

Natural Sciences
Conservation Group

Newsletter

Issue 6

Sept. 1997



Also in this issue: *News & Events from the Conservation World,*
NSCG—The Way Forward, Phenoxetol—Friend or Foe.

Editorial

This will be my last newsletter. I am handing over (at last!) to Donna Hughes who is co-editing this issue. I offer many thanks to past and present contributors, may they continue so doing and I offer good fortune to Donna, hoping she will be able to iron out those little creases that sometimes occur around production time! In the meantime, as always, don't forget to send her any useful bits of information, comments, articles, criticisms, announcements and advertisements.

On a darker note, I hope that most of you read the horror article in the *Sunday Times*, 11 May by John Harlow and how he mentioned that the National Lottery and Arts Council are more likely to give grants to museums whose natural history collections/displays are politically correct, i.e. without 'stuffed animals' and that twitchy museum curators are bundling their taxidermy collections into the nearest skip/incinerator!! A Cornish Museum apparently burned an 18th century mounted monkey - how many of those are there in the UK/World?? What was that museum's mission statement about?

I totally agree that poor-quality taxidermy and neglected and deteriorated specimens will harm a museum's image but these specimens can usually be conserved. That the Natural History Museum apparently started this PC trend is incredible and yet it shrugs off the 'Theme Park' term which is still bandied about where many of their displays are concerned. Do they really know what visitors want to see, or do they only take notice of the 1% who vocalise that they find 'stuffed animals' creepy? I know for a fact that our award-winning and hands-on SEARCH unit in Gosport keeps records of visitor comments and that stuffed animals are top of the list in popularity, giving factual weight to Sue Tunnicliffe's letter (*Museums Journal*, April p.18). Perhaps this is because the young visitors are allowed to touch and gently stroke the exhibits. Perhaps the NHM and other so-called modernisers could learn a lesson here?

Simon Moore

Any articles for inclusion in the newsletter should now be sent to Donna at: Liverpool Museum, William Brown St, Liverpool, L3 8EN., preferably on disk (any format), plus hard copy or you can email articles to her on 100145.554@compuserve.com

Articles for the next newsletter needed by 05.12.97.

Apologies are given for the delay in the distribution of this newsletter. A change in production software and a couple of computer crashes are partly to blame. Hopefully, things can only get better!

View from the Chair

It seems like an age since our annual meeting held in Cardiff at the National Museums and Galleries of Wales. The two day meeting, held jointly with the Biology Curator's Group combined a wide range of talks and posters with plenty of opportunity for networking. Thanks to Julian Carter and his team for organising the event, to the museum for hosting us and providing an excellent evening reception and to members that supported us.

Many of the papers are written up in this edition of our newsletter, others will appear in the BCG newsletter, publishing separate postprints would unfortunately be too expensive.

The AGM saw several long standing members of the committee reaching the point of enforced retirement. Dick Hendry was on the original steering committee that set up the group and has retired as membership secretary, we will all miss his good humour and detailed reports. Bob Entwistle has served as secretary for nearly four years, partly as a co-optee and the last

two years as an elected officer. Bob has certainly helped me enormously as chair. Angus Gunn organised our very first AGM in Liverpool and has been a stalwart committee member for the last two years, Caroline Buttler has represented us at Conservation Forum meetings after wading through regular deluges of paperwork and has been the lone conservator on committee for a while. Thanks to all the retiring members and welcome to the new committee members who joined us for our first meeting in July. We were able to view the aftermath of the Birmingham Museum & Art Gallery flood during the meeting, reported in the "Flood" section of this newsletter.

As a result of a lively debate at the AGM, one of your committee's first tasks will be looking into options for closer links/ one large organisation representing all areas of the natural sciences. Co-optees and cross overs between our committee and both BCG and GCG committees should make communication fairly straightforward.

Kate Andrew

Conservation Focus News and Events from the Conservation World

More Trouble at Glasgow

The following piece was included in the Glasgow Herald on the 11th March.

Against Museum Proposal

The Conservation Forum, an affiliation of 11 professional conservation organisations, is the authoritative single voice of its 2,000 members working in the public and private sectors throughout the United Kingdom and the Republic of Ireland.

The Forum, while aware of pressures faced by Glasgow City Council in making cuts to all its services, strongly urges the council to reconsider its approval of Glasgow Museums' proposal drastically to reduce the specialist services of its conservation department.

Two member organisations of the forum, the Scottish Society for Conservation and Restoration, and the United Kingdom Institute for Conservation, have previously expressed their concerns regarding Glasgow Museum's proposals and their views are unanimously endorsed by all members of the forum.

There is widespread disbelief that the principal multi-disciplinary centre of conservation excellence in framing and in-house care in Scotland should be disbanded and replaced with a comprehensive dependence on the private sector.

The United Kingdom and Republic of Ireland are fortunate in the strengths and quality of private sector provision but it is unarguable that continuity of care and maximum reduction in risk to a collection are best achieved in-house.

The forum is also seriously concerned that the future care of a renowned collection hangs on the hurried implementation of proposals which appear to be an insufficiently researched and convenient short-term solution, but one with long-term deleterious consequences.

Jane Hutchison, Chair, Scottish Society for Conservation and Restoration. Chair, the Conservation Forum; Robert White, Chair, United Kingdom Institute for Conservation; Derek Priest, Chair, Institute for Paper Conservation; Jerry Weber, Chair, Society of Archivists, Preservation and Conservation Group; Michael Barrington, Chair, British Antique Furniture Restorers' Association; Paul Brown, Natural Sciences Conservation Group; Dr Sebastian Strobl, Chair, British Society of Master Glass Painters Conservation Committee; Maighread McParland, Irish Professional Conservators' and Restorers' Association, Institute for Conservation of Historic and Artistic Works of Ireland; Chris Woods, Chair, Photographic Materials Conservation Group; Roger Phippen, Chair, Association of British Picture Restorers.

*16 Queen Anne's Gate,
London*

Accreditation scheme

Review of the Museum Training Institute Professional Accreditation for Conservators day seminar held at the London Voluntary Sector Resource Centre, Holloway Road, London on Tuesday, 22 April 1997.

At a meeting organised and commissioned by the MTI, the subject of formalising qualifications for conservators across the board of disciplines, was discussed. Although nothing presently exists for Natural Sciences Conservators, UKIC have assembled a structured plan along the lines of student, associate and fellowship for whatever discipline.

Alan Leigh of Parameter Research outlined the aims and objectives of the MTI project "to enable conservators to identify and move toward agreement on the need for and a means of accreditation, by using the assessment opportunities presented by S/NVQs". Much work has already been done studying accreditation schemes in other professions, consulting with conservation bodies via the Conservation Forum and other professional bodies and by collation of questionnaire responses. Benefits of accreditation were listed as identifying the profession, the body of knowledge, the common values and ethics, commitment of individuals and recognition of the profession by others. Further reasons listed were to ensure competence of members, application of the code of ethics, to provide structured guidance, discipline and protect

interests of members, to inform actual and prospective clients of the members' worth and to maintain Continued Professional Development.

Chris Newbury, Director of MTI, talked of the need to identify and commission NVQ assessment centres and to identify university courses (quality of lecturers and facilities) for approval as a part of the route to accreditation. He drew attention to an MTI document on guide-lines for education and training course approval.

Val King of the Museums & Galleries Commission stepped in at the last minute for Carole Milner to discuss trends in professionalism. She told us of the rapidly expanding number of accreditation schemes being set up and how the UK is ahead of Europe in this respect. How do we recognise a competent professional and how do we judge competence anyway? Accreditation should be dynamic and accessible.

Hilary McGowan of the Museums Association described the new pathways to the AMA, formerly via the Museums Association Diploma, now via routes A, B and C which are varying combinations of relevant degrees, NVQs and years of experience working within museums. Continued Professional Development and Mentoring for candidates was also discussed. A conservator can be an AMA but an AMA *per se* cannot be an accredited conservator.

Mike Corfield of English Heritage

gave the view of accreditation from a commissioning body and stressed the need for a standardised measure of competence and for a register of the accredited.

After lunch, the delegates were split into four groups for informal discussion and a final plenary session identified the consensus of opinions. Conclusions drawn included that a national unitary accreditation scheme would be a good thing with the need to recognise the peculiar requirements of different sub-groups. This to be policed by the Conservation Forum Federal body. We and not the employers should be the ones to set the standards. The NSCG should be involved and be able to dictate what and how much we want to satisfy our accreditation. There could also be a lower level accreditation (= NVQ level 3) for technicians.

*Paul Brown
Natural History Museum*

Our next newsletter will feature 'Pests' as an Agent of Deterioration in our pull out guide to the risks facing museum collections. Meanwhile two events are being held in the near future, at Liverpool Museum and The Natural History Museum.

PEST CONTROL IN COLLECTIONS: The Way Forward?

2nd December 1997

The Natural History Museum

A one day meeting covering: pest problems at the NHM; their dry spider collection; *Stegobium* at Kew; pesticide residues in herbarium specimens; low temperature treatments; nitrogen and carbon dioxide; and the Thermolignum process. Registration fee: £5

For more information contact: Phil Ackery on 0171 938 9346, Fax: 0171 938 8937, e.mail: pra@nhm.ac.uk

INSECT PEST CONTROL IN COLLECTIONS

4-5th December 1997

Liverpool Museum

This course will show how to identify, evaluate and deal with insect pest problems in collections. The emphasis will be on the need to develop well planned and defined control programmes stressing prevention, the use of non-chemical methods of control and the safe, effective and legal use of pesticides.

Tutors: David Pinniger, Consultant Entomologist; Tracey Seddon, Senior Organics Conservator, NMGM; Steve Judd, Curator of Entomology, NMGM.

The course fee will be £95. Places will be limited so please apply asap. For more details and/or enrolment form contact: Tracey Seddon (address on last page) or Jim Black Tel: (0171) 387 9651, Fax: (0171) 387 9651, email: j.black@ucl.ac.uk

"What's In The Box"

**Papers presented at the Biology Curators Group and
the Natural Science Conservation Group joint
conference**

16-17 April 1997, Cardiff

A Cost/Benefit Approach to Collection Care

Museums and other collecting organisations inhabit a changing socio-economic environment: with rising costs, a sharper competitive environment and a squeeze on funding. A greater diversity of individuals is seeking to use collections in a variety of ways. Increased access to collections can sometimes be promoted as a way of justifying resources to support collection care. So questions of what to do with a collection, which items to preserve, how much and what to do to them, and who is involved in the decision, are not just simple technical matters relating solely to preservation.

- How do we prepare to respond effectively to different demands that the changing priorities of an institution may make on a collection, so that an acceptable balance is maintained between access and care?
- How do we go about ensuring that all the issues which contribute to a balanced decision are being taken on board?

Collection care needs are more likely to be understood and resolved if they are debated and discussed within the context of the institution's aims and objectives. This broad setting brings together different people with different ideas for collection use and introduces more complex relationships than a simple one-to-one contact between the curator or conservator and the collection.

Given the understandable pre-occupation of museums with issues of survival such as threatened or real funding cuts, management may ignore collection care issues unless they are perceived as integral to the institution's overall plan. In fact, it is becoming more difficult for museums to commit money to anything that is not a core activity, even when it falls within its plan; this is particularly so for 'behind-the-scenes' work.

So it is vital that collection care issues are presented as an unalienable part of this plan. The priorities of collection care - no matter how urgent or important - cannot stand apart from the overall priorities of the museum; if they do, they are unlikely to attract support and may be sidelined indefinitely.

So how can resources for collection care be argued for, on an equal basis and at the same time that collection access is being planned? Prioritising resources involves a wide range of internal and external interests. Care must be taken not to tilt the balance of the argument either too much in favour of access so that collections are exposed to unacceptable risk of damage, or too much in favour of collection care to the exclusion of collection use. The skill is to know when the right balance has been struck.

What arguments are usually employed to convince others of the need for action? We generally use technical arguments to persuade others of our point-of-view; we argue for more equipment, additional space, improved training, more staff etc., maybe ignoring the financial straits in which the institution might be in; we intone dire warnings of deterioration caused by a poor environment; we write condition reports noting the extent of damage and we send them to whoever we think ought to read them. But is this approach convincing? How easy is it to digest and use a detailed technical report? Will it enable the problem to be prioritised? Will whoever receives the report have time to read it?

In order to overcome some of these problems a cost/benefit appraisal method can be used to provide shape and form to our arguments. This is necessary because others must be convinced of the need for investment; others are interested in collection use; others are making decisions on the

allocation of resources; others may end up making collection care decisions and outside pressures may force our hand when we are unprepared.

A cost-benefit appraisal exercise consists of 2 parts: a financial appraisal of capital and revenue costs and a non-quantified assessment of benefits. The financial appraisal involves obtaining estimates for all the options being considered. For example, if options for housing a collection are being considered, these might include cost of design work, surveys, building works, fitting out, consultancy fees, running and maintenance costs. But if only the costs are compared, it is almost inevitable that the option with the lowest price estimate will be selected. After all, why should we spend more than necessary?

There may be times when the benefits could justify a higher expenditure. But how can we tell the difference between justifiable expenditure and unnecessary waste? Some form of comparable measure of the benefits of each option, or options appraisal is needed.

This part of the appraisal enables potential benefits to be measured by assessing the extent to which the options fulfil the aims and objectives of the institution's plan. The emphasis given by management to individual aims and objectives may change from year to year and this will also affect funding priorities. So the relevant importance of the aims and objectives must be clarified before an options appraisal is carried out.

The different options will have a different scale of benefits for a collection and its host institution. These benefits can be numerically scored. This is the outcome of the discussion on how well each option fulfils the individual aims and objectives of the plan. The exercise of comparing all the options with the museum's plan should involve a multi-disciplinary team including curators, conservators, scientists, researchers, education officers, events managers, marketing personnel and building managers.

By comparing the estimated costs and benefits of each option, the option which appears to deliver the greatest benefit at the lowest cost emerges as the preferred solution. If a costly option emerges as the one likely to deliver the greatest benefit, its acceptance can be argued more convincingly, particularly if sensitivity analysis of the preferred solution has been carried out. This analysis will test the robustness of the proposal compared to other discarded options. The test consists of asking 'what if?' questions, to see whether any change of circumstances might produce a change of the preferred option.

Conclusion

A cost/benefit appraisal method has a number of advantages:

- It can convince others of the need for appropriate levels of investment.
- It involves others who may be more involved with collection use than collection care.

- It involves those making decisions on how resources are allocated.
- It involves others who may not deal with collections on a day to day basis, but whose decisions may affect the survival of a collection.

*May Cassar
Museums & Galleries Commission*

Heating and Humidity Control for Conservation

At Colebrooke Consulting Ltd I have been helping conservators and conservation-minded organisations to set up and improve preventive conservation measures for the last fifteen years. I am a technical adviser to the National Trust's Conservation Service, and am involved as a Conservation Engineer with museums, galleries, local authority and private historic buildings, auction houses, and others with environmental control problems.

We need to control the environment in stores and display areas, to maintain objects in an unstressed condition and enable long life for them. We cannot get away with doing nothing, but we do not have to do much to maintain benign conditions. If the RH is allowed to remain higher than about 70-75% there is a danger of mould growth. If it is brought down much below 50% there can be permanent

damage by shrinkage beyond the limit of elastic recovery. Most materials in mixed collections (of furniture, paintings, textiles, natural history etc) are altered physically by changes in RH, so that RH cycles stress and age them.

Where conservation is the governing criterion and heating for people can be avoided, then room temperatures can be allowed to fluctuate. Unless we allow temperatures to fall, sometimes to as low as 10°C in cold weather, we shall need to humidify to bring the RH back up to the safe range.

It is possible to control both temperature and RH at the same time - using air conditioning. That option has very high installation costs, high maintenance and running costs, and is often inappropriate in historic buildings because of the disruption involved to the building fabric. Fortunately this solution is rarely necessary. Over the last 10 years the National Trust has pioneered the technique of controlling RH using heating driven by humidity sensors, which we have called Conservation Heating. Since the heating needed to control RH for conservation is very much less than that needed for human comfort, it is often possible to achieve good environmental control using existing heating arrangements - with minor hardware modifications and a new control system.

The alternative to heating is to dry the air with a dehumidifier. This can only work if the amount of incoming air to

be dried is minimised by draught-sealing. Its application has been particularly successful in conservation stores.

Our approach to the specification and design of conservation environmental control systems is to achieve acceptable conditions as gently and unobtrusively as possible, using technology which is understandable and whose sophistication has to be justified in each case. We have commissioned and championed the design and production of appropriate equipment where it was not available.

Good conditions can often be maintained with equipment off the shelf, plugged in or fitted by your electrician. Even where allowances must be made for people, tolerable specifications can be achieved by compromise. Provided that RH values down to say 45 or 40% can be accepted on occasion, and that people can put up with temperatures down to say 15°C in cold weather in rooms with sensitive contents, Conservation Heating can provide an answer - and air conditioning and humidification can still be avoided.

If I can help you with an environmental control problem, please call 01892 750307, fax 01892 750222, or write to Colebrooke Consulting Ltd, Diamonds, Bells Yew Green TN3 9AX.

*Bob Hayes
Colebrooke Consultancy Ltd*

CONSTRAIN: An insecticide developed for museum use.

Most insecticides have been developed for agricultural, commercial or industrial use. That is, they are designed to be powerful and efficient insect killers on materials that have specific functions (such as foodstuffs) and usually short-term life. Although all insecticides are registered under the Pesticides Regulations Act 1986 and have to conform to standards of safety, the formulations incorporating the insecticide are developed to satisfy the usual commercial demands. As a result, many of the products currently on the market are not suitable for treating museum collections, where long-term safety to human health and the well being of the object is essential.

CONSTRAIN was developed to produce an insecticide of proven efficacy, that was environmentally sound and also satisfied current conservation criteria.

The product

The insecticide permethrin is sparingly soluble in water and so other formulations use water dispersible powders, oil/water emulsions or organic solvents such as white spirit. CONSTRAIN is a micro-emulsion, that is, a clean thermodynamically stable dispersion of permethrin in a neutral surfactant which does not have an oily or high solvent content. It has rapid penetration into a variety of substrates including timber and being

water-clear does not stain or leave a visible residue. On exposed surfaces it is totally biodegradable but when absorbed into materials will give extended protection.

CONSTRAIN was tested for its insecticidal efficacy by the Central Science Laboratory, Slough, and found to perform as a residual insecticide, as well as or better than comparative products. It is cleared for all museum pests, including wood borers, textile pests, silverfish, book lice etc., and as it is cleared for amateur use non-professionals can happily use it - following the instructions on the label.

In order to test its conservation worthiness, CONSTRAIN was tested by the Oddy test for any enhanced attack of metals (steel, lead, copper, tin, silver) and showed no effect. It was also applied to a wide range of textiles variously dyed to check for any staining or colour change, and also on a range of papers and cards. Again, there was no visible deleterious change.

CONSTRAIN was developed to provide a safe effective insecticide that can be used directly or indirectly on a wide range of museum materials and collections. Although it would be naive to expect it to be suitable in all circumstances where a residual insecticide is needed, it does meet most conservation criteria and is a useful addition to the armoury.

CONSTRAIN is available in 500ml trigger packs at £5.00 (+VAT) inc. p+p from Historyonics, 17 Talbot Street,

Cardiff, CF1 9BL [Tel. 01222-398943.
Fax. 01222-235193]

R.E. Child
National Museums & Galleries of Wales

What Use are Collection Surveys?

Most people working in museums particularly those responsible for collections management are familiar with the concept of collection condition surveys. The use of statistical methods to sample survey collections may have made the process manageable but it is still an enormous commitment. The purpose of the paper is to examine if these surveys are being used in the most effective and efficient way.

The real starting point for the popularity of condition surveys was 1988 when the National Audit Office published "*Management of the collections of the English National Museums & Galleries*".

In 1991 UKIC organised a conference on storage at which Suzanne Keene presented a very influential paper (well worth reading) on Audits of Care. This described a method of carrying out a sample survey of collection condition using a simple questionnaire and scoring system. In order to be clear about what was involved in the survey and to differentiate the technique from condition reports the methodology was defined - "*collection condition surveys are surveys undertaken in order to*

assess, or audit the condition of collections as a whole, rather than to identify objects requiring action" (Keene 1991)

Unfortunately the definition has not stuck precisely and this has led to a plethora of surveys being carried out using the Keene method but with varying aims. Any review of papers on the subject will confirm this diversity; it is easy to draw a list of nearly 20 different reported motivations for surveying. (Taylor, pers. comm) This suggests that the condition survey method is being applied to gather information on a much wider remit than it was originally designed for.

In researching the presentation I read 12 published articles on surveying. I found that they fell naturally into three groups. The first could be described as classical Keene type surveys although often these were individually amended by the institution. The second type I shall describe as audit of the state of conservation and collection condition and were normally conducted over several institutions. The third type I describe as simple snapshots. I chose to look at them all together as the survey methodologies overlap.

Looking at each in turn I looked at the stated aims, the results quoted and finally whether I thought it might have been possible to achieve the results in a simpler way.

The first type (Keene model) listed aims including:

- identify storage improvements
- identify environmental improvements

- monitor deterioration
- plan future research
- evaluate success of past treatments
- "to do a survey"

The second group, conservation audits listed aims including;

- framework for strategy for improvement
- quantify conservation needs
- identify priorities set work programme
- seek resources
- identify storage problems
- identify environmental improvements
- measure damage to collections
- predict possible damage
- status of collections

The third type, simple survey listed aims including;

- identify cause of damage
- identify programme for conservation
- identify environmental improvement
- priorities
- identify storage improvement priorities

Clearly the aims overlap between survey types. Furthermore all the published work reported similar results, that the surveys led to clearer defined priorities or a shift of attention towards collection condition inside the surveying institution. The more significant difference between survey methods was the amount of time and money that was taken up to achieve results. Not every publication contains details of how long the data took to gather and it seems that this factor was not always being carefully analysed although comparisons can be drawn. For example in Johnsen (1994), a simple survey shows the results of surveying 3050 artefacts on a single

sheet whereas some of the Keene based surveys asked at least 12 questions per artefact with further written comments. Yet both types are reported as achieving similar results. Although some of this difference may be justified in terms of different types of artefact is the method used being questioned enough?

In two of the published reports the authors raised the issue of how much data was being gathered, both had started with a "standard" model but found that they did not get the information that they wanted for the purposes of their study.

"The Survey amassed a large amount of data, most of which has been ignored subsequently as it is considered to be of no relevance either to the aims of the survey or in the context of the collection". (Dollery 1994)

"At first it was intended that the survey should take the form of a comparatively straight forward examination....to get... priorities for conservation. The first survey had three questions....this format was used once and found to be far too basic and inconvenient to use" (Walker 1987)

In both these cases the method was questioned in the light of the defined aims and indeed Keene recommends trial surveys at the outset which should help identify just these sorts of issues. What is more alarming is when there seems to be less evidence of critical thinking about what data is being gathered and why. One article describes circumstances in which a

collection was decaying, then describes the survey before concluding with recommendations to resolve all the problems that they had outlined a years work earlier.

Conclusions

Collection surveys are a popular tool and have clearly helped raise the profile of conservation and collections care. They are also often an enormous commitment in terms of staff time. If you plan to conduct a survey, identify and define the aims tightly. Use these aims to question your chosen survey method and check its appropriateness. Ask yourself questions about your survey

Is it to find out about your collection or to get funds. Be honest, why gather in depth details of damage, disfigurement, etc. etc. If the whole thing will be reduced to one side of text and two pie charts.

Ask also who the survey is for. Is it for the surveyor or the surveyed? This is especially important if the surveyor or the instigator of the survey is from another organisation. You may contribute a lot of resources to a survey so have you contributed to the definition of its aims?

Ask will the benefits be direct, will you get a check-list of things to do, or indirect, a politician or senior manager will see things differently and change policy as a result.

Exclude all irrelevant questions and avoid the urge to say "while we are surveying we could also ask this other

question it may come in handy".

Look at how many questions are being asked against how many will be analysed. Don't forget that you should allow a lot of time for this element of the project.

Finally, when you look back on the exercise identify the results of the survey and question if the results were achieved in the most effective way.

Above all don't aim to do a collection survey just because everyone else has.

References

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- Walker, K. & Bacon, L. (1987)** A Condition Survey of the Horniman: A Progress Report *Recent Advances in the Conservation and Analysis of Artefacts*, Summer Schools Press, pp.337-340.

*Jane Henderson
Conservation Manager
The Council of Museums in Wales*

Access and the Consequences of Damage

Introduction

This paper presents a brief outline of part of a study being undertaken for the degree of MPhil in Conservation with the Royal College of Art and the Victoria & Albert Museum, London

Conservation may be seen as the management of damage and all conservators will recognise that the requirement for access to collections lies at the heart of their work. The *raison d'être* of museum collections is to provide information and in palaeontology collections this demands access at many levels, from molecules to mammoths, and commonly with a high degree of intervention. Whether or not a balance is achieved between the level of accessibility to the collections and the information they hold, and their preservation might be assessed by considering the damage which results from access and its consequences.

Risks and Damage

The risk assessment technique developed by Waller (Waller, 1994, 1995), provides a quantitative analysis of risks through the calculation of Risk Magnitude (MR) as the product of Probability x Fraction Susceptible to the Risk x Loss in Value. The resulting figures mean little on their own and the value of Waller's technique relies on the comparisons of Risk Magnitudes. However, much depends on the parameters chosen and

how the value of collections is viewed. The consequences of the identified risk tend to be defined as a far from tangible loss in value and are presumed to be negative and synonymous with damage. This may not always be the case. The three key events in the damage process are the Risk, the Failure Event, and the Consequences. Damage is not a measure of loss in value although loss in value may be one of the consequences of damage. In fossils, damage is the normal state and as Ashley-Smith (Ashley-Smith, 1995) observed, perceptions of damage in an object vary from one observer to another. Equally some actions or situations, perceived by some to involve risks, may have a beneficial outcome and the consequences are not always negative.

Consequences

"Accidents" are very specific and acute failure events which result in damage to people or objects. Working in occupational health studies of accidents in the furniture industry of Finland, Aaltonen et al (Aaltonen et al, 1996,) have produced a model based on two premises which are readily transferable to the field of conservation and its management:

Information about the consequences will motivate the prevention of accidents.

and

The information on the controllable accident costs will affect the motivation of the top management to invest in accident prevention.

The Ten Agents of Deterioration

An issue by issue guide to the risks facing museum collections



2. Flood

flood became apparent a dike was constructed around the Gallery and it was decided to evacuate the basement. A round-the-clock work plan was drawn up. The plan did not take into account the fact that in the event of the basement flooding the goods lift would not operate; it was realised therefore, that the plan would have to be enacted well in advance of flooding, and was begun immediately. Upstairs galleries, the staff lounge, the board room, the lecture hall and the meeting room were used for temporary relocation of collections. Much of the Inuit sculpture and decorative art collection was not moved due to fragility. The operation was completed in less than a week and monitoring of the basement by Engineering and Security staff was ongoing. Inevitably there would be disruptions to the public

programmes and space rentals but the Gallery did not have to close completely and the operation resulted in a sense of collective 'ownership' of the collection with staff from diverse parts of the Gallery, for once, working together.

In the run up to, and throughout, this unsettling period the Manitoba Heritage Conservation Service (MHCS) has been preparing and offering help and advice to museums in the area., but fortunately, there have so far been no reports of flood damage. The MHCS is now developing a workshop for its clients on Disaster Preparedness, in readiness for the next challenge.

*Tracey Seddon
National Museums & Galleries
on Merseyside*

The consequences are depicted in tree diagrams, Accident Consequence Trees, designed to be inclusive and comprehensive and extending a consideration of the accident phenomena and cost beyond the narrow view of personal injury, damage to property and loss in productivity (Fig. 1).

Not all the consequences will be relevant in all cases. Applied to conservation, this model takes us beyond the notion of damage to a specimen as the final and only outcome of the risk and failure event and suggests a more complete view of the consequences of accidents or damage. It also offers another view of losses and gains in value.

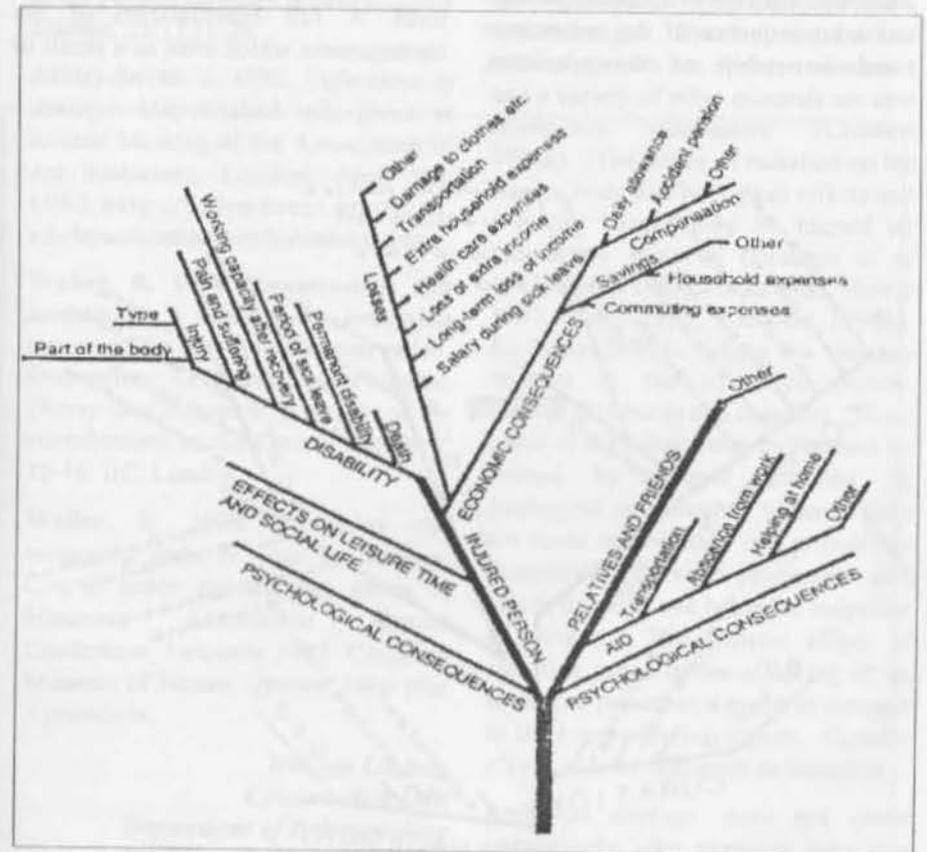


Figure 1. An example of the Accident Consequence Tree for an individual (Aaltonen *et al.* 1996)

Figure 2 depicts a first attempt at constructing a general consequence tree for damage to a museum specimen or collection. Some of the branches indicate losses but others, such as careers, may be gains or losses depending on their relationship to the damage. Some, such as work hours and funds can be measured in financial terms while others such as the effect on international relations, arising perhaps as a consequence of the provenance and ownership of the specimen,

cannot. Anguish, although depicted here as an expression of conservation only would, hopefully, be a more universal consequence of damage.

Conclusions

Damage arises as a consequence of access but it is not the only consequence. Assessments of risks help us to manage access and to prevent damage, but do not consider consequences at a useful level. A full consideration of the consequences which arise as a result of

a failure event add to an appreciation of the risks and the management of the access from which they result.

References:

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Risk Assessment of Radiation and Radon Hazards Associated with the Mineral Collections of the National Museums and Galleries of Wales

Radioactive mineral specimens present twofold hazards to curators: radiation and radon gas. Uranium and thorium mineral species are always radioactive and a variety of other minerals are also commonly radioactive (Lambert 1994a). The action of radiation on the human body has biological effects and a health hazard may be caused by radioactive minerals (Brunton *et al* 1985, Dixon 1983, Hicks 1983, Howie 1987, King 1986, Lambert 1994b). Radiation effects, where the damage appears in the irradiated person, include skin burns and cataracts. These occur at high dose rates and cannot be caused by normal handling of geological specimens. Other effects are those where there is a probability relationship between exposure and effect, the main one being the induction of cancer. The genetic effect of radiation arises in the offspring of an irradiated person as a result of damage to their reproductive organs. Genetic effects may be dominant or recessive.

Radiation damage does not show immediately, after exposure there is a latent period before damage becomes evident, radiogenic cancer may not show for 10 to 20 years after the irradiation which is responsible for it.

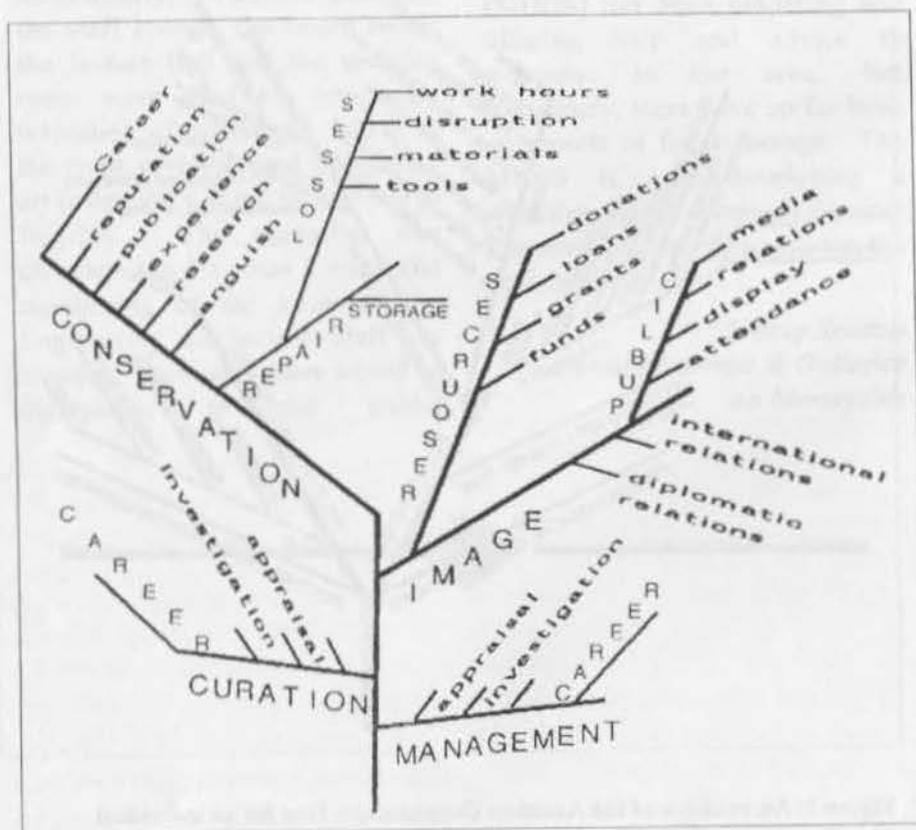


Figure 2. Consequences for the Institution

There is moreover no lower limit of safety for radiation, even low levels carry some risk (NRPB 1988). The risk of lasting damage to the human body depends on which parts are irradiated, those organs most at risk are sites where rapid cell replacement is occurring, e.g. adult reproductive organs are radiosensitive. Children, as they are growing up, undergo rapid cell replacement and should not be exposed to any unnecessary radiation.

It is important to keep the risk from radiation in perspective, we are all exposed to background radiation from the environment. The risk from non-background radiation can be assessed from measurements of exposure to radiation, the dose equivalent, which is a guide to the likely biological effect (Martin and Harbison 1986). The risk to geological curators exposed to radioactive collections can be quantified for comparison to other risks in life by multiplying the measured exposure to radiation by a risk factor, for the working population the risk factor for the induction of a fatal cancer is 400×10^{-4} per Sievert (ICRP 1990). This factor means that for every million people receiving 1 mSv an extra 40 cancers would be expected to occur.

For example if a curator is exposed for a known period of time to radioactive specimens the risk can be calculated from measurements of the dose rate at the site of radiation exposure.

The calculation is as follows:

$$\text{Dose} = \text{Dose rate (measured with meter)} \times \text{Exposure time}$$

$$\text{Risk} = \text{Dose (in sieverts)} \times \text{Risk factor} \quad (400 \times 10^{-4})$$

Radioactive minerals should never be prepared, sawn, lapped or polished without extensive precautions being taken to prevent serious and dangerous internal contamination occurring. Exposure to radiation should be as low as reasonably achievable (ALARA). The mineral collection at the National Museum and Gallery Cardiff contains approximately 750 radioactive minerals which have been isolated in a separate radioactive mineral store. It is a controlled radiation area and has continuous extraction to purge radon (Lambert 1994a).

Radon poses a risk quite separate to that of direct radiation but the risk can be quantified in a similar way from measurements of the radon concentration and estimates of exposure time.

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Further information about radiological protection can also be found on the NRPB web site at <http://www.nrp.org.uk>

*Mike Lambert
National Museum & Galleries of Wales*

N.S.C.G. - The Future.....

The Way Forward - A personal view (1)

Suggestions were put forward at the Cardiff AGM on how various groups relating to natural science conservation/curation might establish closer links with each other, possibly to form one large organisation. This idea is still at the melting point stage - there are many pros and cons but a larger group, if it could exist, would give us greater political clout, one subscription, one journal plus newsletter, one large 3-day conference (more appealing to overseas members) and considerably more exchange of valuable information.

When making the point made about merging to form an SPNHC style Curator-Conservator Group to provide a stronger political pressure group, I failed to stress at the AGM that we already have this with membership within the Conservation Forum as illustrated by a Conservation Forum letter to Julian Spalding on the cuts in Conservation at Glasgow. The Museums & Galleries Commission Conservation Unit "Conservation Forum" consists of representatives from 11 professional Conservation organisations (representing about 2,000 members) who meet to discuss common issues and help to formulate policy on the development of the profession. A major part of the Forum's work is focused on a common approach to professional accreditation

for conservators with much study of other professional groups' efforts in this field. Most of the organisations are at different stages of working out what diplomas, degrees, NVQs and years of experience and what combination of these they would require for their full accreditation. The ideal would be a national unitary accreditation scheme with differences for each specialism as agreed by the Forum.

One reason why the NSCG left UKIC was that they wished to follow professional accreditation and thus raise the subscription level. I stressed the point at our AGM that if Natural Science Conservators do not follow this road to full harmonised accreditation then we may not be recognised as professional conservators at all by other conservators or employers or the greater museum community and beyond. We know that many of us have had a different career structure to other conservators and are hybrid curators and researchers but many others out in the "real world" may not understand this "special case" scenario. My lonely voice of dissent on the Conservation Forum worries me especially as I have no recognised "bit of paper" saying that I am a conservator myself. All on the Forum are agreed that accreditation is a necessity that will have to come and soon.

My personal view on an SPNHC type amalgam is that the UK is not the USA and that we would be swamped by the greater curatorial membership and no longer recognised by the Conservation profession or by the Museum Community. William Lindsay's comment on waiting for the UKIC money to be sorted seems common sense. As with the Conservation Forum, with due consideration, we can be part of a three-way pressure group without having to merge! We can be this with other groups such as UKIC, Care of Collections Forum and the Museums Association itself.

Do we take charge of our own parameters for accreditation and have a series of "individual peculiarities" attached to our system which can be agreed by Conservation Forum? We have Chris Collins' new MPhil and Certificate courses at Cambridge which could be approved courses to go toward accreditation. Or if individuals wish accreditation do they seek it from other sources such as UKIC.

Do we need accreditation for our membership via Conservation Forum?

Do we seek political clout via Conservation Forum and nurture closer ties with other organisations within Museology in general and not just within Natural Sciences?

For those who do not want accreditation, we could have a student/non accredited and lower fee.

Paul A. Brown
Natural History Museum

The Way Forward - A personal view (2)

Following the discussions at the Cardiff AGM I have drawn up a plan outlining a possible restructuring if the NSCG was to merge or become a sub group of a combined organisation to include BCG, GCG & NSCG. An organising committee consisting of a Conservation Forum rep and reps from each group could meet twice a year. Sub-committees would include: a) Biology curatorial (BCG); b) Geology curatorial (GCG, SPCC); c) Conservation (NSCG, ?ICOM-CC); Training; Editorial & Publication; Membership & Publicity; Conference; Taxidermy (Guild of Taxidermists*).

*[I would suggest not including the Guild of taxidermists since most of their members are individual freelance and professional taxidermists and are not museum connected.]

The first three of these sub-committees each have their own relevant subject groupings:

- 1 taxidermy/freeze-drying (a,c)
- 2 preventive conservation and infestation work (a,b,c)
- 3 geology treatments (b,c)
- 4 fluid preservation - biology (a,c)
- 5 botanical - herbarium (a,c)
- 6 IT and documentation (a,b,c)

We are already establishing closer links with other similar organisations and it could be, for the time at least, that we may proceed no further - the mixing of curatorial and conservator groups may not be ideal in the long term. I would strongly suggest, however, that a united

annual conference would be a good idea and should encourage overseas members.

An annual conference would take into account zoology, botany and geology comprising: one day of talks for each discipline group, plus one on general matters - preventive, risks, buildings etc. This would total three days [meaning that those who only have enough funding/time to attend one day can do so without having waste time on other unwanted disciplines.]

Additional 2 day workshop involving technical specialist talks and practical demonstrations and/or half day practical courses in either zoology, botany, geology by rotation each year.

The conference will also give a chance for all the various sub-committees to get together while visitors go on a local Jolly and for conference organisers to have a breather.

Certificates for workshop attendees could be awarded, to add to their CVs.

Reasons for possible merger.

Presently we are in separate groups with little or no influence on policy makers and funding sources. I feel that as one group, something like SPNHC, we will have a much better chance of making our stronger voice heard where it matters.

Membership is confusing. Having to pay three different subscriptions, having three separate AGM'S, conferences and, for some of us, having to attend all those separate committee

meetings up and down the country is just so wasteful of time, money and logistics (like the dating of AGMs not to clash with other groups). Intending members from abroad would feel much happier about joining one organisation than having to decide which of the three (or more) suits them best and that one large annual conference would attract many more members from outside the UK. Perhaps a Joint membership of NSCG, BCG, GCG each sharing out the monies, for overseas members might make this easier?

One reason there is so little material for the newsletter, I have been told, is that authors are not interested in submitting to a newsletter that has a small circulation. At least the membership and newsletter circulation continues to augment.

In the meantime a sub-committee has been set up to investigate ways forward. I would urge members to think about the above proposals and send their views and ideas to Kirsten (chair) at the Horniman Museum.

This paper is just a suggested starter for drawing our organisations closer together and members' views are required. I hope that as natural science conservation and the desire for accreditation become stronger in the UK this proposed organisation will continue to take the steps to further such causes.

*Simon Moore
aka Steve in the MA Journal!*

A New Working Party

At the NSCG committee meeting on 24 July, a new working party was set up to consider the feasibility and desirability, or otherwise, of developing formal links with related organisations, namely BCG and GCG. Its point of reference will be the aims of the NSCG and whether or not we would further or fog those aims by a merger with another group.

The NSCG was initially set up as a Section of UKIC. Following restructuring of the latter and the prospect of Section Members having to become full UKIC members (with a resultant prohibitive increase in fees) the Section/Group decided to opt out of UKIC and go it alone. Some concern has since been expressed about

the Group needing a stronger voice, more support and greater opportunity for shared meetings and publications with related groups.

We also need to consider whether or not to apply for charitable status.

Please send your ideas, suggestions, comments etc to any of the Working Party members, by phone, fax, surface mail, email, whatever, BEFORE 10 OCTOBER. We would like to present a comprehensive set of options in the next Newsletter, with a view to then holding a membership ballot.

The Working Party consists of the following committee members, Nick Gordon, Simon Moore, Tracey Seddon, Wendy Simkiss and Kirsten Walker (addresses on page 28).



Phenoxetol, friend or foe? (A personal history)

Those who are old enough to recall phenoxetol coming into use as an experimental preservative in museum collections during the late 60s will recall a sense of relief not having to put up with the smell of formalin or the flammability of alcohol but tinged with a sense of doubt about the longevity and effect of this preservative panacea. It also had its down side - diluting with water (to 1%) produced a white colloid that was no good to man nor beast, leading to many calls asking why and how. Dilution with hot water was the answer and produced a faintly sweet smelling fluid that seemed to work for well-fixed tissue and was so non-hazardous you could have drunk it!

In 1976, Steedman wrote in the UNESCO publication (*Monograph on oceanographic methodology 4*) about fixing and preserving zooplankton using phenoxetol combined with propylene glycol (PG). The PG acted as an additional humectant, should preserved tissues dry out through custodial neglect or accident; it additionally provided solvency for the phenoxetol so that hot water was no longer necessary provided that the two were mixed as a concentrate beforehand. The fixative appeared to be highly effective histologically. Tissue cells were not distorted, shrivelled or exploded by either the fixative or the preservative, staining reactions for Haematoxylin-Eosin, triple stains or histochemical reactions

such as Feulgen were all perfect: even after 1-2 years in the preservative the tissue was still looking good histologically - the preservative was working and Steedman seemed to have discovered the fluid preservationist's panacea. Many collections were hastily transferred to the preservative without much thought as to how they had been fixed and we all waited with bated breath to see what the ultimate test of time would bring about.

For my part, I relaxed some fresh-water snails and fixed and preserved them according to the Steedman formulae and for about a year they looked really good. Then I noticed that the tissues, which had slightly swelled in the preservative, were becoming just slightly too swollen and relaxed and could collapse or break up if not supported by fluid. The specimens were transferred back to the formalin-containing fixative to 'tighten them up' for about 3 weeks. After that, the tissues were fine in the preservative. In the meantime, curators known to have made the transfer were notified to check their collections. Some specimens were found to have partly dissociated (due to their dubious fixation history) and Steedman's preservative was given the thumbs down by many curators, rather unfairly I felt since it had been developed for marine zooplankton and many curators were totally ignorant about fixation procedure, even what was a fixative!

Slightly later, Oliver Crimmen (1989) wrote in the BCG Newsletter about the downside of phenoxetol as a

preservative and although his fish specimens had been well-fixed and he knew about fixation procedure, something else had gone wrong. It was found that large and/or densely-muscled fish were the main problem and that the phenoxetol was only able to provide a surface preservative for animals with dense tissues; muscle, especially, formed too dense a barrier for the preservative to have any effect - the fish had effectively rotted, over the years, from the inside outwards.

In the late 80s came the discovery that formalin masked DNA and that alcohol was the ideal fixative/preservative (cf. Criscuolo, 1994). Fluid preservation has come full circle and we are now using updated techniques discovered in the late 17th century to preserve tissues.

For my own part, I still find that the Steedman formula works well for smaller invertebrates, small fish and other small vertebrates. Curators and collection managers must weigh up the pros (much less hazardous than formalin or alcohol, less likely to evaporate and require topping up, if

specimens dry out they are easier to rehydrate) against the cons (specimens require more regular monitoring, lipid leaching still a problem - as with formalin and alcohol, dubious effect on DNA, unsuitable for large or densely-muscled animals). The trend towards using alcohol as a preservative (and fixative for DNA study specimens) appears to be fine at the moment, museums world-wide have their own preservative formulae, some using isopropanol or mixes. I am still giving phenoxetol a chance and finding that it works well.

References:

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*Simon Moore
Hampshire County Museum Service.*

Services available

Use of The Conservation Centre Freezer

The Conservation Centre, Liverpool, can offer a low temperature insect pest disinfestation service to other museums and related institutions for a fee to cover staff time and electricity consumed in running the freezer - currently this would be £75 for the first five objects, plus £5 for each additional object (negotiable if the objects are very small or already bagged).

The freezer's internal dimensions are 2.35 m (H) x 3.8 m x 2.8 m, with doorway size 2m x 1m. It can achieve -30°C, usually in only 2-4 hours, and we maintain that temperature for about 72 hours before allowing the objects to warm up to ambient again, still within the container, over 24-48 hours. The freezer is located in our quarantine room and has very easy access directly from the loading bay.

Ring for more information if you are interested in using this facility.

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Information Wanted

BSRIA

BSRIA is a UK based, not for profit building services research and information organisation.

We are carrying out research into the requirements for climate control, the costs involved and the effectiveness of HVAC, (heating and ventilation/air-conditioning), systems in museum storage areas, with particular emphasis on the application of air conditioning/climate control technology to natural history museum exhibits. These would typically include palaeontology specimens, stuffed animals and birds, botanical specimens, meteor and other mineralogy specimens, as well as publications, microfilms and photographs.

We are particularly looking for documented case studies of buildings which are either fully air conditioned or have close control air conditioned storage facilities for any or all of these groups of specimens. The experiences of the facility's operators in maintaining and control of the temperature and RH, and the running costs involved, are of primary importance. Buildings either built or renovated or upgraded in the last 15 years are the target for our investigations.

A few queries have come up during the course of our initial research.

1. Are there any recommendations for minimum air change rates in these storage areas? I understand that mould growth can be a problem in high humidities and "stagnant" air. Allied to this is the question of air speed over the stored items - what is the definition of "stagnant" air, and when is a gentle air movement too much? - any suggestions?
2. I have come across references to proposals to allow the temperature and RH to "drift" from winter to summer conditions. Are there any recommendations for maximum daily or weekly temp. & RH excursions, or is this usually determined by the curator or conservator on site? Is short-term (ie, less than daily) temp. & RH variation a problem; if so, are there any recommendations to limit short term swings?
3. Are there any recommendations for minimum particulate or gas phase (ie, odour removal) filtration? It has been suggested to me that unlike the normal HVAC installation where these filters are fitted in the fresh air intake, it is normal to fit them in the recirculation air stream, as the major source of dust and/or gaseous pollutants is the store itself, not the outside air. Have you any views on this? Is there any preference for activated impregnated carbon, or
4. Are there any specific recommendations for minimum fresh air, or is this determined by local or national building codes/regulations? E.g. CIBSE in the UK, ASHRAE recommendations in USA.
5. I understand that preservation and pest control procedures often use relatively hazardous (to humans) chemicals, such as formaldehyde, Dichlorvos, etc. I have come across references to the use of CO2 as an alternative, safer "pesticide". How common is this, and is this now the preferred option? I ask because of the implications on worker safety, and local exhaust regulations when using pesticides in the workplace, or for general fumigation purposes.

potassium impregnated alumina (purple pellets, Purafill, etc)?

All of the above have implications on running costs, either directly due to fan power, or heating, cooling, humidification or dehumidification costs. Absorbed fan power in filters can be significant, especially on full flow filtration systems using both particulate and gas phase filters.

If you have information on these topics, or can put us in touch with the appropriate people, please contact Steve Kilford at BSRIA.

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