

Conservation and Preservation Activities in Archives and Libraries in Developing Countries

An Advisory Guideline on Policy and Planning

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November 2000



**Association of
Commonwealth
Archivists and
Records Managers**



Acknowledgments

The author would like to express his grateful thanks to Deborah Jenkins, Michael Roper, George Mackenzie and Charles Gibson for their support, advice and sound counsel during the production of these guidelines.

Further thanks are due to archivist colleagues in the National Archives of Uganda, Kenya and Vietnam for providing the great opportunity of working with them and adding to the author's experience.

Finally, thank you to the Association of Commonwealth Archivists and Record Managers and the London Metropolitan Archives for their sponsorship of this pamphlet, to Helen Lindsay for additional work on its text and to the Judy Segal Trust for a generous grant towards its publication.

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AN ADVISORY GUIDELINE ON CONSERVATION AND PRESERVATION ACTIVITIES FOR ARCHIVES AND LIBRARIES IN DEVELOPING COUNTRIES

1 INTRODUCTION

This pamphlet is intended to help developing countries of the Commonwealth initiate programmes for the preservation and conservation of their national documentary heritages. As such it is directed not only at archival institutions but also at libraries which hold reference collections of rare and valuable published material. It is an advisory guideline not a technical manual and wherever possible it should be read in conjunction with the more detailed studies listed in Annex H.

The pamphlet also aims to put conservation management decisions into a priority matrix. Conservation is a costly activity for any service charged with the administration of unique historical and information-rich collections and the dream of a fully equipped conservation workshop, run by professionally qualified (and committed) staff is not always achievable. This guideline will emphasise the importance of developing the smallest part of this dream and then building on it.

The best use of resources is always difficult to define. Preservation activities (storage, packaging, cleaning, etc.) will have a significant affect on the problems that we all face. Actual practical conservation will be an ultimate goal. Many conservation solutions are now described as non-invasive or passive. In other words, they are methods for securing material for access, by doing as little as possible and then moving on to the next problem. This does not belittle the craft but acknowledges that something is better than nothing.

This guideline seeks to highlight the ethos that preservation is the responsibility of all staff, at whatever level in the organisation. We are all looking for practical solutions to problems. Ideally, these solutions should make the utmost use of available resources (both financial and people) within broad ethical guidelines, and this must be the main objective.

It is also important that initiatives are creative and acknowledge that each country has skills and talents of its own. These “home-grown”, and often locally available solutions, should not be clouded by the strong commercial messages coming from European and American suppliers. Benches for a conservation workshop are easily within the capabilities of the roadside carpenter prevalent in developing countries. One of the aims of this publication is to recommend the specifications for such specialised items.

Whilst the conservation option requires quite serious funding to become effective, in many cases, preservation initiatives can be developed without major capital investment. In the final analysis though, however basic (or advanced) the set-up, it

cannot succeed in its mission to preserve the documentary heritage of the nation without considering the issues raised in this pamphlet.

2 ESTABLISHING A COMMITMENT

Without adequate protection, the materials that contain important historical information will deteriorate beyond their usefulness. Consequently, the consultation of this material by governments and citizens will not be possible. The information that is vital for the safe and ethnic management of any culture will not be available - it will not be accessible.

The primary function of any service charged with the management of information (including historical records) is to provide the means of access to that information. Preservation activities provide a range of solutions. In a general sense Preservation is a management tool. It is therefore important not to allow Preservation Policy to become clouded by the specialist details that define its elements.

The starting point is to build a culture of appreciation for historical records. We must all create an environment where the role of an archive and library service is seen as crucial to both local and central government. Unfortunately, all too often, these services are regarded as “money pits” - places where significant capital and revenue budgets disappear.

It is vital that the promotion of the role of archives and libraries to the politicians, the businessmen and, importantly, members of the public is effective. They all need to appreciate the wide range of questions that can be answered by using this material, and how it illustrates and contributes to the history of a culture.

The following strategy is suggested:

- canvass politicians
- hold “open days” for all citizens
- liaise with other government departments
- produce simple displays illustrating the range of library and archival materials
- stress the importance of these materials as part of a wider “information” network
- encourage businesses to support or sponsor activities
- develop clear and focused goals for all to see
- create links with international partners.

It is also important that the shock value of deteriorating material is highlighted. This should be developed as part of the programme to deal with the problem. It should not be a negative exercise, but must offer a range of solutions from the most basic to the wholly ambitious. The audience must be under no misconceptions about the commitment of archive and library services to solving their own problems with limited resources.

3 DEVELOPING A STRATEGY

Broadly speaking, the function of a forward thinking plan is to establish the real priorities - not necessarily dealing with the apparently worst problem first. Whilst preservation activities provide a wide range of possibilities, there are some basic elements that must be established first. Without them any more technical solutions, such as practical conservation, will fail.

3.1 Establishing a secure storage facility

The starting point in developing a strategy to maintain material that is affected by its surroundings is to ensure that the building in which it is housed meets the basic requirements for the storage of library and archive materials. It may seem obvious but this consideration is often low on the agenda.

The building must be situated in an area that is identified as secure - ie not close to any military installations or the petro-chemical industry. It must be situated well away from sources of water, especially rivers and lakes. All vegetation in close proximity must be removed and a clear perimeter area established around the building. Ideally, there will be no basement or sub-level storage and the (again, ideally) single-storey building will be above literal ground in case of local flooding.

The building must have one identified entrance (for both in and out) and all windows must be protected against intruders - this must also include controlling access by rodents and insects. A fine metal wire mesh over the openings will offer some protection. The provision of blinds to exclude direct sunlight is recommended. All doors and other direct means of access must have good seals when closed. There must be a ready availability of basic fire-fighting equipment and some form of out-of-hours inspections.

Lighting should be fluorescent and able to be controlled aisle by aisle. Other electrical sockets should be minimal and placed for the ease of cleaning staff.

In most cases it will not be possible to install any air-conditioning systems because of set-up, running and maintenance costs. The use of windows to increase ventilation will need to be considered against the risks. Precautionary measures, as mentioned above, will reduce the overall risk, but regular monitoring by appropriate staff is essential. Any other option to reduce high humidity and temperature levels should be investigated. It is suggested that the fabric of the building may provide some source of control.

The monitoring of environmental conditions by mechanical or technological means is a luxury. It may be that a regular visual inspection by a competent member of staff will be a sufficient, basic safeguard. Hand-held, battery-operated recording devices (for both temperature and humidity) are available.

However, these methods are ever only effective if the conditions can be adjusted or changed. It is recommended that an accurate record of all readings be retained, and that annual graphs are created. This will enable both positive and negative trends to be identified and ultimately solutions sought. The establishment of some form of controllable system must be a future goal.

3.2 Shelving

It is recommended that metal shelving be used in storage areas. Wooden shelving is often treated with varnishes that cause damage to organic materials and wood is a food source for many insects. Metal shelving should aspire to a general standard of design and rigidity of construction (including cross bracing). The paint should be non-toxic and applied by a powder-coating method. It must be placed away from outside walls to aid ventilation and the bottom shelf must be at least 15cm above floor level to protect against flooding. This safeguard gives the salvage teams time and is an easy standard to establish during the erection of shelving.

Whilst these recommended standards refer generally to archive storage areas, libraries that hold special or reserve collections should consider aspiring to these simple guidelines. To complicate matters, the specification for library shelving requires a much smaller depth - to accommodate book stock, and not boxes.

General library open-access shelving and the pressure of space in public areas will not allow adherence to the above recommendations and in this case library best practice must apply.

3.3 Boxing

It is recommended that all material be boxed. Ideally the boxes will be constructed of high-quality, acid-free card, but a good quality cardboard box will still offer first-line protection. The main advantage of boxing, especially if the material within is also provided with packaging, is the creation of a barrier between the item and the atmosphere in which it is stored.

This form of protection also works against insects, provides a level of protection against fire and is especially effective against water damage. The affects of a serious flood, or the indiscriminate use of large quantities of water by Fire Services, can be reduced substantially by boxing. There have been cases of very wet and disintegrating boxes whilst the contents within have remained dry and secure.

Boxing should be viewed as best practice and establishing this strategy at the beginning of the preservation cycle can be a very effective use of resources.

As in section 3.2, the above recommendations are based on archival standards and best practice. It is clearly not feasible, or desirable, to pack books that are on open-access; the depth of library shelving will only accommodate archive style boxes if they are placed side-on, and this is not economic on space or aesthetically pleasing. However, boxing for groups of pamphlets can be a useful solution for access and security.

The appearance of the books on the shelves is very important in the library environment, and is also a mainstay of public perception of standards.

Book stock that is defined as reserve or special collection may benefit from a different form of storage and boxing will answer many of the concerns regarding protection and security. Boxing can also be a suitable method for stabilising material that is too fragile to handle, or reference material that is so badly degraded that a microform copy has been created, but the original must be retained (a very viable solution to the problem of deteriorating newspapers).

3.4 Packaging

It is recommended that a packaging programme be developed as part of an overall preservation strategy. This is an area where much can be achieved with prudent investment. It will considerably improve the management of the materials if packaging is standardised.

It is suggested that for single sheet material, each file or bundle be packaged in a separate archival quality folder. The folder is then tied four ways with an archival quality linen tape, which is threaded through a non-rip label.

Calculations will have to be made regarding how many folders will fit in each box and how much material will fit into a folder. This information can then be used to inform future standardisation.

It is further recommended that plans and maps, where possible, are stored flat, in folders, and in plan chests. Careful consideration must be given to the safe handling of this material. Clear policy guidance must be developed to include a decision on:

- the number of items per folder
- the number of folders per drawer
- the use of an appropriate trolley to transport large format folders
- the number of folders made available, at any one time, to an individual researcher

- the range of weights and Melinex sheets available to aid the viewing and protection of maps and plans.

The act of packaging does not have to be a professional activity and properly supervised it can be carried out by, for example, students or school leavers

It is further suggested that the use of encapsulation will also play an important part in this programme. This involves the sealing of archival polyester film (Melinex) by a heat or ultrasonic welding machine, and greatly extends the packaging options. Pockets may then be constructed for fragile or slightly damaged single documents, which can be housed with related documents as suggested above.

These pockets (which can be bought in ready-made sizes) may also be used for photographs, plans, maps and pictorial items. The pockets can be sealed on all four sides for security as long as the corners are trimmed off to stop the creation of microclimates within and to allow the item to “breathe”.

A further benefit is that an encapsulated item can be copied through the Melinex, which supports and protects it. Also as Melinex is available as a roll, all sizes of enclosure can be constructed. Users can even trace over a map as long as pressure is controlled. In some cases the use of encapsulation is a more economic solution than practical conservation. Again technician grade or non-specialist staff could carry out this activity.

3.5 Good housekeeping

It is vitally important that an overall policy of cleaning and tidying is maintained. Cleaning and ancillary staff are generally an available, and cheap, commodity, and their use can make very real improvements to the general conditions of storage.

Increasingly government departments are under pressure to save money by contracting out certain services, including cleaning. It is vital therefore that any contracted cleaners should receive basic training from the professional staff on how to carry out the cleaning programme without damaging the materials.

It is essential that clear instruction be given to the company, and the employees, banning eating and drinking in the repository areas. All areas of the storage facility must be regularly cleaned and a timetable of expected work compiled for the cleaners. It is ideal if a supervisor is provided by the company, backed-up by a competent member of staff who is available to monitor standards and performance.

Dust, debris and untouched areas become sources of insect or rodent infestation. It is imperative that a programme is established to monitor the places of high risk and that tours of inspection are regularly carried out. This will ensure that remedial action is undertaken well before a problem gets out of control.

A dusty and dirty environment will give all the wrong signals to visitors and dignitaries, and more importantly to funding or grant-giving bodies.

The storage staff play a very important role in maintaining the standard of handling and shelving, the monitoring of conditions and the identification of potential problems.

3.6 Handling

An early target must be to ensure that all staff are aware of the importance and responsibility of handling. It is crucial that high standards are maintained in the public areas, where trained staff must ensure that users are aware of their responsibility when handling original material. Strong standards of supervision must be maintained, and it is recommended that pencils only be used for note taking. The expected standards of behaviour must be published and available to users - no smoking, eating or drinking, etc..

If a photocopier is to be added to the services on offer, copying should be carried out by staff only and not be self-service. A record must be kept of any items that are copied regularly - it may be appropriate to produce a facsimile.

There are a range of risks to original material associated with the photocopying process, especially handling and physical damage:

- the spines of books are easily damaged when placed face down on a photocopier platen
- large sheets are damaged when they are allowed to hang over edges
- frequently copied photographs can be affected by the intensity of the copying light source.

There are no suitable, specially designed photocopiers. Some useful work is currently underway to improve the handling capacity of digital copying systems. The digital vs microfilm debate has moved into a crucial phase with a range of hybrid systems in development. However, the production of published standards, defining responsibilities, will aid in enforcement.

3.7 Disaster preparedness and recovery

It is recommended that all institutions that hold books or records develop an emergency plan. This will enable staff to react effectively and efficiently if an emergency event occurs. The plan must be clearly written and understood by all the staff who will be involved. The plan will further require a rigorous training and review programme to be developed.

The main elements of an Emergency Plan:

- Risk assessment - assessing the dangers to the building and the collections

- Prevention - implementing measures to remove or reduce danger
- Preparedness - the detail of the plan itself
- Response - the planned procedures to follow
- Recovery - restoring the site and material to a stable and usable condition.

The assessment of risk will involve the establishment of a building maintenance programme. This will identify both the external and internal environmental threats.

Prevention will include the level of routine building maintenance carried out and the degree of provision of fire alarm and fire suppression systems.

Preparedness will require detailed floor plans and the establishment of priority lists of the stored material. It will consist of a range of management activities, such as regular reviews of incidents (however minor), the identification of salvage areas, the training of staff and the establishment of teams to carry out the specific salvage activities.

There is also a need for a significant commitment to the research of local facilities, including freezer and transportation services. Careful consideration will be required to identify adequate budgets for the purchase of emergency supplies.

Response will be the practical application of the plan and its timetable. This will include:

- assembling the teams
- preliminary assessment
- recording
- packing for freezing
- air-drying slightly wet material
- conservation treatments (on-site if applicable).

Finally, recovery will require management to set priorities, liaise with the media, clean and rehabilitate the site and ultimately review the plan.

This is a complex subject that requires detailed research [see Annex H: Bibliography].

4 THE ROLE OF SURVEYS

One of the most significant ways to define the extent of a conservation problem is to look at the material in detail. A structured survey, clearly thought through, and with

achievable goals, can provide information on a number of different levels. It can outline the generalities, give very detailed analysis, and provide unique management information. It is not always possible or desirable to look at every item, and a percentage sample will give enough indicators to enable policy decisions to be formulated and priorities drawn up.

It is recommended that the methodology of a survey plan be tested before embarking on the project. The commitment of time and resources on a major survey project is significant and should not be underestimated. A survey will probably only be carried out once and can be traumatic for the material. The availability of useful data may be very late in the process, and management expectations should be realistic from the beginning.

One of the results of a successful survey will be the potential to attract funding for project-based work and this in turn enables managers to identify the experience level(s) of the staff to be involved. The results of a survey now form the basic requirement for background information in the grant application processes in the UK.

A survey should enable priorities to be identified by:

- assessing the current condition of collections
- assessing the current storage - environment and packaging
- gathering quantitative information on the preservation needs of a collection
- collecting the minimum data needed to fulfill a brief
- consulting with appropriate colleagues to determine the levels of actual or potential use
- defining timescales and estimating costs.

4.1 Sampling categories

Random sampling

The documents for assessment are chosen randomly. However, this approach will only be successful if the collection has a detailed catalogue.

Cluster sampling

In this case a decision is made to assess an agreed percentage throughout the collection eg sampling every tenth or twentieth item or box.

Although a well-planned survey should progress with little need for change, it must be accepted that alterations will occur. The nature of this material is often unpredictable! Consideration should be given to this in the planning phase and a contingency made on the survey forms, and any related database.

4.2 Survey forms

It is recommended that the form(s) are designed by the survey leader to ensure that all staff involved in the collection of data can proceed with the minimum of supervision. Most institutions will not have the luxury of professional conservation staff to lead such a project, and the forms must be clear of assumptions. Before the project begins, structured staff training and awareness raising will be necessary.

The form should ideally be linked to a software programme that allows the information to be presented in a spreadsheet format.

The form should:

- be a standard format - ideally using codes or tick boxes
- use standard terminology - this should be relevant to the institution
- be clear about the extent of conservation and preservation requirements
- make an estimate of the time required to complete each option.

4.3 Evaluating survey results and establishing priorities

How the results of a survey are used is for the institution to decide, but it will need to answer the following questions:

- What is the extent of the “problem”?
- What are the solution options?
- How long will each process take?
- How much will each process cost in resources?
- Can these results be used to estimate the problems of any other collections?
- Is the collection a priority?

5 INVESTIGATING ALTERNATIVES

This guideline has sought to emphasise that practical conservation is one of the elements of preservation policy - it may not be the answer in many situations. Each item or collection of items will present a number of options that must be considered before sanctioning the commitment of full conservation. They will all have cost implications and these must be considered carefully.

5.1 Substitution

Can the material be copied in any way?

The options to consider are:

- photocopying
- photography
- microfilming
- digital scanning
- digital copying.

However, these forms of substitution will only be an option for larger institutions that have in-house copying facilities. In general, these services will have to be sought through external contractors or agencies. It is imperative that a contract is drawn up to ensure that the appropriate standards of handling and security are maintained.

5.2 Packaging

Can the use and storage of the material be improved by an enhanced and better quality packaging?

Good examples would be:

- photographic materials
- volumes where the text is secure but the covers are badly deteriorated.

5.3 Leave alone

Would it be best to do nothing? Because of:

- lack of resources

- lack of expertise
- severe deterioration.

5.4 Disposal

Are the conservation problems so severe that it is unlikely that the material will ever be made fit for access?

If so, it may be destroyed unless it has been appraised as having high historical or cultural value. Physical condition should always be a consideration in borderline cases of appraisal when deciding whether material merits retention or accessioning.

5.5 Conservation

Each of these options must consider the role that conservation can play as it crosses many of the boundaries covered by preservation management. It is clearly an important part of a conservation section's work to be involved in the preparation of material that has been identified for copying.

Material that has suffered damage will require different levels of conservation first aid, to ensure that the information to be recorded is presented in the most secure and legible way. It is recommended that a conservator be consulted during the planning phase of a copying programme.

It is equally important to ensure that appropriately trained staff are involved in all of these considerations. All the skills of assessment that are required in other areas of preservation work are needed here. Whilst this is clearly passive (not practical handcraft) conservation in action, it must be seen as the necessary level before sanctioning active conservation in the workshop.

Some of these options are uncomfortable for both archive and library professionals to consider but they are now becoming valid when campaigning for resources.

6 FUNCTION OF THE WORKSHOP

The conservation workshop has a very important role to play in the development of a culture dedicated to the preservation of heritage materials. It establishes a specialist activity within a public service and also represents in an unassailable way that there is a significant commitment to the long-term preservation of material worthy of retention.

The workshop is a place where important and complex activities are carried out. It often carries the image of a laboratory; pristine benches and a clean white decor. It should be specialised, but the conservation facility must also reflect the needs of the organisation.

There are elements, such as packaging and the testing of conservation materials that are often regarded as less interesting than the technology, but they must remain the primary source of investment if strategic preservation initiatives are to succeed.

Undertaking conservation treatment and then replacing the material in unsatisfactory conditions is a waste of time and money. It is more important to establish a good, basic and sustainable workshop environment than to get embroiled in the requirements of more specialised areas of expertise.

6.1 Identify site

The ideal position for a conservation facility is within easy access of both the repository and Search Room areas. Conservation staff will need to survey material at short notice and they will play an advisory role for other staff and especially members of the public.

The workshop should ideally have adequate natural light via windows, mains water supply and local drainage facilities. The perfect shape would be square, no less than 25sq.m. and with one side of windows. However, the key elements of a conservation facility can be accommodated into the space available - a certain degree of lateral thinking will be required!

Security must be another consideration, both internally and for the perimeter. The conservation area will contain materials and equipment, both of which are portable, and documents and books undergoing treatment may often have to be left in the workshop overnight. The room must be locked when staff are absent, and all staff must be made aware of the health and safety risks associated with a primarily craft-based, practical workshop area, where cutting machines, sharp knives and chemical solvents are in regular use. This room must never be a thoroughfare and access must only be available to staff of the institution. Consideration will have to be given to identify which staff are to be designated as keyholders.

6.2 Clean and prepare

Once identified the area must be properly prepared:

- the room must be cleaned and washed down
- any areas of weakness must be repaired (especially faults that would aid insect, rodent or water access)
- all surfaces must be re-painted
- the floor must be sealed (to reduce dust) and covered with a waterproof vinyl.

6.3 Electrical services

All services should be upgraded to perimeter trunking with double sockets at approximately one-metre intervals. The height of the trunking should be approximately 50cm above the bench tops.

6.4 Lighting

The ceiling lighting will need to give a strong overall coverage. Office style lighting levels will not be adequate for this area. Separate task lighting will be required for all bench areas. It is suggested that this lighting is portable or moveable to aid close-up and detailed work. Ideally the standard of all lighting will be ultra-violet filtered, although this will be an expensive option.

6.5 Windows

All seals must be checked and all necessary repairs carried out. A fine metal mesh must be attached to all windows to limit access by insects when windows are open. It is understood that adequate ventilation will generally be available via the windows. All windows must have adjustable blinds to protect both individuals and the materials on which they work from direct sunlight.

6.6 Fire prevention

The area must have fire protection to ensure that all potential forms of ignition are catered for and this must include the identification of chemical risks. In general, appropriate hand held fire extinguishers and a fire blanket will provide basic cover.

6.7 Ventilation

If chemicals are to be used, it is advised that an adequate source of ventilation is available. Whilst a fume cupboard or local exhaust system would be the ideal, careful consideration must be given to the use of chemical procedures and especially solvents. In many cases the provision of an outside area or proximity to an open window will have to suffice.

The same considerations will have to be given to those activities that produce dust. Much material will carry a layer of dust from storage areas and this must be removed outside the workshop. Bookbinding activities, which tend to produce off-cuts and dusts, will need to be placed carefully within the workshop with close proximity to ventilation.

[The special provision for bookbinding services is dealt with in the next section]

7 WORKSHOP LAYOUT

The design of a workshop provides an opportunity for a creative approach. In most cases the area available for conservation facilities may not be the ideal. However, if the basic principles can be achieved then a satisfactory layout should be possible.

At this early stage it is prudent to think about the functions of the workshop and to ensure that there is enough room for the staff to circulate safely and efficiently. This in turn should be influenced by a consideration of the proposed workflow to ensure that the different stages of conservation work can be carried out in a logical way.

7.2 Bookbinding

If bookbinding facilities are to be included then they should be placed away from paper conservation activities, as dusts will be transferred to the face of the work.

In general, bookbinding activities will require extra (often bulky and heavy) equipment, such as nipping presses, laying presses and guillotines. They will also need more space for storage of work in progress and materials.

It is suggested that careful consideration be given to the use of external bookbinding facilities. This will require sound planning, as security, conservation standards and the level of staff skills will need to be specified in the contract. It may be prudent to investigate local facilities in other institutions.

For example, the national library may have a bindery and be able to take on work for the national archives with the latter providing microfilming services in return. Such arrangements would relieve some of the worries expressed regarding commercial firms.

7.3 Benches

It is recommended that the bench height should be 90cm with a depth of 100cm. This will appear very deep, and the back of the bench may be out of reach, but it is space required for adequate placing of larger flat items when they are receiving treatment. The working height should enable conservators to get their legs under comfortably whilst also allowing for working standing up. Therefore all bench seating must be “draughtsman’s” height.

7.4 Washing/wet areas

The washing/wet areas should be placed away from the benches where detailed work will be undertaken. It is important that all wet processes (which use baths and quantities of water) are kept under control to minimise damage to other material or slipping hazards. Where possible, the carrying of water-filled containers across the workshop should be avoided.

7.5 Workstations

The workstations should endeavour to act as the personal area for each individual allowing plenty of under-bench storage for personal affects, off-cuts of materials and other projects in progress. The bench should also provide adequate filing for notes and professional information. Some plan chest style drawers are vital for the storage of sheets of specialist papers whilst in use.

The built-in lightbox is an important part of the conservator's equipment. This is simply a backlit, opaque, glass-fronted box, similar to those used by photographers. Once placed on the glass the light shines through the document and shows all the tears, and missing and weak areas.

Whilst portable versions do exist, the frequency of their use in paper conservation methods requires this equipment to always be to hand. The bench must be connected to the electrical supply to allow for the lightbox, but also to provide a double socket from which to run smaller electrical hand tools, such as tacking irons for heat-set tissue repair.

7.7 Workshop overview

The workshop needs to provide an adequate area for each of the different specialised functions, and it is suggested that a thorough review of these activities be made, to decide what exactly will be carried out, and where. Tough decisions will have to be taken on what remains and what is left out. It is far better to concentrate effectively on what can be accommodated. Do not clutter this valuable area to create a dream perfect workshop - the staff will not thank you!

[See Annex C for two examples of workshop layouts]

8 BASIC EQUIPMENT AND TOOLS

In all cases, a dialogue should be established with the suppliers to ensure that specific detailed advice is available on all products. The supplier must understand the needs of the customer. These orders will be substantial and appropriate discounts must be negotiated.

When using procurement agencies, it will be prudent to identify a contact member of staff. These agencies are not specialists and cannot therefore be expected to make decisions regarding alternatives. The use of any professional conservation networks in the supplier's country will be vital to ensure that technical problems can be effectively resolved.

The following lists can only be a guide and are not definitive. They are based on a workshop staff of three; two trained conservators and one conservation technician.

Where supply from local sources seems unlikely, appropriate suppliers in the UK are suggested using the acronyms given in Annex A.

However, their inclusion does not imply a recommendation.

8.1 The following equipment is essential and recommended:

x1	stainless steel conservation sink (for specialist staff use only)		
x1	stainless steel domestic sink with bowl and drainer (for conservation staff use only)		
x1	drying rack		CBD
x1	domestic refrigerator and x1 domestic chest freezer with UPS power supply to protect against power cuts		
x1	microwave oven (for conservation use only)		
x1	Board chopper/guillotine		CBD
x1	Rotatrim cutter		CBD
x1	portable lightbox (A2)		CBD
x2	nipping presses (to accommodate A3 size sheets)		WLHP
x1	nipping press (to accommodate A2 size sheets)		WLHP
x1	bead-weld polyester encapsulator		CBD
x1	ultrasonic humidifier		CBD
x1	hand-held thermohygrometer (for environmental monitoring)		CBD
x1	temperature controlled tacking iron		CBD
x1	weighing balance		KCS

8.2 The following furniture is essential and recommended:

x4	draughtsmen's chairs		KCS
x2	plan chests		
x2	large benches and cupboards (modular system; mobile - x1 to include built-in lightbox) (See Annex D)		
x1	roll storage rack (See Annex H)		

8.3 The following hand tools are essential and recommended:

Steel rulers	50cm	x2	CBD
(Non-slip)	100cm	x2	CBD
Carpenters set square		x2	CBD
Small tacking hammer		x2	KCS
Retractable steel measure	5m	x2	KCS
Bone folders	(rounded and pointed)	x5 of each	CBD
Scissors	medium	x2	CBD
	small	x2	CBD
Scalpel handles	(No. 3 and No. 4)	x5 of each	CBD

Scalpel blades	(10a, 12, 15, 23, 26)	x500 total	CBD
Dividers		x2	CBD
Awl or bodkin		x2	CBD
Needle holder		x2	CBD
Needles	(sizes 17&18)	x2 packs of each	FFP
Brushes	(different sizes and widths)	x20	CBD
Utility knife with retractable blade		x2	CBD
Utility knife blades		x10 packs	CBD
Tweezers/forceps		x2	CBD

8.4 Other recommended items:

Weights	(various sizes and weights)	x50	
Perspex sheets	(60cm x 44cm x 2cm)	x20	
Wooden pressing boards	(60cm x 44cm x 2cm)	x50	
[To be either Medium Density Fibreboard (MDF) or wood that is not easily splintered - not chipboard]			
Self-healing cutting mat	large (2m x 1m)	x1	CBD
	Medium	x2	CBD
	Small	x2	CBD
Sponges various sizes		x20	KCS
Water spray		x10	CR
Sewing thread	(16/3 and 18/3)	x1 skein of each	FFP
Cotton wool			KCS
Cotton buds			KCS

8.5 The following chemistry supplies are recommended:

Distilled water(start-up quantity)		x10 litres	KCS
[A source of supply will need to be identified]			
Stainless steel spatula		x5	CBD
Polypropylene beakers	100ml	x5	CBD
	400ml	x5	CBD
	1 litre	x5	CBD
Plastic bowls		x5	CBD
Plastic containers with air-tight lids (Various sizes)		x10	CBD
Stainless steel spoons		x5	KCS
pH indicator strips	(pH 4.4 - 10)	x10 boxes	CBD
Disposable “sharps” container (For scalpel and cutting blades)		x1	CBD
Disposable dust masks		x50	CBD

Disposable rubber gloves	(different sizes)	x20 boxes	CBD
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8.6 The following selection of materials are recommended to form the basic “starter pack”:

Once established a precise stock-checking system will need to be devised so that levels of use are recorded and that replacements are ordered well in advance to ensure that no stocks reach zero.

Archival Kraft paper		x5 packs	CBD
Archival manila paper		x10 packs	CBD
Archival cover paper		x5 packs	CBD
Archival boxboard	(1000 micron)	x10 packs	CBD
Archival quality photographic enclosures (4-flaps)		x500	CBD
Archival quality glass negative boxes		x10	CBD
“Evacon” PVA adhesive		x5 litres	CBD
Bondina support fibre	(30gsm and 100gsm)	x1 roll of each	CBD
Polyester felt support material	(6mm thickness)	x3 rolls	CBD
Archival blotting paper	(“Megasorb” and “Aquaforte”)	x10 packs and x2 rolls	CBD
Archival repair tissue	(“Spider” and “OK”)	x3 rolls of each	CBD
Archive Text archival machine-made paper	(85gsm)	x1, 000 sheets	CBD
Fraynot archival backing cloth		x1 roll	FFP
Terylene		x2 rolls	CBD
Polythene	(250 gauge)	x5 rolls	CBD
Melinex archival polyester (Micron thickness 75, 100, 125)		x20 rolls (x10 of 75 micron)	CBD
Archibond heat-set tissue		x2 rolls	CBD
Archive linen tape		x20 50m rolls	B-B
Tyvek labels		x10,000	PE
Waterproof pens		x10	KCS
Wheat starch paste		x5 1kg jars	CBD

8.7 The following binding equipment is essential and recommended:

x1 Blocking Press	JTM
x1 sewing frame	RB
x1 laying press	RB
x1 backing hammer	RB

x2 12" steel rulers	RB
x1 pair of backing boards	RB
Glass paper and sand paper	CBD
Sewing tapes (various sizes)	RB
Archival Buckram bookcloth x2 rolls (brown and black)	SB
Millboard (various thickness) x25 of each	SB
Greyboard (various thickness) x25 of each	SB
Cartridge paper (white and cream) x100 sheets of each	CBD

9 HEALTH AND SAFETY

9.1 The use of chemicals

In the 1960s the use of chemicals was seen as the panacea for many who were grappling with the problems of the treatment and storage of paper and parchment/vellum records. Their use in conservation treatments primarily covered adhesive tape removal, fumigation, stain removal and deacidification. The availability of effective insecticides, microbiological agents and poisons for the control of infestations in agriculture were abundant.

The USA and Europe have been assessing the extent of this legacy of over-indulgence ever since this period. There has consequently been a radical re-think and the dangerous effects of these chemicals (cancers, mutagenic properties, etc.) are now heavily controlled by legislation in many countries.

Understandably because of their effectiveness, the status of these chemicals in the rest of the world has remained high. Unfortunately the (now historical) serious effects from exposure have either been badly communicated or ignored. In most cases their use will have been indiscriminate, wholesale and applied by unprotected personnel.

9.2 Hazard data sheets

The hazard data sheets in Annex C give an indication of the extent of risk inherent in some of the more popular chemicals. Whilst this data gives clear advice on how to minimise the risks it must be understood that they are not removed completely.

It is recommended that an appropriate member of staff undertake training in safety in the workshop, with particular emphasis on the handling and storage of chemicals. This individual would then be responsible for all risk assessments and be required to report regularly to senior management.

This is an area of very real concern and it is crucial that attention is given to this issue when considering a strategy for the long-term preservation of records.

9.3 Personal protective equipment (PPE) and controls

PPE is the first and most basic protection for the individual involved in the use of chemical procedures. Consideration in line with hazard data sheet advice must be given to the protection of:

Hands	-	by the use of gloves - usually latex or Nitrile
Nose and mouth	-	by the use of dust masks and respirators
Eyes	-	by the use of goggles or safety glasses
Face	-	by the use of face shields
Clothes	-	by the use of aprons and overalls

In a conservation workshop the first three must be available and meet international standards - detailed information must be sought from chemical suppliers. Careful assessment of the task to be carried out must be made and the correct specification of PPE selected.

In general conservators will need protection from dusts and vapours. The inhalation of harmful dusts and vapours is a very real risk and must never be disregarded. Masks and respirators are not a substitute for ventilation and should be worn only to protect against infrequent short-term exposures.

The problem of spillage's must also be assessed (again details are in the hazard data sheets) and procedures put in place to deal with this problem. [See Annex C]

9.4 Chemical storage

Chemicals must only be stored in specially designed cabinets. Such cabinets can be bought from chemical suppliers or those specialising in PPE. Individual containers within the cabinet should not exceed the permitted capacity. There should be one cabinet for dry chemicals, and one for combustible and flammable liquids. Many chemicals are incompatible and this should be carefully researched.

9.5 Waste disposal

All personnel involved in the use of chemicals must be aware of their responsibility to dispose of toxic and flammable materials properly and in line with local and international legislation. A specialist, licensed contractor who can provide a certificate of disposal, must carry this out. This must detail that the disposal has been carried out:

- without injury to living beings
- without adulteration of drainage systems
- without contamination of the earth or air or water supplies.

Any clothes or other materials that may become contaminated should be placed in polythene bags and stored in a disposal bin awaiting the contractor.

There must always be a full inventory of all chemicals on site and a record of safe disposal available for inspection.

9.6 Mould and pest control

Traditionally archives and libraries have relied on pesticides and fumigants to reduce mould attack and infestation. Increasingly it has been recognised that there are considerable disadvantages to the repeated use of chemicals to deal with the problems associated with pests and mould. Pesticides and fumigation chemicals do not prevent damage occurring to material as applications are made in response to an observed outbreak of mould or pest damage. The chemicals used can pose health hazards to staff and damage to paper-based collections. Furthermore, unless the cause of the problem is ascertained it is likely to reoccur. Newer extermination methods such as controlled freezing and oxygen deprivation are effective alternatives to chemical application but they do not prevent the outbreak occurring. Monitoring for pests and mould is the most effective way to prevent damage to paper-based collections.

9.7 Integrated pest management

Integrated pest management is a strategy to prevent and manage infestation by preventive, long-term control measures. Most of the insect species likely to infest paper collections are attracted not by the paper itself but by the sizes, adhesives and starches, all of which are more easily digested than the cellulose that makes up paper. Insect damage does not stem solely from insects eating material, collections are also affected by tunnelling and nesting activities and by bodily secretions.

Integrated pest management strategies encourage ongoing maintenance and housekeeping to ensure that pests will not find a hospitable environment in a archive or library building. Activities include; building inspection and maintenance, climate control, restriction of food and plants, insect identification, staff training, regular cleaning, proper storage, control over incoming collections to avoid infestation of existing collections and routine monitoring for pests.

It is best to begin a formal pest management programme with an initial survey of the building, surrounding areas and all collection storage areas. This assessment may include looking at the history of any previous infestations to document pests which have caused damage in the past and what was done to solve the problem. Any IPM plan must be tailored to the specific requirements of the institution.

9.8 The control and management of mould

Where chemical fumigants appear to have been successful it has been where a particular species or strain of fungi has been identified and found to be sensitive to

that particular fumigant. Generalised treatments with fumigants do not necessarily kill the fungi and there is much evidence to suggest that not only are they ineffective but that in certain cases they can actually encourage mould growth by creating sterile conditions on which future growth thrives. As with an integrated pest management system non-chemical means of dealing with mould growth has been shown to be effective. In particular, control of temperature, relative humidity and air circulation will reduce the likelihood of damage from mould.

A relative humidity above 55% is likely to encourage mould growth, however, even with high humidity levels controlled air circulation may help to reduce risk. On discovering an outbreak of mould a specialist should be consulted on the best course of action. If possible, items should be removed and isolated from the rest of the collection while the cause of the problem is established. Any protective enclosures, boxes or folders that are infected should be discarded. Anyone handling mould infected material must be protected. A close fitting mask with a filter capable of removing fungi spores from the inhaled air, protective clothing and disposable rubber gloves are particularly recommended.

Infected items should be thoroughly dried as quickly as possible, in a controlled fashion so as to reduce distortion and damage due to over rapid drying. Once the items are dry use a soft brush to remove mould material. This should be done in a well-ventilated area, outside or in a fume cabinet wearing protective clothing. Only replace items back on the shelf when the source of the problem has been found and eliminated.

10 CREATING A SELF-HELP CULTURE

The purpose of this section is an attempt to rationalise both the demands and expectations that exist for developing countries. At the time of writing there are a number of quite major investment initiatives from European aid agencies, certainly in Africa. These are in some cases linked to the commitment of the World Bank to a programme of stabilisation for local and central government civil service structures.

However, as part of the process of external funding, there is a tendency for the decision-making for archive and library development to be taken by politicians too often ignorant of the subtleties of the sector. This responsibility may then be devolved to a project management consultancy, which, in turn, may employ a specialist consultant to lead on the project.

There is nothing inherently wrong with this form of structure, but it does illustrate the distancing of the host institution from the core decision-making. At the completion of the project, it is the local archive or library that will have to implement the decisions, often made on their behalf.

It is therefore important for the host institution to identify an appropriate member of staff to lead on the project in a local capacity. This individual will need to have some authority and be sanctioned to make some decisions on the behalf of senior

management. This individual can then look at the overall requirements for equipment, furniture and materials, and start to investigate the potential for local supply.

The maintenance of equipment is often a problem as spare parts can be expensive or impossible to obtain. It is suggested that negotiations with the suppliers are undertaken to investigate ways to help alleviate the worst affects of this problem. In some cases the supplier may be able to provide some general orientation or access to specialist advice.

The local project leader, who must identify the best staff to receive the instruction, should plan appropriate technical training as part of the overall project.

In many countries, supply will be hampered by geographical, political, economic and, more importantly, bureaucratic and logistical factors. However, it is recommended that a level of self-help will instil the project with a flavour of local control. This will be doubly important once the project is completed, the monies spent, and specialist consultants have returned to their own countries.

The logistical and bureaucratic problems that exist in developing countries will never improve if a project is wholly managed through the eyes of those from the developed world. Their expectations are very different, and are easily frustrated. This can cause a feeling of failure and lack of direction amongst those for whom such a project is a one-off blessing.

The overall message is to get involved, and plan ideas to achieve:

- the development of local expertise
- the establishment of efficient supply routes
- the establishment of links with institutions in developed countries.

11 ANNEXES

- A Suppliers addresses
- B Mould and pest control
- C Examples of workshop layout
- D Chemical hazard data sheets
- E Example of a survey form
- F Example of a copying policy
- G Examples of job descriptions

- H Select bibliography
- I Professional contacts

SUPPLIERS ADDRESSES

This list indicates suggested suppliers for most items recommended in the previous sections by an identifying letter for each supplier (see below).

This is not an exhaustive list, but is an attempt to keep the number of suppliers to a minimum so as to aid efficiency, consistency and best value. Each supplier will advise on requirements (quantities, sizes, specifications and prices).

Inclusion in this list does not imply a recommendation.

Bower-Bond Narrow Fabrics Ltd

B-B

Hanging Bridge Mills
Ashbourne
Derbyshire
DE6 2EA
UK

Telephone: +44 1335 42244

Fax: +44 1335 46353

Conservation by Design

CBD

5 Singer Way
Woburn Road Industrial Estate
Kempston
Bedford
MK42 7AW
UK

Telephone: +44 1234 853 555

Fax: +44 1234 852 334

E-mail: info@conservation-by-design.co.uk

Web <http://www.conservation-by-design.co.uk>

Conservation Resources (UK) Ltd

CR

Units 1,2 & 4
Pony Road
Horspath Industrial Estate
Cowley
Oxfordshire
OX4 2RD
UK

Telephone: +44 1865 747755
Fax: +44 1865 747035
E-mail: 10046.3447@compuserve.com
Web: <http://www.conservationresources.com>

Falkiner Fine Papers

76 Southampton Row
London
WC1B 4AR
UK
Telephone: +44 20 7831 1151
Fax: +44 20 7430 1248

FFP

W.L. Harrild and Partners Ltd.

Unit 3
Alpine Business Centre
Eastbury Road
London
E6 4LP
UK

WLHP

Telephone: +44 20 7473 5345
Fax: +44 20 7473 6673

Kent County Supplies

Gibson Drive
Kingshill
West Malling
Kent
ME19 4QG
UK

KCS

Telephone: +44 1622 605001
Fax: +44 1732 871974

John T Marshall Ltd

Canonbury Works
Dove Road
London
N1 3LY

JTM

Telephone: +44 20 7226 7957
Fax: +44 20 7704 9885

Preservation Equipment Ltd

PE

Church Road
Shelfanger
Diss
Norfolk
IP22 2DG
UK

Telephone: +44 1379 651527

Fax: +44 1379 650582

E-mail: presevation.equipment@btinternet.com

Web: <http://www.preservationequipment.com>

Russell Bookcrafts

RB

Great North Road
Wyboston
Bedfordshire
MK 44 3AB

Telephone: +44 1480 405464

Fax: +44 1480 407105

E-mail: john@russels.powernet.co.uk

Shepherds Bookbinders Ltd

SB

76 Rochester Row
London
SW1P 1JU

Telephone: +44 20 7630 1184

Fax: +44 20 7931 0541

E-mail: information@shepherds-of-london.com

MOULD AND PEST CONTROL INFORMATION

International Mycological Institute

Bakeham Lane
Egham
Surrey
United Kingdom
TW20 9TY

Telephone: +44 784 470 111

Fax: +44 784 470 909

Email: imi@cabi.org

Environmental Building Solutions

30 Kirby Road
Dunstable
Bedfordshire
United Kingdom
LU6 3JH

Telephone: +44 (0) 1582 690187

Fax: +44 (0) 1582 690188

Email: jagjit@env-bldg-solns.co.uk

Web: www.env-bldg-solns.co.uk

Integrated Pest Management

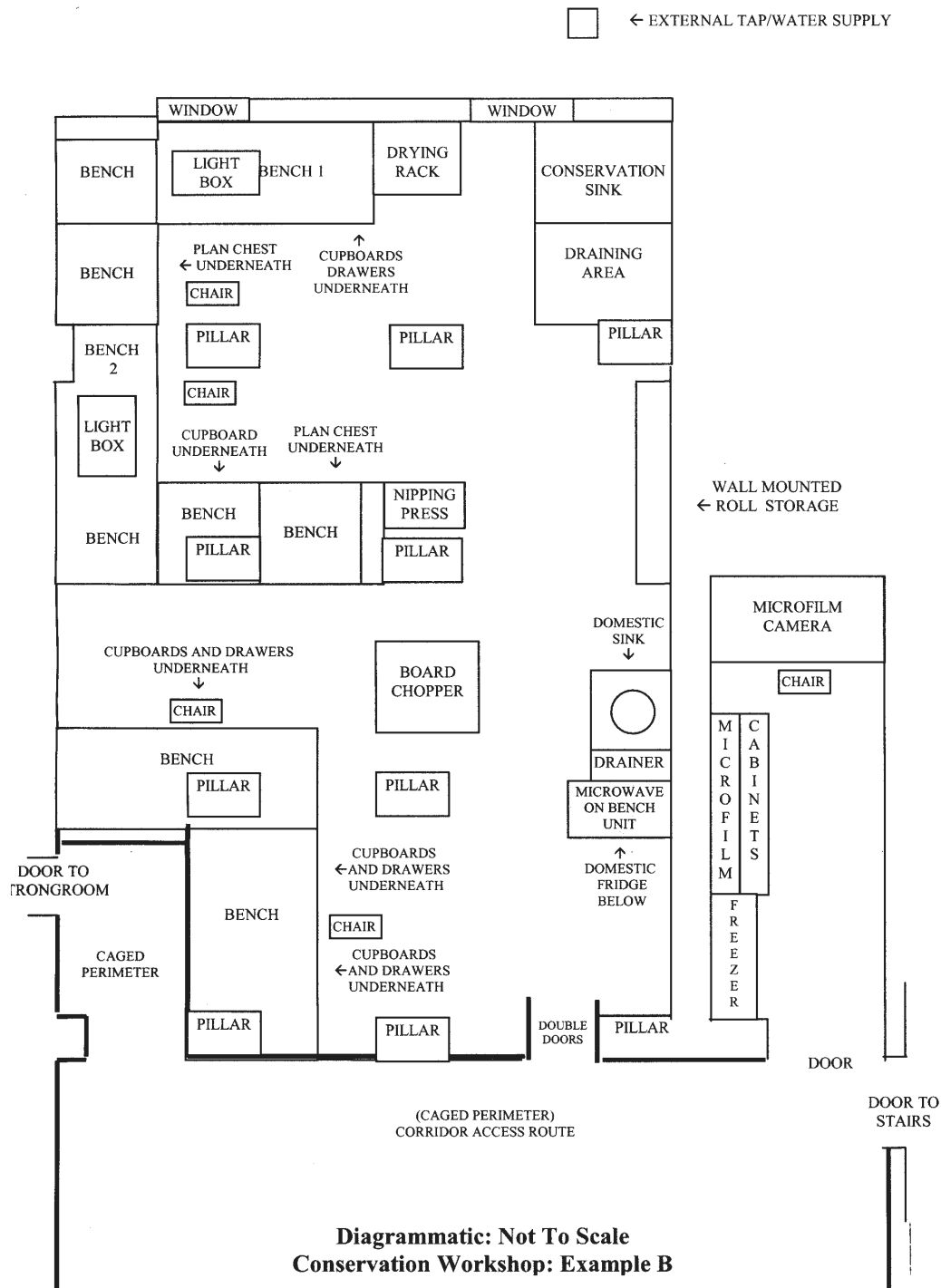
National Parks Service

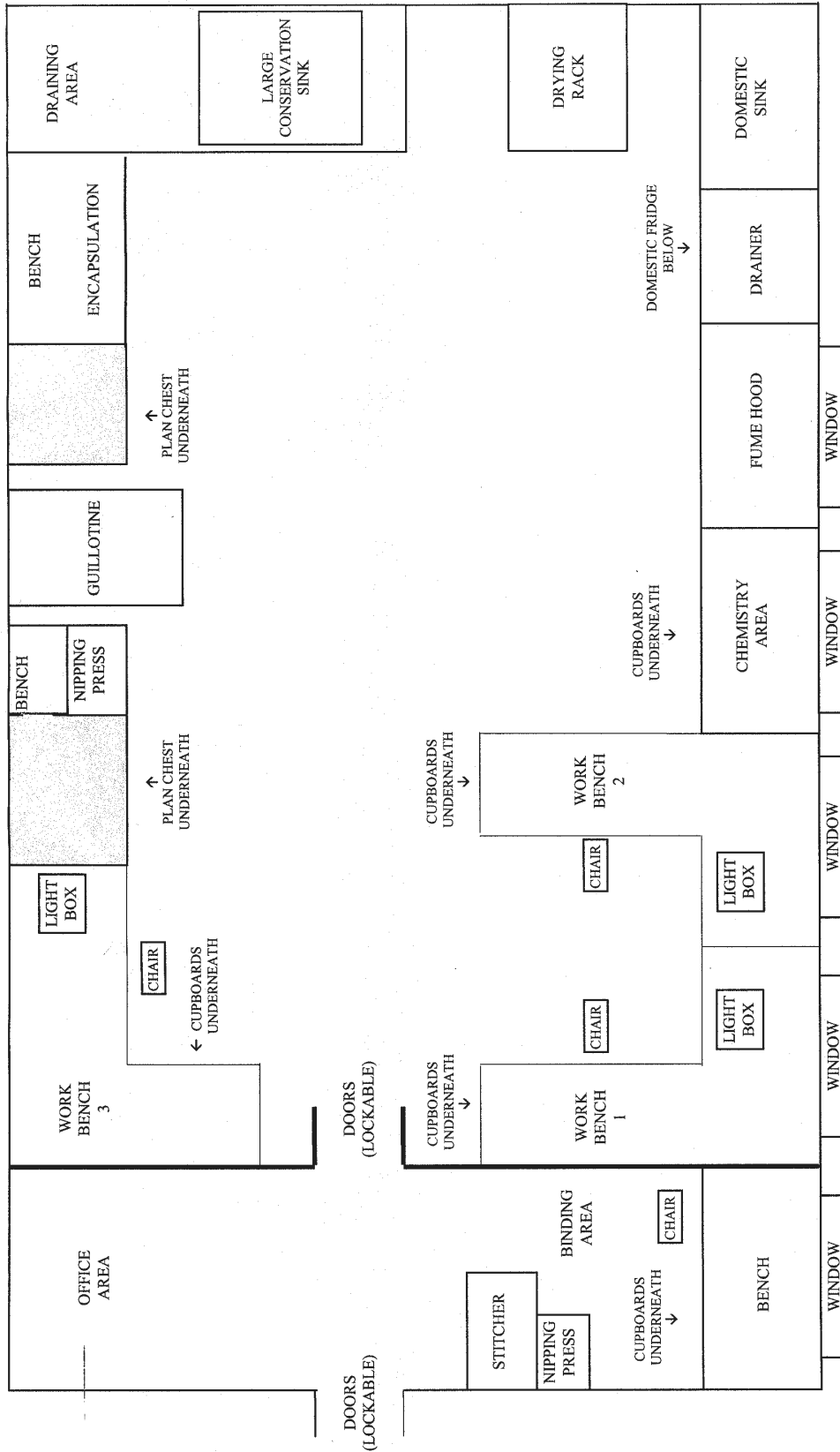
<http://www.nature.nps.gov/wv/ipm/manual.htm>

The Ohio State University

<http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/index.html>

EXAMPLES OF WORKSHOP LAYOUT





**Diagrammatic: Not To Scale
Conservation Workshop: Example A**

CHEMICAL HAZARD DATA SHEETS

Solvents:

BENZENE
CARBON TETRACHLORIDE
METHANOL

Deacidification:

CALCIUM HYDROXIDE

SAFETY DATA SHEET - MERCK

1 Identification of the substance/preparation

Identification of the product

Catalogue No: 10051

ID No: 1005100

Product name: Benzene AnalaR

Manufacturer/supplier identification

Company: Merck Ltd, Merck House, Poole, Dorset BH15 1TD

Emergency telephone No: 01202 669700

2 Composition/information on ingredients

Chemical characterisation

Hydrocarbon solvent

Product name: Benzene

CAS number: 71-43-2

EC-No.: 200-753-7

3 Hazards identification

May cause cancer. Highly flammable. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

4 First aid measures

Eye contact: Irrigate thoroughly with water for at least 10 minutes. OBTAIN MEDICAL ATTENTION.

Inhalation: Remove from exposure, rest and keep warm. In severe cases, or if exposure has been great, OBTAIN MEDICAL ATTENTION.

Skin contact: Drench the skin thoroughly with water. Remove contaminated clothing and wash before re-use. Unless contact has been slight, OBTAIN MEDICAL ATTENTION.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. OBTAIN MEDICAL ATTENTION

5 Fire-fighting measures

Special risks:

Highly flammable. Vapour/air mixture explosive.

Suitable extinguishing media:

Foam, dry powder, carbon dioxide or vaporising liquids

6 Accidental release measures

Shut off all sources of ignition. Inform others to keep at a safe distance. Wear appropriate protective clothing. Absorb on an inert absorbent, transfer to container and arrange removal by disposal company. Wash site of spillage thoroughly with water and detergent.

For large spillages liquids should be contained with sand or earth and both liquids and solids transferred to salvage containers. Any residues should be treated as for small spillages.

7 Handling and storage

Handling:

Take precautions against static discharge. All electrical equipment must be flame proofed

Storage:

Store at room temperature (15 to 20°C recommended). Keep well closed and protected from direct sunlight and moisture. Store small containers in suitable flammable liquid storage cabinets when not in use. Larger drums (200l) must be kept in purpose-built stores.

8 Exposure controls/personal protection

As appropriate to quantity handled.

Respirator: Self-contained breathing apparatus

Ventilation: Fume cupboard, flameproof

Gloves: Nitrile

Eye Protection: Goggles or face-shield

Other Precautions: Plastic apron, sleeves, boots - if handling large quantities

9 Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	characteristic
Melting temperature	5°C
Boiling temperature	80°C
Density (g/ml)	0.88
Vapour pressure	100mmHg, 26°C
- Density	2.77
Log P(o/w)	2.13
Solubility in water	Slightly soluble
Flash point	11°C
Explosion limits:	lower: 1.4%
	upper: 8%
Ignition temperature	562°C

10 Stability and reactivity

Stable.

Unsuitable working materials: rubber, various plastics

Substances to be avoided
mineral acids, sulphur, halogens, halogen-halogen compounds, oxidizing agents,
halogenated hydrocarbons (in the presence of: light metals).

11 Toxicological information

Experience has shown this substance to be carcinogenic in man. After skin contact: irritant effect. Danger of skin absorption. Degreasing effect on the skin, possibly followed by secondary inflammation.

Further data

LD50 3306mg/kg oral, rat

Known carcinogen. Evidence of reproductive effects.
Carcinogen, Category 1

12 Ecological information

Do not allow to enter drinking water supplies, waste water, or soil!

13 Disposal considerations

Chemical residues are generally classified as special waste, and as such are covered by regulations which vary according to location. Contact your local waste disposal authority for advice, or pass to a chemical disposal company. Rinse out empty containers thoroughly before returning for recycling.

14 Transport information

UN-No.:	1114	IMDG class:	3.2
IMO:	3.2/1114	Packaging group:	II
IATA:	1114	Packaging group:	II
Correct technical name:	BENZENE		
ADR/RID:	3.3'(b)		

15 Regulatory information

Labelling according to EC directives

Symbol: F T Highly flammable. Toxic

R-phrases: R45-11-48/23/24/25

May cause cancer. Highly flammable. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

S-phrases: S53-45

Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

EC-No: 200-753-7

Carcinogen, Category 1

Local Regulations

Regulated in the UK under the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972.

UK Exposure Limits: MEL, Long-term, MG/M3: 16 - Benzene

16 Other information

Revision Date: 18/04/94

Date of Print: 08/01/99

SAFETY DATA SHEET - MERCK

1 Identification of the substance/preparation

Catalogue No: P22519

ID No.: 1007400

Product name: Carbon tetrachloride

Manufacturer/supplier identification

Company: Merck Ltd., Merck House, Poole, Dorset BH15 1TD

Emergency telephone No.: 01202 669700

2 Composition/information on ingredients

Chemical characterisation

Halogenated solvent

Product name: Carbon tetrachloride

CAS number: 56-23-5

EC-No.: 200-262-8

3 Hazards identification

Toxic by inhalation, in contact with skin and if swallowed. Possible risk of irreversible effects. Toxic: danger of serious damage to health by prolonged exposure through inhalation. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Dangerous for the ozone layer.

4 First aid measures

Eye contact: Irrigate thoroughly with water for at least 10 minutes. OBTAIN MEDICAL ATTENTION.

Inhalation: Remove from exposure, rest and keep warm. In severe cases obtain medical attention.

Skin contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases, OBTAIN MEDICAL ATTENTION.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. OBTAIN MEDICAL ATTENTION.

5 Fire-fighting measures

Special risks:

May evolve toxic fumes in fire.

Suitable extinguishing media:

Not applicable.

6 Accidental release measures

Wear appropriate protective clothing. Inform others to keep at a safe distance.

Absorb on an inert absorbent, transfer to container and arrange removal by disposal company. Wash site of spillage thoroughly with water and detergent.

For large spillages liquids should be contained with sand or earth and both liquids and solids transferred to salvage containers. Any residues should be treated as for small spillages.

7 Handling and storage

Handling:

Under no circumstances eat, drink or smoke while handling this material. Wash hands and face thoroughly after working with material. Contaminated clothing should be removed and washed before re-use.

Storage:

Store at room temperature (15 to 25°C recommended). Keep well closed and protected from direct sunlight and moisture.

8 Exposure controls/personal protection

As appropriate to quantity handled.

Respirator: Self-contained breathing apparatus

Ventilation: Fume cupboard, flameproof

Gloves: Nitrile

Eye Protection: Goggles or face-shield

Other Precautions: Plastic apron, sleeves, boots - if handling large quantities

9 Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	characteristic
Melting temperature	-23°C
Boiling temperature	77°C
Density (g/ml)	1.59
Vapour pressure	112mmHg, 25°C
Solubility in water	Slightly soluble
Flash point	n/a
Ignition temperature	n/a

SAFETY DATA SHEET - MERCK

1 Identification of the substance/preparation

Identification of the product

Catalogue No: 10158

ID No.: 1015800

Product name: Methanol AnalaR

Manufacturer/supplier identification

Company: Merck Ltd., Merck House, Poole, Dorset BH15 1TD

Emergency telephone No.: 01202 669700

2 Composition/information on ingredients

Chemical characterisation

Alcohol

Product name: Methanol

CAS number: 67-56-1

EC-No.: 200-659-6

3 Hazards identification

Highly flammable. Toxic by inhalation and if swallowed.

4 First aid measures

Eye contact: Irrigate thoroughly with water for at least 10 minutes. OBTAIN MEDICAL ATTENTION

Inhalation: Remove from exposure, rest and keep warm. In severe cases obtain medical attention.

Skin contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases, OBTAIN MEDICAL ATTENTION.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. OBTAIN MEDICAL ATTENTION.

5 Fire-fighting measures

Special risks:

Highly flammable. Vapour/air mixture explosive.

Suitable extinguishing media:

Water spray, dry powder or vaporising liquids.

6 Accidental release measures

Shut off all sources of ignition. Inform others to keep at a safe distance. Wear appropriate protective clothing. If local regulations permit, mop up with plenty of water and run to waste, diluting greatly with running water. Otherwise absorb on an inert absorbent, transfer to container and arrange removal by disposal company.

Ventilate area to dispel residual vapour.

For large spillages liquids should be contained with sand or earth and both liquids and solids transferred to salvage containers. Any residues should be treated as for small spillages.

7 Handling and storage

Handling:

Take precautions against static discharge. All electrical equipment must be flameproofed.

Storage:

Store at room temperature (15 to 20°C recommended). Keep well closed and protected from direct sunlight and moisture. Store small containers in suitable flammable liquid storage cabinets when not in use. Larger drums (200l) must be kept in purpose-built stores.

8 Exposure controls/personal protection

As appropriate to quantity handled.

Respirator: Self-contained breathing apparatus

Ventilation: Fume cupboard, flameproof

Gloves: Rubber or plastic

Eye Protection: Goggles or face-shield

Other precautions: Plastic apron, sleeves, boots - if handling large quantities

9 Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	characteristic
Melting temperature	-98°C
Boiling temperature	65°C
Density (g/ml)	0.79
Vapour pressure	100mmHg, 21°C
- Density	1.11
Log P(o/w)	-0.82
Solubility in water	Miscible in all proportions
Flash point	12°C
Explosion limits:	lower: 7.3%
	upper: 37%
Ignition temperature	464°C

10 Stability and reactivity

Stable.

Substances to be avoided

acid halides, alkali metals, alkaline earth metals, oxidizing agents, hydrides, zinc diethyl, halogen compounds, chloroform (in the presence of: alkali hydroxides).

11 Toxicological information

After ingestion: toxic.

After inhalation of vapours: Irritation symptoms in the respiratory tract.

After contact with substance: Irritation of: eyes, mucous membranes.

After the absorption of large quantities: nausea, vomiting, headache, inebriation, impaired vision, blindness (irreversible damage of the optical nerve).

Systemic effect: acidosis, drop in blood pressure, agitation, spasms, narcosis, coma.

Symptoms may occur after a latency period has elapsed.

Further data

LD50 5628 mg/kg oral, rat.

LC50 83mg/l inhalation, rat.

No evidence of carcinogenic properties. Evidence of reproductive effects.

12 Ecological information

No environmental hazard is anticipated provided that the material is handled and disposed of with due care and attention.

13 Disposal considerations

Chemical residues are generally classified as special waste, and as such are covered by regulations which vary according to location. Contact your local waste disposal authority for advice, or pass to a chemical disposal company. Rinse out empty containers thoroughly before returning for recycling.

14 Transport information

UN-No.:	1230	IMDG class:	3.2
IMO:	3.2/1230	Packaging group:	II
IATA:	1230	Packaging group:	II
Correct technical name:	Methanol (Methyl Alcohol)		
ADR/RID:	3,17'(b)		

15 Regulatory information

Labelling according to EC directives

Symbol: F T Highly flammable. Toxic

R-phrases: R11-23/25

Highly flammable. Toxic by inhalation and if swallowed.

S-phrases: S7-16-24-45

Keep container tightly closed. Keep away from sources of ignition - No smoking. Avoid contact with skin. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

EC-No.: 200-659-6

Local Regulations

Regulated in the UK under the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972.

UK Exposure Limits: OES, Long-term, mg/m³: 260 (Sk) - Methanol

16 Other information

Revision Date: 18/08/94
Date of Print: 08/01/99

SAFETY DATA SHEET - MERCK

1 Identification of the substance/preparation

Catalogue No: P22641

ID No.: 1030400

Product name: Calcium hydroxide

Manufacturer/supplier identification

Company: Merck Ltd., Merck House, Poole, Dorset BH15 1TD

Emergency telephone No.: 01202 669700

2 Composition/information on ingredients

Chemical characterisation

Alkali

Product name: Calcium hydroxide

CAS number: 1305-62-0

EC-No.: 215-137-3

3 Hazards identification

Risk of serious damage to eyes.

4 First aid measures

Eye contact: Irrigate thoroughly with water. If discomfort persists obtain medical attention.

Inhalation: Remove from exposure.

Skin contact: Wash off thoroughly with soap and water.

Ingestion: Wash out mouth thoroughly with water. In severe cases obtain medical attention.

5 Fire-fighting measures

Special risks:

May evolve toxic fumes in fire.

Suitable extinguishing media:

Not applicable.

6 Accidental release measures

Wear appropriate protective clothing.

If local regulations permit, mop up with plenty of water and run to waste, diluting greatly with running water.

Otherwise transfer to container and arrange removal by disposal company. Wash site of spillage thoroughly with detergent and water.

For large spillages liquids should be contained with sand or earth and both liquids and solids transferred to salvage containers. Any residues should be treated as for small spillages.

7 Handling and storage

Handling:

Storage:

Store at room temperature (15 to 20°C recommended). Keep well closed and protected from direct sunlight and moisture.

8 Exposure controls/personal protection

As appropriate to quantity handled.

Respirator: Dust respirator

Ventilation: Extraction hood

Gloves: Rubber or plastic

Eye Protection: Goggles or face-shield

Other Precautions: Plastic apron, sleeves, boots - if handling large quantities

9 Physical and chemical properties

Form:	solid
Colour:	white
Odour:	odourless
Melting temperature	n/a
Boiling temperature	n/a
Density (g/ml)	n/a
Vapour pressure	n/a
- Density	n/a
pH value	12 (2g/l H ₂ O)
Solubility in water	Slightly soluble
Flash point	n/a
Explosion limits:	lower: n/a
	upper: n/a

10 Stability and reactivity

Sensitive to moisture, sensitive to air.

Substances to be avoided acids, hydrogen sulphide, light metals

11 Toxicological information

After ingestion: Irritation of mucous membranes in the mouth, pharynx, oesophagus, and gastrointestinal tract.

After skin contact: Burns

After eye contact: Burns. Risk of blindness!

Further data

LD₅₀ 7340 mg/kg oral, rat

12 Ecological information

No environmental hazard is anticipated provided that the material is handled and disposed with due care and attention. Harmful effect due to pH shift.

13 Disposal considerations

Chemical residues are generally classified as special waste, and as such are covered by regulations which vary according to location. Contact your local waste disposal authority for advice, or pass to a chemical disposal company. Rinse out empty containers thoroughly before returning for recycling.

14 Transport information

UN-No.:		IMDG class:	NR
IMO:	NR	Packaging group:	
IATA:	NR	Packaging group:	
Correct technical name:	NOT RESTRICTED		
ADR/RID:	NR		

15 Regulatory information

Labelling according to EC directives

Symbol: I Irritant

R-phrases: R41

Risk of serious damage to eyes.

S-phrases: S22-24-26-39

Do not breathe dust. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

EC-No.: 215-137-3

Local Regulations

UK Exposure Limits: OES, Long-term, mg/m³: 5 - Calcium hydroxide

16 Other information

Revision Date: 18/08/94

Date of Print: 08/01/99

10 Stability and reactivity

Stable.

Unsuitable working materials: various plastics, light metals, iron, copper

Conditions to be avoided:
with air at temperatures exceeding 100°C.

Substances to be avoided:
alkali metals, alkaline earth metals, aluminum, alkali amides, aluminum halides / triethylaluminum.

Hazardous decomposition products
hydrochloric acid, phosgene.

11 Toxicological information

After ingestion and inhalation: headache, vomiting, unconsciousness. In high concentrations: narcosis, respiratory arrest. Effect potentiated by: ethanol.

After a latency period: Damage to: liver, kidneys. Resultant lesions may lead to the following: coma, death.

After ingestion: gastric pain, bloody diarrhoea.

After eye contact: Irritation.

Further data

LD50 2350 mg/kg oral, rat

LC50 52mg/l inhalation, rat

Has been found to cause cancer in laboratory animals. May cause adverse mutagenic or teratogenic effects. Carcinogen, Category 3.

12 Ecological information

This material is an ozone depleting substance restricted under the provision of the Montreal Protocol. Marine and/or freshwater pollutant.

13 Disposal considerations

Chemical residues are generally classified as special waste, and as such are covered by regulations which vary according to location. Contact your local waste disposal authority for advice, or pass to a chemical disposal company. Rinse out empty containers thoroughly before returning for recycling.

14 Transport information

UN-No.:	1846	IMDG class:	6.1
IMO:	6.1/1846	Packaging group:	II
IATA:	1846	Packaging group:	II
Correct technical name:	CARBON TETRACHLORIDE		
ADR/RID:	6.1,15'(b)		

15 Regulatory information

Labelling according to EC directives

Symbol: T N Toxic. Dangerous for the environment

R-phrases: R23/24/25-40-48/23-52-59

Toxic by inhalation, in contact with skin and if swallowed. Possible risk of irreversible effects. Toxic: danger of serious damage to health by prolonged exposure through inhalation. Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment. Dangerous for the ozone layer.

S-phrases: S23-36/37-45-59-61

Do not breathe gas. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Refer to manufacturer/supplier for information on recovery/recycling. Avoid release to the environment. Refer to special instructions/Safety data sheets.

EC-No.: 200-262-8

Carcinogen, Category 3

Local Regulations

UK Transport Category 2

Under EC regulations, this product is labelled: "For industrial installations only".

UK Exposure Limits: OES, Long-term, mg/m³: 12.6 (Sk) - Carbon tetrachloride

16 Other information

Revision Date: 14/10/97

Date of Print: 08/01/99

EXAMPLE OF A SURVEY FORM

REFERENCE/CLASS					
LOCATION	Room:	Bay:	Shelf:		
CONDITION OF BOX					
CONDITION OF CONTENTS (eg use of DDT/insect activity/mould)					
HOW MANY FILES IN THE BOX?					
AVERAGE THICKNESS PER FILE?					
CONDITION OF THE FOLDERS?					
WHAT FORMATS ARE IN THE BOX?	Files:	Volumes:	Single sheets:	Other:	
WHAT PROBLEMS ARE THERE? [Missing areas/eaten by insects/rodents Mouldy/damp or water damage Excessive dirt or dust Faded ink/acid ink Yellow or brittle paper Damage from clips/fasteners/ties etc Damaged beyond repair]					
HOW MANY ITEMS ARE DAMAGED?					
IS PACKAGING SUFFICIENT?					
ANY OTHER COMMENTS/PROBLEMS?					
SUGGESTED SOLUTIONS:					
Full Conservation	<input type="checkbox"/>	First aid Conservation	<input type="checkbox"/>	Boxing/re-boxing	<input type="checkbox"/>
Packaging/re-packaging	<input type="checkbox"/>	Cleaning	<input type="checkbox"/>	Quarantine	<input type="checkbox"/>
Put aside for review	<input type="checkbox"/>				

EXAMPLE OF A COPYING POLICY

New technical developments, particularly in the field of scanning technology have multiplied the options for the duplication of documents. The Archive wishes to offer a service that meets as many of the requirements of our users as possible while ensuring that the process involved does not damage the material in our care. Because the preservation of this material for present and future users is essential, it remains the case that weak and fragile documents especially those damaged by water, mould or insects, cannot be copied.

Within these broad constraints, however, the Archive can supply copies for most items provided they are in good condition. The copying processes available include photocopying; scanning; microfilming and photography.

PHOTOCOPYING

- 1 The real risk of damage that photocopying poses for both manuscript and printed material (through excessive heat, light and the need for an item to be flat to produce a good copy) means that we can allow comparatively little material to be copied in this way. The process can only be used for suitable flat material and some modern printed books. The maximum size of the original is A3.

DIGITAL SCANNING

- 2 Digital scanning can be used to copy a much wider range of material. This includes small flat material and volumes, maps and plans, parchment documents, seals, and photographs.
- 3 The following rules govern the provision of scanned images:
 - a) tightly-bound, fragile, very heavy, large or rare bindings are assessed individually for suitability.
 - b) if an item is heavily folded or tightly rolled, it will not be held down under pressure. This especially refers to parchment documents. Creases and shadowing will appear in the copy.
 - c) all seals will receive a protective covering and may be obscured. Special arrangements can be made to include the seal, but the document will then not be held under pressure.
 - d) we reserve the right to refuse the copying of stapled, pinned or tied documents (with the exception of front and back pages).

- e) the print of a scanned image may not be to scale. This must be specially requested.
 - f) scanned files will be held for two weeks after which they will be deleted. After two weeks a new scan will have to be done and a charge made.
- 4 Photocopying and scanning will not normally be provided for items for which a microfilm already exists. Prints from microfilms will normally be supplied unless the copy is required for publication or display purposes.

PHOTOGRAPHY AND MICROFILMING

- 5 A photographic service is available for the vast majority of items including some tightly bound items, not able to be copied by other means. Microfilming remains an option for copying extensive series of documents or very large items.

COPYRIGHT AND OTHER PERMISSIONS

- 6 Apart from the physical risk considerations, we would like to draw your attention to some other issues that may affect access to copying :

a) **Copyright:**

You are responsible for ensuring that your copy complies with current legislation. We can often indicate who the copyright holder is but cannot carry out research in cases where this is not clear.

b) **Depositor's permission:**

Many items held here are not owned by the Archive. While we can usually make copies for private use without reference to the depositor, for publication you may need to get permission. We will provide a contact address wherever possible.

c) **Use for publication:**

This may attract a reproduction fee depending on the type of use. Please ask for details if you intend to publish a copy of any of our holdings.

All order forms require a signature that confirms an individual's undertaking to abide by copying conditions.

EXAMPLES OF JOB DESCRIPTIONS

JOB DESCRIPTION – SENIOR CONSERVATOR

Designation: Senior Conservator, Grade X

Location: An Archive
Town
Country

Responsible To: Senior archivist

Responsible For: 1 x Conservator
1 x Conservation Technician

Purpose of Post: To direct and manage the Preservation and Conservation Service of the *Archive* and to liase with other services of the *Archive*.

Principal Duties:

- 1 **Conservation**
 - 1.1 To formulate preservation and conservation objectives and standards. To propose the allocation of resources.
 - 1.2 To plan a comprehensive work programme and the establishment of priorities.
 - 1.3 To direct the Conservation staff to ensure the provision of:-
 - a practical conservation service for archival materials, using cost-effective, up-to-date and appropriate techniques
 - effective recording systems
 - the effective maintenance and monitoring of storage and display conditions
 - a comprehensive advisory service.
 - 1.4 To liase with Reprographics staff to ensure the safe handling of items and the provision of high quality surrogates.

- 1.5 To make recommendations for expenditure in the Conservation Section. To order materials and ensure the proper control of such materials.
- 1.6 To provide general advice and recommendations on new materials, products and equipment, and to advise on future purchasing needs.
- 1.7 To assess new conservation techniques and advise on their use.
- 1.8 To liaise with conservators in other institutions, and attend lectures and meetings to ensure professional development.

2 **Preservation Management**

- 2.1 To maintain and monitor storage and display conditions.
- 2.2 To maintain and update the Disaster Planning procedures.
- 2.3 To supervise the implementation of health and safety regulations in the Conservation, Reprographics and Building Management Sections of the *Archive*.
- 2.4 To give technical advice on environmental conditions, and make recommendations on storage and display conditions.
- 2.5 To prepare and oversee the substitution programme of the *Archive* under the direction of the Preservation Management Group.
- 2.6 To keep up to date with new developments in preservation management.

3 **Staff Management**

- 3.1 To recruit and appoint, within set guidelines, and with other managers, staff to the Conservation Section.
- 3.2 To train, develop and discipline, on a day to day basis, the staff within the Conservation Section.
- 3.3 To monitor the deployment of staff within the Conservation Section.

4 **Administration**

- 4.1 To draft tenders for equipment and services when necessary. To negotiate with suppliers.
- 4.2 To contribute to the grant applications programme of the *Archive*, by formulating grant projects, and seeing the applications through.

4.3 To contribute to the income generating targets of the *Archive*.

5 **Policy and Planning**

5.1 To contribute to the general management of the *Archive*, by taking part in the Management Team meetings.

5.2 To contribute to inter-divisional planning and co-operation.

5.3 To assist in committee report writing where relevant and attend committees when appropriate.

5.5 To advise the Head Archivist as appropriate.

6 **Essential Skills**

6.1 A recognised qualification in a conservation specialism and evidence of a good general education.

6.2 Strong managerial skills.

6.3 A positive capacity for team work.

6.4 Good written and verbal presentation skills.

6.5 A global perspective.

6.6 A methodical mind.

6.7 Demonstrated computer skills.

6.8 Knowledge of chemistry.

6.9 Interest in the preservation and conservation of various materials.

6.10 A commitment to opening access to archives; a capacity for lateral thinking and problem solving. An ability to compromise.

JOB DESCRIPTION - ASSISTANT CONSERVATOR

Designation: Assistant Conservator, Grade XX

Location: An Archive
Town
Country

Responsible To: Senior Conservator

Responsible For: None

Purpose of Post: To conserve the holdings of the *Archive*, maintain and improve storage and apply preservation policies as directed by the Preservation Management Group.

Principal Duties:

1. General

- 1.1 To administer, organise and carry out to targets, as part of an agreed programme, the conservation of archive and printed materials, incorporating the full range of techniques.
- 1.2 To assist in the monitoring of storage conditions in the strong rooms, both manually and via computer.
- 1.3 To undertake and monitor specific conservation projects including externally funded work, as directed by the Preservation Management Group.
- 1.4 To join in office wide preservation initiatives.
- 1.5 To carry out surveys of archive and printed materials, compiling and writing reports as required by the Senior Conservator.
- 1.7 To respond to requests for information on conservation and preservation issues from both staff and members of the public.
- 1.8 To undertake specific administrative roles within the conservation workshop as directed by the Preservation Management Group. These may include liaison with manufacturers of conservation equipment, packaging and supplies; quantifying microfilming orders; sampling material for various investigations.
- 1.9 To contribute to the preparation, and undertake the practical mounting, of original materials for exhibition to conservation standards.

- 1.10 To assist in the maintenance of stock records, and generate clear and accurate records of all work undertaken.
- 1.11 To organise and carry out quality control procedures for all materials.
- 1.12 To keep abreast of, by reading the appropriate literature, attending training courses, seminars and conferences, developments in the profession.
- 1.13 To keep personal statistics and records of all conservation and preservation activities, and take part in monitoring sessions including performance management meetings, to account for the achievements of the previous monitoring periods.
- 1.14 To assist in the work of the *Archive* as required.

2 Essential Skills and Qualifications

- 2.1 A recognised qualification in archive conservation. The post holder may be required to develop additional specialisms to deal with specific parts of the collections of the *Archive*.
- 2.2 Good communication and presentation skills.
- 2.3 Proven ability to function well in a team; to possess mediating skills, flexibility and a creative attitude. The ability to internalise common, corporate goals and work towards achieving them with other Conservation staff is paramount.
- 2.4 Ability to climb step ladders, lift heavy volumes and boxes, work in dusty environments and at other locations outside normal hours on occasion.
- 2.5 Computer literacy.

3 Desirable Skills

- 3.1 Understanding of reprographic processes.
- 3.2 Driving licence; willingness to drive.

JOB DESCRIPTION – CONSERVATION TECHNICIAN

Designation: Conservation Technician, Grade XXX

Location: An Archive
Town
Country

Responsible To: Senior Conservator

Purpose of Post: To undertake work in the conservation section and assist with preservation, microform preparation and reprographics programmes as directed by the Senior Conservator.

Principal Duties:

1 Conservation and Preservation

- 1.1 To undertake, as part of pre-set preservation programmes, the cleaning and packaging of archives, library materials and modern media.
- 1.2 To assist in the survey of archive and library holdings.
- 1.3 To assist in environmental monitoring programmes.
- 1.4 To undertake basic repairs and flattening projects, learning new techniques as appropriate.
- 1.5 To undertake mounting, encapsulation and the production of protective enclosures.
- 1.6 To assist in the work of assistant conservators, as directed by the Senior Conservator

2 Microform Preparation and Reprographics

- 2.1 To undertake the preparation of material for microfilming programmes including numbering documents and preparing the filming sequence.
- 2.2 To undertake the preparation of material for digital scanning.
- 2.3 To undertake estimate and other work relating to reprographics orders.
- 2.4 To understand reprographic processes for preservation.

3 **Essential Skills and Qualifications**

- 3.1 A recognised qualification in paper conservation *or* working towards a recognised qualification in paper conservation.
- 3.2 A good general education, clear legible handwriting.
- 3.3 Good manual dexterity, good colour vision and a methodical approach.
- 3.3 Ability to manage time well, to work to target and under pressure.
- 3.4 Good communication, report skills and experience in applying them.
- 3.5 Ability to work effectively as a member of a team with enthusiasm, good humour and flexibility.
- 3.6 Demonstrable interest in reprographic processes and equipment.
- 3.7 Keyboard skills or willingness to acquire them.
- 3.8 Ability to climb ladders; lift heavy volumes and boxes; work in dusty environments as required.
- 3.9 Ability to work under direction.

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