified by evidence of burrowing and tunnelling through books and paper, as well as through the evidence of faeces and/ or the presence of dead insects or body parts (called insect "frass").

Manging pests holistically means paying attention to the grounds of the building, the building's fabric (or outside), the building's inside and human behaviour. All of these can provide either food sources to attract insects or create spaces by which they can enter the building and storage areas. The discovery of any insect or pest, should be taken as an indicator that pests are finding their way into the building and that the building is possibly providing a safe haven for them. Even if they are the kind of insect that does not feed on paper-based materials, the fact that they are in the building is an early warning that cleaning and building hygiene routines should be reviewed to ensure that n archive (and its grounds) are not a welcoming environment for pests.

The nature of the storage rooms can be designed to create a far less welcoming environment for pests to establish themselves. Not having carpeted floors is a very useful step to take. Carpets attract certain wool-eating insects and provides places for insects to lay eggs and burrow. Using Formica-type flooring that is easy to clean and monitor for insect activity is the most ideal flooring surface. Keeping floor areas and walkways clear of debris removes areas where pests can nest unnoticed, as well as creating a space that is more easily monitored for any pest activity. Ensuring that there is no eating or beverage consumption occurring in the storage areas is essential, dropped or discarded food attracts and sustains pests. Ensuring that any bins in the building are emptied daily, and that any rubbish is frequently removed from the building and grounds.

“Inherent vice”

How archival materials were made can often lead to damage from the way they were manufactured. An example of this are inks and pigments that corrode and damage paper. Another example of this is paper acidification, where poor-quality paper rapidly yellows and becomes increasingly brittle, newspaper is a good example of this.

Prevention measures include:

- An awareness of the different kinds of damage and what they look like. Early identification and detection can lead to early intervention.
- Measures include limiting handling and usage, often through creating copies or surrogates for use and consultation.
- Limiting exposure to strong light and heat, both of which can accelerate certain types of damage linked to inherent vice (for example, yellowing paper).
- Using protective enclosures made of good quality paper to prevent acidity in paper transferring to other paper stored next to it.

Particulate pollution (or, dust and soot)

Dust and soot are harmful to archival materials. They coat paper and other surfaces, causing marks and staining, and can cause scratching of sensitive surfaces. Dust also contains spores that can lead to mould infestations under hot and humid conditions.

Dust and soot may enter the building from outside from a variety of external sources, ranging from road and engineering works, industrial sites, building works. Dust and soot may also be generated inside the building, from building or maintenance work.

To prevent or limit dust coming into the building, screening and blocking methods can be used. For example, by keeping windows closed and any blinds or curtaining drawn. Blocking any gaps in the roofing material and installing insulation in the roof and ceiling cavity to trap dust. Air-conditioning systems with particulate filtering can also help. Air-conditioning filters will need to be cleaned and replaced on a regular basis, especially where there is a high degree of particulate matter in the environment. Effective door and window seals can also assist in preventing dust and soot from getting into the building.

Ensuring that the immediate area around the building is paved or gravelled, and keeping paved and concreted areas swept can assist in keeping dust out of the building. Foot-wiping doormats at all entrances of the building will help remove dust brought in by shoes and boots. Preventing coats and bags being brought into storage areas also assists in keeping the dust people can bring in with them to a minimum. Regular cleaning of the entrance hall or reception area to remove the dust people inadvertently bring in with them can contain additional dust brought into the building.

Internal sources of dust can be mitigated by using dust suppression measures, such as screening off contractor working areas and limiting through-traffic of contractor staff via storage areas not affected by building works and maintenance on or inside the building. Stipulations regarding dust suppression measures need to be included in any contract negotiations before site or building works, or any maintenance work on the building's external fabric or inside the building or inside begin. Archives staff need to consider moving certain parts of the holdings away from the building works or maintenance work. This requires advance planning and cooperation from the contractor in providing a schedule of works, so that archives staff can plan around the maintenance or building work that will occur.

Finally, the use of protective enclosures for archival materials, is another form of combatting dust and soot. All of the successive layers of preventing or limiting dust and soot getting into the building work together to prevent or limit

Gaseous pollutants (gasses and vapours)

Gasses and vapours can come from a variety of sources, both from outside the building and inside it. Gasses and vapours can be generated from solvent use, drying paint, wood treatments and varnishes (called "off-gassing"), or from the decay of certain materials like plastics and plastic film (sometimes called "vinegar syndrome" for the vinegar-like smell that it gives off).

Risks posed by gasses may seem less urgent than those from more visible risks like dust and water. However, gasses can cause damage and pose under-appreciated risks to archival materials. Gasses associated with the decay of plastics and plastic film can spark or accelerate the plastic decay process of other plastic-based items in the same room. One way to manage this is to ensure that there is adequate ventilation in the room to prevent a build-up of gasses and use substances that will help to absorb the gasses and vapours. Using "activated charcoal" (also called "activated carbon") in granular or powder form can assist in preventing the build-up of damaging gasses and vapours associated with vinegar syndrome.

The gasses from solvents pose an explosion and fire risk, especially if they are able to build up in a small area. A small spark can set off an explosion and resulting fire. Strict adherence to health and safety regulations and procedures on the use and storage of solvents is key, whether the solvent use is by staff or external contractors.

Air-filtration systems can help in removing gasses and vapours from storage area. Alternatively, strive to minimise potential sources of gasses and vapours inside the building and, most importantly, in the storage areas. Allow any painted furniture to dry out and off-gas before placing them in the storage area. Do not lay carpeting in the storage area using commercial strong commercial adhesives, carpeting in any case is not a good idea for storage areas as it holds dust and harbours pests.

Strong light

Exposure of archival materials to light results in the fading of dyes, inks and pigments. Strong light also contributes to the faster ageing (yellowing and browning of paper) and embrittlement of paper, as well as other materials that books are made from such as cloth, parchment and leather. The most commonly experienced example of this is how newspaper, placed in strong light will very quickly turn yellow. If left long enough, the paper will become increasingly yellow and the paper becomes more brittle, with bits of the paper breaking away and crumbling.

Damage from light, especially strong light cannot be reversed and is cumulative (that is, the damage gets worse the longer the item is exposed to the light). All kinds of light are harmful, but ultraviolet radiation (bright sunlight) is particularly damaging. Of all of the kinds of materials found in archives, photographic materials are the most damaged by exposure to even low levels of lighting. Photographic materials include not only prints, but also different types of negatives on plastic film or glass. Other materials such as plastics are also affected by exposure to bright light.

Damage can be minimised by placing ultraviolet screening film on windows and inside lights. By switching off lights when the storage areas are not in use, and by storing archival materials in boxes. Keeping curtains closed and installing thick "block-out" type curtaining material can also help. Installing lower levels of light in storage areas, the cumulative effects of light damage can be lessened over the longer term. Exhibiting archival materials poses a risk of light damage to materials if they are displayed in areas with strong lighting and for lengthy periods. Either use copies or surrogates of materials you want to display or display them for very short periods. Use cloth covers for the exhibition cases when they are not being viewed to minimise light exposure during exhibition.

Incorrect temperature and humidity

Relative Humidity (RH) is the amount of water vapour that the air can hold at any one time. The amount of water vapour held in the air (RH) is dependent on temperature. The warmer the temperature, the more moisture it can hold. When air cools, it can hold less water and RH rises. Temperature and humidity work together, which is why they are often discussed together in literature on the preservation of archival materials. Controlling both heat and humidity is

critical in the preservation of archival materials. A too-high or too-low level of humidity contributes to the deterioration of archival materials.

Both heat and humidity accelerate the rates of deterioration of archival materials. The rate of most chemical reactions is roughly doubled with each 10°C increase in temperature. High RH (65% and above) provides the moisture necessary to promote harmful chemical reactions in certain inks, pigments and other materials. High RH in combination with high temperature encourages mould growth and provides a comfortable environment for many insect types to establish themselves. On the other hand, extremely low RH (30% and under) can lead to desiccation (drying out) and embrittlement of some materials.

The difficulty of maintaining ideal temperature and humidity ranges is a recognised problem in archives worldwide. The ideal temperature and humidity ranges were established in countries with far more stable and temperate range of temperature and humidity levels, compared to elsewhere in the world. The ideal temperature and humidity ranges were also developed in wealthier countries, with far better resourced archives with large budgets to ensure that their climate control systems could maintain the ideal temperature, humidity and other storage factor ranges. In recognition of the difficulty that many archives face due to their geography and climate (and the increasing effects of climate change), as well as resourcing, maintaining temperature and humidity levels that are slightly higher/lower than the ideal is considered an acceptable compromise – as long as these temperature and humidity levels remain relatively stable and do not fluctuate wildly.

Rapid fluctuations in temperature and relative humidity are also damaging. Library and archive materials are hygroscopic. This means they easily absorb and release moisture in response to daily and seasonal changes in temperature and relative humidity. The effect of the rapid absorption and release of moisture is an accelerated deterioration and of certain types of visible damage such as the cockling paper, flaking ink, warped covers on books, and cracked emulsion on photographs. Avoiding rapid fluctuations in temperature and humidity levels is seen as key to slowing down the deterioration of archival materials.

Slowing down rapid fluctuations makes use of a number of factors. The building fabric provides a barrier against outside fluctuations in temperature and humidity during the night and day. Storage rooms that do not have walls facing the outside, means that the walls do not distribute the sun's heat and the night's cooling into the storage area. Shelves that do not stand up against an outside wall also prevent the heating-cooling cycle from being transmitted to materials on the shelf. Finally, boxing materials act as another buffer to the fluctuations of temperature and humidity on the outside of the building, and any that may occur inside the building.

Handling of archival materials

Careful handling of archival materials helps to avoid physical damage from accidental dropping or falling of materials, and the wear and tear of rough handling of the records themselves.

Staff and other users of archival materials should use clean dry hands to handle materials. Please see additional information on handling and use of archival materials on page 57 of this section.



Understanding risks to archival materials

- The major risks are fire, flood, theft, pest activity and unauthorised access.
- Disaster preparedness working to prevent a disaster from happening in the first place, focusing on identify risks and then working to either eliminate them or greatly reduce them (mitigation). The best disaster plan is the one you never have to use as all risks are managed to very low levels or are completely eliminated.
- “Planning for the worst, but hoping for the best” is the mantra for disaster planning and preparedness.

Fire and fire prevention

- Some measures to resist fire include the installation of fire-resistant doors, walls, ceilings, floors and windows.
- Checking electrical circuits regularly, and the use of smoke detectors.
- Cleaning and landscaping the grounds to reduce fire risk.

Water: flooding and moisture

- Water damage as well as the moisture in storage areas, can result in secondary risks to collection materials, such as the growth of mould in humid conditions.
- Some preventative measures are: raising shelving off the ground, checking plumbing, tanks and pipes regularly, and not storing materials in a basement or near plumbing or pipes.

Theft or unauthorised access

- Storage rooms, areas and cupboards must be lockable.
- Archives and current records need to be protected from unauthorised access.
- A separate area for viewing and using the archives should be set aside if possible.
- All areas should be monitored when in use.

Pests and biological agents

- Keep building grounds clean and cut back plant growth.
- Maintain the building's exterior to prevent insects and other pests gaining access to the building.
- Monitor for insect activity inside the building and storage areas.
- Do not allow food and beverage consumption in storage areas or where archival materials are used or exhibited.

Collection maintenance: ensuring good storage environment for archival materials

Archives need to be stored in conditions which are cool, dry and seasonally stable, with minimum exposure to natural or artificial light and protection from pests, pollution and access by unauthorised people. Making a quick assessment based on the 'how to' guidance below will allow you to identify any immediate needs or risks and to plan how to tackle them.

The archive storage area should be maintained and used only as a store. This will help to maintain security, environmental stability and light levels. Any archive store should allow for expansion space for additions to the collection. It also needs extra space to allow for repackaging, which can mean that the collections take up more space than they did before.

A stable storage environment, where temperature and humidity does not change much is best. An attic space can reach extremes of temperature and relative humidity and the conditions change frequently. Attics cannot be easily monitored or accessed, so are not ideal for storage. If attics are used, every effort to insulate the space should be taken to stabilise temperature and humidity.

Poor storage and environmental conditions, inadequate packaging and handling arrangements will encourage deterioration of the archive over a prolonged period. The following environmental conditions need to be considered:

- High temperatures and high humidity speed up chemical changes in the materials stored in your archive. This, in turn, speeds up degradation of archival materials. '
- Humidity is measured as "relative humidity". This is the amount of moisture in the air at particular temperature. Measuring it tells us how moist the air is in a particular room or area. Temperature and humidity readers and dataloggers are available locally from refrigeration or air-conditioning companies
- Changes in temperature and relative humidity can also increase degradation of archival materials. The greater the frequency and rate of change, the greater the speed of degradation.
- High levels of humidity (above 65%), mould can germinate and spread through collections causing extensive damage.
- Paper and parchment should not be stored below 40% relative humidity for long periods of time as it can become dry and brittle. This increases the risk of damage through mishandling. This is more an issue in more arid climates, such as that in the interior of the country (in semi-desert and desert conditions).
- Photographic materials and plastic film benefit from storage at a lower relative humidity of 30-35%, and at colder temperatures as well as in light conditions where the light levels are very low.
- Light damage is cumulative. The damage occurs and worsens over time with exposure to light.
- Avoid direct natural light from outside in your storage area. All windows, rooflights and other glazing should be adequately covered. Ideally an archive store contains little or no glazing.

- Keep lights on for a minimum amount of time, and only when staff are inside your storage area.

How to organise and improve archival storage conditions

Storage rooms

Storage areas should be clean, dry, and secure. Doors (and windows) lockable and secure. This prevents uncontrolled access, damage, disorder, or theft.

The storage area should have a strong, load bearing floor to take the weight of the archival collections, the packaging and shelving.

If there is a possibility that are hazardous materials in the collection or you find evidence of mould, seek specialist advice.

When cleaning the storage area:

- Always clean without chemicals or water as far as is possible, using a vacuum cleaner where possible.
- Vacuum cleaners should have good filters to avoid spreading more dust around your storage area. "HEPA" filters are even better as they catch a larger amount of very small particles, leaving the area cleaner.
- It is a good idea to wear a dust mask whilst cleaning the storage area.
- Work from the top shelf to the bottom, before cleaning the floor. Dust drifts downwards from ceilings and top shelves. To ensure a systematic removal of the dust in storage areas, always work from top to bottom and from one end of the room to the other.

Maintenance and repairs to the storage area:

- Are repairs to the storage area needed? Check the ceilings, corners, walls – are they clean and sound? Is there evidence of damp, cracks, damage or deterioration?
- When repairs are being made, store the archives in another secure place. Chemicals in paint and other decorating materials can affect archival materials as they release gases (known as "off-gassing"). Avoid oil-based paints. Take care to minimise dust and debris while rooms are refurbished.

Storage cupboards and drawers (storage furniture)

Storage cupboards should be clean, dry, well ventilated and secure. They should be made of strong materials and ideally fixed to an interior wall.

Any cupboards should be lockable and secure. This will prevent uncontrolled access or theft.

Air circulation in storage areas and in storage furniture is important. Good circulation in the storage area prevents pockets of high humidity and temperature from forming (called "micro-climates"). Micro-climates can cause harm to archival materials in that area. Deterioration in microclimates can be hard to spot, if conditions elsewhere in the room are fine.

Powder-coated steel is recommended for the use in storage cupboards and shelving. Wooden shelving and cupboards are not recommended. They are flammable and wood attracts certain pests. Wood also gives off fumes (called "off-gassing") that can adversely affect certain archival materials. Older wood tends to off-gas less but continues to off-gas over time. If wooden shelving cannot be replaced in the short term, it should be sealed with at least 3 coats of water-based acrylic varnish and allowed to dry thoroughly.

Shelving

Shelving should preferably be open powder-coated metal racking which is secured to the floor and ceiling. It should not be fixed directly to exterior walls to prevent damp. Open shelves allow circulation of air and allow easy inspection and cleaning.

Shelving should be open-fronted and easy to access. The shelves should be large enough to fully support the archives stored on them. For example: large maps or plans, large or heavy boxes, and multiple boxes. The lowest shelf should be around 15cm from floor level to allow air circulation and help prevent damp. The top of the shelves should be at least 30cm from overhead lights to prevent heat damage to documents stored at high levels.

Shelves should be strong enough to fully support the weight of the materials placed on them. Free standing shelving units should be suitable for that purpose. Other shelving units should be fixed to the walls, ideally with an air gap between the wall and shelf to act as a buffer. Airgaps between shelving and any outside walls prevent the transference of outside temperature fluctuations into the storage area being transmitted via the metal shelving

Packaging for materials (protective enclosures)

Packaging is an extra layer of protection for archives. It should protect the contents from light and pollution. It also provides some protection from damage, pests, and changes in light or humidity.

The ideal storage enclosures are archival-quality boxes, folders, sleeves, and other packaging materials. Archival-quality storage enclosures are low in acid and lignin and designed to protect the archives to professional standards. However, archival quality enclosures are expensive. They are made overseas, and their already high price in euros or dollars becomes even more expensive when converted to local currency.

With increasing awareness about good quality paper within the arts and crafting communities, acid free paper options are increasingly available locally. Several types of folders, envelopes, etc., can be made with basic skills from locally purchased sheets of paper or card. If archival quality enclosures are unaffordable, using lidded cardboard boxes for document storage is an option – something is better than nothing.

If you cannot buy storage boxes or folders straight away, the boxes from photocopy paper may be used for temporary storage. These are only a temporary solution, but can provide some protection from physical damage, dirt, dust and light. Never re-use cardboard boxes which have contained food as these can attract pests.

Temporary packaging should be replaced with archival packing as soon as possible. Archival boxes and folders which are delivered flat packed are the cheapest to buy.

When placing archival materials into boxes:

- Never over-fill boxes: especially where this makes them too heavy to handle. This can cause damage to the contents and is a health and safety risk to staff.
- Storage enclosures must be labelled clearly, including covering dates, so that you know what they contain.
- Photographs and fragile single documents should ideally be stored in archival polypropylene (plastic) pockets or sleeves. However as archival quality pockets and sleeves come from overseas and have to be imported, they can be expensive to acquire. Good quality polypropylene plastic pockets available from art shops can be a good substitute. Pockets used by artists to store their artwork in portfolios are generally of a better quality than much cheaper products available elsewhere, they are also available in sizes ranging from A5 – to A2, which can be handy for storing larger pieces of flat paper or documents.



Summary

Storage environment for archival materials

- Archives need to be stored in conditions which are cool, dry and seasonally stable, with minimum exposure to natural or artificial light and protection from pests, pollution and access by unauthorised people.
- Ideally a storage area should be only used for storage to help control the environment, as well as access to the storage area as much as possible.
- The following are damaging in a storage area:
 - Incorrect temperatures and Incorrect humidity.
 - Rapid changes in temperature and humidity.
 - Exposure to light.
 - Pests.
 - Water and fire.
 - Careless handling when shelving or retrieving records from the shelf.

How to organise and improve archival storage conditions

- Storage rooms and furniture should be clean, dry, and secure.
- Good air circulation in the storage areas and furniture prevents pockets of high humidity and temperature from forming.
- Strong, open, metal shelving, secured to the floor is ideal.
- Packaging (protective enclosures) will protect the contents from light and pollution. It also provides some protection from damage, pests, and changes in light or humidity.
- Archival quality is best but if unaffordable, use the best quality boxes available to you.
- Archival quality boxes typically have no acid or lignin content in the board, may be buffered with alkaline buffering, and have standards for surviving being dropped from a certain height and being immersed in water for a certain number of hours without losing their shape or integrity.
- Archival boxes for photographic materials are generally designated as having passed the "PAT" test (Photographic Activity Test), to ensure that the chemistry in the board does not adversely affect the photographic materials.
- Never over-fill boxes.
- Storage enclosures must be labelled clearly.
- Photographs and fragile single documents should be stored in archival polyester pockets or sleeves.

Managing the use and handling of archive materials

Providing access to records, and the associated handling they receive, pose a risk to archival materials. This risk can be managed in several ways, including always supervising those who consult your archive's records and providing guidance (and enforcement) on basic document handling. You should consider restricting personal items that researchers can bring into your reading room or consulting area / table (for example, bags and bulky coats).

Archival materials should always be supported during consultation. Large items (such as large maps) need a large table, do not allow them to overhang the table's edge. Bound volumes (books) need supports such as foam wedges or pillows so that they don't open too far and damage the spine and pages. Padded strip weights can help prevent keep plans or volumes with over-tight bindings from curling upwards while being displayed or consulted.

Photocopying and scanning can cause damage to records through exposure to strong light and closing the lid to flatten the document. If you must copy in this way, copy once only and keep the photocopy or digital scan to make other copies from. Automatic document feeder trays on photocopiers and scanners can damage original documents and should not be used.

- General handling principles for archival materials (for staff, volunteers and researchers):
 - Anyone who uses your archives must handle them carefully.
 - Any food and drink should be excluded from the area where records are stored, exhibited or consulted.
- Careful handling of archival materials includes:
 - Always handle archival materials carefully. Don't take risks.
 - Handle archival materials as little as possible.
 - When handling archival materials, ensure hands are clean and dry.
 - Examine archives for signs of damage before making them available.
 - Use only pencil for taking notes.
 - Never use adhesive stickers to mark pages (or 'Post it' type sticky notes).
 - Use soft, flexible weights to hold pages in place.
 - Never moisten or lick fingers to turn pages; never "pinch" a corner of a page together with fingers to turn or lift the paper.
 - Be careful when moving heavy items, use a trolley to transport items.
 - Never carry heavy, awkward, or large items on your own. Get assistance to lift or carry these items. This protects you and the documents.
- Setting up a consultation space for researchers and managing researchers during their work includes:
 - Have a clean, flat workspace away from hazards ready before bringing out the archival material.
 - Always supervise anyone who is viewing the records.
 - Have a designated area where archives are produced for viewing.
 - The area should be clean, tidy and well presented.
 - The area should be easy to supervise whilst not hindering researchers.
 - Researchers should not be allowed into the storage areas.
 - Keep records of researchers and the records they have viewed.



Managing the use and handling of archive materials

- Always supervise people who view your archives to ensure careful handling.
- Any food and drink should be excluded from the area.
- Always support documents using a table and padding.
- Photocopying and scanning can cause damage to documents. Try and keep to a minimum.
- When handling archival materials, ensure hands are clean and dry.
- Use only pencil for taking notes.
- Never use adhesive stickers to mark pages (or "Post it" type sticky notes).
- Never moisten or lick fingers to turn pages; never "pinch" a corner of a page together with fingers to turn or lift the paper.
- Be careful when moving heavy items, use a trolley to transport items.

Always consider health and safety when handling materials to avoid injury and harm to records

- Always use both hands to remove a record from the shelf. Use both hands to carry a record.
- Get additional help when handling really heavy or large items.
- Use trolleys for transport, wherever possible to prevent records being dropped.
- Do not carry so much in your hands, that you risk dropping something.
- Be careful when using ladders. Ideally have two people, one on the ladder retrieving the record and handing it to another person standing at the bottom of the ladder.

What is a disaster?

A disaster is any event, large or small, that has the potential to cause disruption in the functioning of an archive. Disasters are usually unexpected and have the potential to cause severe disruption and harm to the archive's functioning and its materials.

The impact of risks to archival materials can be reduced by disaster management planning. A plan will help you respond to a disaster faster. A faster response reduced the damage caused by incidents of flooding, fire, of theft and security breaches.

Can a disaster be planned for?

Yes, disasters can be planned for. Just because they are unexpected, it does not mean that cannot be planned for. Certain kinds of events, like fires and flooding, are common enough occurrences that they can be planned for. The key concept in disaster management is "to be prepared for the worst but hoping for the best".

The common scenarios of fire and flood are used to plan for less common disasters such as earthquakes, the effects of civil unrest, severe storms, etc. The pattern of responding to and containing fire and flood scenarios are broadly similar enough to serve as useful planning platforms to outline less common events or disaster scenarios.

Why plan for a disaster?

An archive's response and recovery will be faster and more efficient when people understand how to respond, by knowing what is expected of them and what resources are available. Arrangements made in advance means that news of the disaster is quickly communicated and responded to, people know what their roles are in the event of a disaster and what to do under the challenging circumstances.

Having a written plan that will guide an archive's response will spell out the various steps to take in responding to a disaster. The plan will provide information on how to communicate the disaster, how to access supplies in the event of a disaster and how to salvage the archive's materials. Disaster plans need to be updated with any changes on a regular basis.

Disasters are emergencies. This means that the normal rules and modes of operation are suspended to allow an archive and its staff to respond to the emergency. Duties and roles will be different in the event of a disaster. If people understand ahead of time what to do, it saves much time and effort when responding to an actual disaster. As the disaster response unfolds people's duties may change with the changing circumstances. Once the situation is stabilised, normal roles and modes of operation can be returned to, while the longer-term recovery continues.

Disaster preparedness begins even before something happens

A large part of disaster preparedness is about preventing a disaster from happening in the first place. Identifying likely risks to your archive is an important part of understanding how and where to begin to look at where measures can be taken to eliminate or lower the possibility of risks developing into full-blown disaster scenarios.

Generally, a really good place to start with is to focus on the building and grounds maintenance. Focusing on building and grounds maintenance can help to eliminate potential risks to the archive that could begin in the grounds or building and threaten the archive's materials. A well-maintained building and grounds is one of the best ways to protect an archive.

Another area that should be monitored for possible risks is what is going on outside of the grounds of the archive. Problems and risks to the archive can begin outside the grounds and spread into the grounds and building. Pest infestations, urban unrest and fire can spread from outside the grounds into the building. Assuming something cannot happen just because it has never happened before, can lead to gaps in planning which could have devastating consequences when something does go badly wrong. "Magical thinking" is the term given to the assumption that if something has not happened before, it is unlikely to ever happen. In planning, always assume the worst and plan for it (you can still hope for the best possible outcome). Magical thinking has been identified as a major cause of disasters having even worse outcomes due to the assumption that something could never happen.

Planning for disaster, what you will need

Disaster preparedness requires three things: (1) a written plan to guide how to respond to a disaster; (2) a team that understands how to assess the damage and how to plan for the salvage of the damaged archival materials; (3) some basic supplies with which to get going (brooms, mops, buckets, "wet-and-dry" vacuums, along with personal protection clothing such as waterproof boots, aprons, eye protection, masks and safety hats are a good place to start).

A written plan that will guide an archive's response. The plan will set out the various steps to take in responding to a disaster. It will provide information on how to communicate the disaster, how to access supplies in the event of a disaster, and how to salvage the archive's materials. The plan needs to be updated with any changes on a regular basis.

A response team of staff members is needed to implement the plan. They will respond to the disaster and assess the level of damage to the archive building and materials. After assessing the situation, they will formulate a response to the disaster. Based on the formulated response, duties and work will be assigned to the rest of the archive and/or organisation's staff. The team will include not only archivist staff, but members of the organisation's management and communications staff. Responding to and recovering from a disaster requires teamwork. No one person alone can deal with a disaster, especially if it has had a big impact on the archive. Good teamwork is essential to any recovery from a disaster.

Supplies to decant water and clean the areas, as well as to help dry the affected materials are needed. Try to assemble a minimum of supplies in the event of a disaster. Find out and

know where to get other kind of supplies like generators and pumps that may be needed in case they are needed. The minimum materials should ideally be kept on-site at the archive, so that they can easily be accessed in the event of a disaster. Supplies need to include adequate personal protective clothing and equipment, many disaster sites are hazardous, Great care must be taken during any work in the disaster site to ensure safety of those working on-site.

Practising how to respond to a disaster, along with an organisation-wide awareness about disaster preparedness and response are important components in how an organisation can speedily and efficiently respond to a disaster. Disaster preparedness and awareness can be linked closely with health and safety issues in the workplace, and even help identify issues that could lead to disaster in the building or grounds.

Planning for the different stages of disaster response: the initial response, raising the alarm and the initial assessment of the situation

Disaster response is divided into (1) an initial stage of raising the alarm and triggering a response to the disaster, (2) a stabilisation stage and (3) a recovery stage. This makes planning for a disaster easier as it is broken into smaller areas, all of which have different things that need to happen. Bear in mind that these stages do not have hard borders, they can very much overlap in the event of a disaster.

In the initial stage the alarm is raised, and news of the disaster is communicated to archive and organisational staff. There needs to be a plan as to how the discovery of a disaster is to be communicated to the emergency services, if their response is required. Known as a "phone tree" the plan has current contact information for emergency and other services needed in the event of an emergency, as well as the organisation's initial responders to the disaster and senior management.

There also needs to be a plan as to how to communicate to the archives staff and organisation staff, as well as to any external clients of the archives such as researchers. How the media is to be communicated with also needs to be planned; who has the authority to make media statements and the channels through which that communication needs to proceed needs to be decided in advance. As the situation stabilises, other interested parties such as donors may also need to be contacted.

The scale and scope of the disaster needs to be assessed to plan for the following stages. When the building is declared safe to enter, an assessment of the damage needs to be made and plans to stabilise the situation (the next stage) can happen. Details of how the organisation is going to proceed and the new roles of the staff can then be communicated to the staff.

Plan for a resumption of service as soon as possible, even if in a very limited way, once the scale and scope of the disaster is known.

An important point during the entire disaster response is to be prepared to stop and reassess if things are not working or that changes need to be made. All disaster response situations are quick-moving and changeable situations. Be prepared to respond to changing circumstances (good or bad) and implement changes.

Planning for the different stages of disaster response: responding and stabilising the situation

After the initial assessment has occurred, the most important focus of the response is to stabilise the situation. Depending on the type of disaster, this may mean pumping out water from affected areas, cleaning dirt and debris from the floor, securing walls, shelving and roofs before work on salvaging the archival materials can begin. Human health and safety is always the first consideration, both in planning for disaster and during the actual response.

For the archival materials, the most important thing is to bring the temperature and humidity levels down inside the building. This will prevent mould growth. In the event of flooding, mould can quickly grow on archival materials. Mould is not only detrimental to many kind of archival materials, it is also a human health hazard.

Focus on removing humidity (water / moisture) from the affected area and bringing down the temperature. Using office fans and opening windows are low-cost ways to reduce humidity inside the building. Commercial and domestic dehumidifiers can also help to regulate humidity.

Assess if salvage work can be done on-site, or if the damage is so extensive that an alternative venue to salvage and store the archival materials is needed. Always consider security during a salvage operation, unfortunately opportunists will target the aftermath of a disaster.

Planning for the different stages of disaster response: salvage and recovery

Salvage work needs to proceed carefully to not cause further damage to archival materials. In the haste to remove items from a disaster-site, more damage can easily be done to items already weakened by damage from fire and/or flood. Bear in mind that wet items are heavier and often slipperier than you are used to handling. Removing items carefully, one by one if necessary. Try to use supports like crates or boards to prevent items becoming more damaged.

Assess items for level of damage and determine the next step. For badly wet paper and book items, freezing them can buy valuable time to treat other items before returning to the worst - affected. Bear in mind not all archival materials can be frozen, glass for example cannot be frozen.

Do not forget the archive's own operational records in the salvage process: staff employment records, payroll information and administrative files also need to be factored into any salvage operation.

For most items, careful air-drying can help to salvage items. Drying materials must be monitored for any mould growth and shifting as they dry. Compact items such as books will need to be fanned out to help them dry out, if they can stand up on their own, otherwise they need to be laid down and supported, with pages regularly turned to help the book dry out.

Once materials have been salvaged from the disaster site, planning for the long-term recovery can proceed. Part of the planning includes assessing how well the response went, what worked and what did not and updating the disaster plan to account for the lessons learnt.

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