Safe handling guidelines for hazards in the collection at MAA

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Introduction

Hazards are inevitable in a collection like the University of Cambridge Museum of Archaeology and Anthropology. Spanning millions of years of human activity across all seven continents and the oceans, we care for an incredible diversity of materials. Some of these were intended to be dangerous, others may have become so due to the ways in which they have aged or been treated. However, most hazards can be safely managed with clear communication and personal protective equipment (PPE), reducing risk for both people and collections.

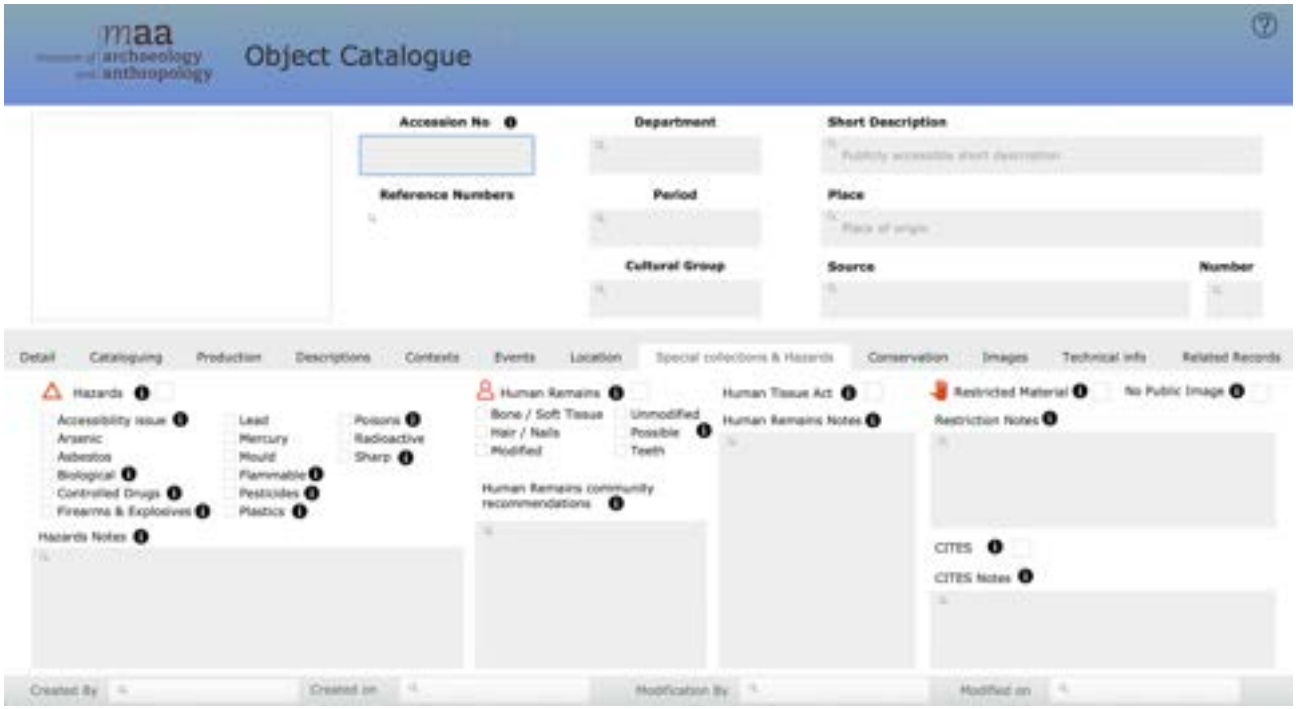
The following guide will introduce hazards found at MAA with recommendations on identification, management, documentation, and response. The purpose of this guide is to facilitate safe storage, handling, and access, and to promote transparency in our museum's practices of care. It is intended to be used both internally and made available to external visitors, community-based caretakers, researchers and other users of the collection.

The following recommendations are based on initial research by Dr Lucie Carreau, MAA Stores Move Team Manager and UCM conservator Kirstie French ACR. Over the course of the Stores Move Project (2020-2025), their original guidelines were supplemented by findings made by the Move Team and MAA collections managers in collaboration with Dr Ayesha Fuentes, Isaac Newton Trust Research Associate in Conservation, who wrote and designed the following guidance in August 2025.

Documentation

Documentation plays an essential role in the safe preventive care and risk management of collections. It can include information about suspected or identified hazards and take the form of notes made in the object's digital record, a red triangle 'HAZARD' adhesive label on the storage container, and guidance on the use of personal protective equipment (PPE). When accessing the collection – either digitally or in person – this information is put in place to make it easier to handle objects and have conversations about their care.

Hazard labels on the outside of this container warn users in advance that the objects inside may have been treated with a pesticide. This information is also recorded in MAA's collections management system. Printed guidance on the top of the inside of the box suggests the use of disposable gloves and protective clothing to avoid transfer of harmful residues to your person or the environment, as well as a face mask to avoid any loose airborne residues during handling.



In the current version of the collections management system, known and suspected hazards are documented under the tab for “Special collections and Hazards”. Here it is possible to describe the material’s condition or appearance and to record information about how it can be safely stored and handed. These entries should be signed and dated.

Sadly, a museum’s documentation will not always reflect current UK safety standards or clearly describe historic museum practices. The following guidelines therefore include further resources for identification, testing, and control as well as suggestions on how to add to our collective knowledge of hazards at MAA.

Note: There is currently an option in this section of the collections management system to flag objects as made from or containing ‘Plastics’. Though some plastics can become hazardous as they deteriorate, they are not necessarily harmful to other objects or people if kept in a relatively stable and well-ventilated environment. The option to flag ‘Plastics’ in ‘Special collections and Hazards’ is meant to inform conservation monitoring and research on the long-term aging of plastics in museum storage more than to indicate a present risk. *Cellulose nitrate and cellulose acetate are important exceptions since both of these become increasingly flammable as they deteriorate (see Flammable and Combustible Materials, below).*

Personal Protective Equipment (PPE)

Personal protective equipment, or PPE, is used to prevent or minimise your exposure to hazards. It includes protection from contact to the skin or eyes as well as respiratory hazards and chronic exposure. In a museum or collections storage environment, the most commonly used forms of PPE include:

- **Disposable nitrile gloves**: Nitrile is preferred to disposable latex or vinyl gloves for their durability and being less irritating to the skin; they are also safer than cotton gloves against chemicals or pathogens. Nitrile gloves are suitable to most museum work but should be replaced when they become damaged or soiled.

- **Face masks**: These range in suitability from simple paper surgical masks (Type IIR) to full face piece (FFP) particle masks or respirators with full face coverage. For most of the inhalation hazards encountered in a collection like MAA, a surgical mask or FFP should be sufficient. Note that FFP is different to a surgical mask in that it closes over the face and is divided into three protection classes: FFP1, which filters up to 80% of fine particulate materials; FFP2, up to 95% (similar to an N95); and FFP3, which is approximately 99% efficient. These masks should be replaced when they become damaged or soiled.

- **Protective clothing**: This might be a lab coat or other garment which extends to the hands, covering the arms and front of the body. This should be something which is easily washable and which does not leave the collections environment.

- **Eye protection**: This should be chemical safety eyewear worn over or in addition to regular glasses. It should shield the eyes from contact with liquids and dust from the front as well as the sides.

Note: Nitrile gloves are often suggested to keep both people and objects safe. For polished metal, lacquer and other delicate surfaces, gloves should always be used during handling. For many other materials in the collection, you may wish to keep your hands clean or to demonstrate respect. *In most cases, clean hands – washed with soap and water before and after handling – are sufficient for limited periods of contact with non-hazardous materials.*

Further Resources

University of Cambridge Health and Safety Office, ‘Glove Selection Guidance’, 2020.

UK Health and Safety Executive, ‘Personal protective equipment (PPE) at work’, 2024.

Pesticides

Historic pesticide use is common in museums and other collections with large amounts of organic material like skin, feathers, textiles or plant fibres. Some of these pesticides pre-date the arrival of objects at the institution; others may have been re-applied by previous custodians or collectors. There is very little historic documentation on pesticide use at MAA and laws in the UK governing these chemicals have changed multiple times in the lifetime of the museum, along with standards for best practice. And yet – with appropriate PPE, clear labelling, and well-informed risk management – these collections can still be made safely accessible for research, handling, transport and outreach.

Suspected pesticides and pesticide residues can take many forms, from opaque powders to fine crystals on a surface. They may have a smell or be odourless. This image shows a white powder with a strong smell on a mask made with wood, textile and animal bone (Z 13785),

Identification

Suspected evidence for pesticide use in the collection at MAA includes various white or light-coloured opaque powders as well as a fine white or clear crystalline residue. A few objects were also noted to exhibit a strong chemical smell. Observations of pesticide use are almost entirely restricted to Anthropology collections and very few of these interventions are recorded in museum archives and historic records or documentation.

At present, confirming the identity of suspected pesticides requires multiple forms of scientific analysis: While some heavy metal salts like arsenic or lead can be confirmed with micro-chemical tests (e.g. Plumbtesmo strips), others like organic pesticides developed for agricultural food production in the 20th century (e.g. DDT, lindane) might require more

During the Stores Move project, a fine, clear crystalline residue was seen on many leather objects, including this saddle from east Africa (D 1937.241). These residues can become loose and should always be handled with disposable gloves and a FFP mask. They can be reduced – but not necessarily removed – by a conservator using a vacuum with a high-efficiency particulate air filter (HEPA).

advanced instrumentation like mass spectrometry or x-ray fluorescence (XRF) spectroscopy. *It is not possible to say – based on condition or appearance alone – whether an object has had a pesticide applied to it, or whether that pesticide continues to pose a risk to humans.*

Furthermore, some objects may have been treated with pesticides more than once in their lifetime. In all cases, it is very helpful to have an idea of what kind of pesticide you are looking for in order to identify it: Organic pesticides like ethylene oxide or naphthalene require different forms of analysis than those with halogens attached (e.g. methyl bromide, paradichlorobenzene, Vikane [sulphuryl floride]) or heavy metal salts of arsenic and mercury.

This ceramic vessel has a salt problem resulting from inappropriate storage conditions and/or acidic packing materials. It can be distinguished from mould because it is will reflect and transmit light (i.e. ‘glitter’). Because it is an inorganic material — therefore not vulnerable to pests like feathers, skin or wood – it is unlikely this would be a pesticide residue. Contact a conservator for further guidance.

This object has been flagged for a ‘suspected pesticide residue’ and was noted to have a strong smell. It was not possible to reduce these hazards so the object was sealed in a labelled polythene envelope to facilitate long-term storage and safer access.

Note: Dry powdery mould can sometimes be mistaken for a pesticide residue. The easiest way to make this distinction is by using a torch, or other small light, and moving it back and forth at an angle above the surface of the object. If the surface sparkles or glitters, it is more likely to be a pesticide, since mould is usually matt and powdery. However, if the object is made from ceramic, shell, or glass, it is less likely to be a pesticide residue and might be a salt or other corrosion product.

Safe handling and response

At present, it is very difficult and expensive to decontaminate objects treated with historic pesticides and especially when the chemicals used have not been identified. However, loose residues and powders can be reduced using a dry brush and vacuum with a high-

efficiency particulate air filter (HEPA); ask a conservator and/or the University Health and Safety Office for further guidance. It is also important to make a note of any new or undocumented evidence for pesticide use, including links to archival information, photography and a short description in the digital object record on the collections management system.

In general, pesticides which have been applied as powders or formed deposits on surfaces are the most challenging to manage. For these, it is recommended that you use a FFP mask to prevent inhalation, disposable gloves and protective clothing like a lab coat or apron to prevent skin contact or the transfer of residues beyond the collection space. After handling objects, do not eat or drink or use personal objects without washing your hands. Do not dispose of pesticide residues in the regular bin; ask a conservator and/or University Health and Safety Office for support. Anything suspected to be a risk for handling due to the presence of pesticide residues should be documented and sealed in polythene for accessible long-term storage and future pest management.

If you need to document a suspected pesticide residue in the object record, go to the ‘Special collections and Hazards’ section of the collections management system and select ‘Pesticides’. Add a short description of what you are seeing that makes you suspect pesticide use. If it has a loose residue, strong smell or needs special handling, select ‘Hazards’ at the top of the menu *as well as* ‘Pesticides’, and add a ‘HAZARD’ label to the storage materials.

***Note*:** Unless you have done testing to confirm the identity of a pesticide, you should describe what you see in the collection record as a ‘suspected pesticide residue’: What colour is it? Is it clear? Is it powdery and loose? Do you notice a smell? (*Do not sniff*.) Even a short description can help keep future users safe and direct further research.

Further Resources

Angelova, L., et al. ‘The use of 'poisonous insecticidal solutions' in bookbinding: coping with historic pesticide treatments in the archive’, 2023.

Carrlee, E. ‘What that white stuff? Caring for Alaskan artifacts’, 2011.

Charlton, A., et al. ‘Pesticide residues on the Cook-Voyage Collections at the Pitt Rivers Museum, University of Oxford,’ 2015.

Chiwara, D., et al. ‘Potential pesticide contamination in repatriated artifacts in African museums: The need for the adoption of safety protocols for access and use of hazardous artifacts,’ 2022.

Odegaard, N. and Sadongei, A. *Old Poisons, New Problems: A museum resource for managing contaminated cultural materials.* Altamira Press, 2005.

UK Health and Safety Executive, ’UK Authorised Biocidal Products’, 2024.

Heavy metals

The hazardous character of heavy metals like arsenic, lead or mercury depends on their form: In stable condition, metallic lead, painted objects with pigments like cinnabar or orpiment, and alloys like pewter are relatively safe to handle with gloves whereas powdery or corroded heavy metals, flaking or powdery paint, or loose elemental mercury found in a thermometer, for example, are more mobile and therefore more difficult to control. Heavy metals are most dangerous through chronic exposure or when ingested but can also be irritating to skin and eyes, and breathing their airborne particles or dust should be avoided.

Identification

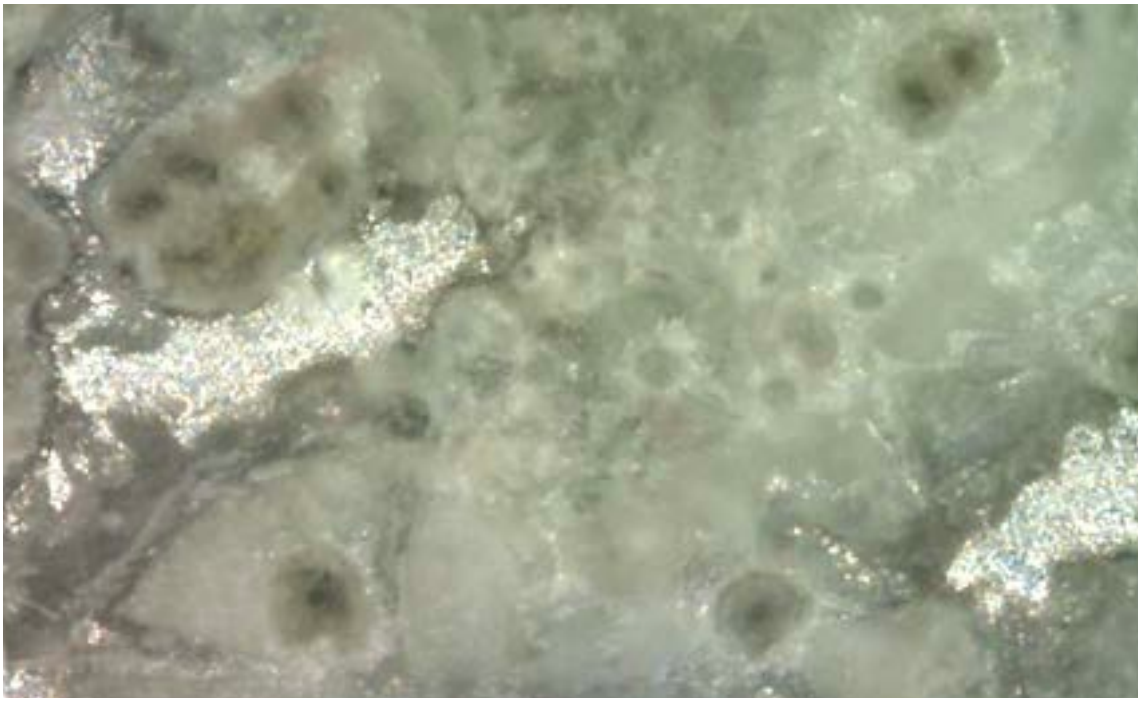
Due to the development of industrial safety standards for food, medicine and the environment, heavy metals are easily identified by XRF spectroscopy or micro-chemical tests like commercially-available Plumbtesmo strips; ask a conservator and/or University Health and Safety Office for guidance.

Metallic lead and its alloys – like this 15th century pewter spoon from the UK – are often notably heavy compared to other metal objects of similar size. However, if the metal is not powdery or corroded, it is generally safe to handle with disposable nitrile gloves.

This is one of many containers with heavy metal residues from the use of compounds of antimony or lead in cosmetics in many cultures. This particular example is from west Africa and is a relatively low risk to humans if kept closed or opened while wearing gloves and FFP mask.

Metallic lead is frequently found in Roman objects and coins, and used in weights and measures. Only if the lead is powdery should it be labelled as a hazard. Lead which is stored within or around wooden or non-archival paper materials should be monitored for powdery corrosion.

In the 17th and 18th centuries, mirrors – including the decorative elements added to this textile from south Asia (1978.107) – were often made by combining tin and mercury. This alloy can become unstable over time, resulting in the separation of liquid mercury. Objects with tin-mercury mirrors – noteworthy for their blueish tinge relative to other types of mirror when covered with a piece of white paper – should not be frozen due to the degradation of metallic tin under -7 degrees C. They can be safely handled with gloves or clean hands washed with soap and water afterwards.



Photomicrograph of a deteriorated mirror on 1978.107 showing metallic mercury forming between the characteristically round and white tin corrosion product (230x magnification).

Safe Handling and Response

In general, exposure to heavy metals is well-below safe limits working in a museum collection like MAA. It is important, however, to consider the condition of the object in assessing their risk: Stable materials or surfaces are generally safe to handle with disposable gloves alone. Only powdery, flaking, or other loose forms of heavy metal-containing materials should be designated as ‘Hazards’ in the collections management system or with a red ‘HAZARD’ triangle in storage. Where possible, further identifying them as ‘Arsenic’, ‘Lead’ or ‘Mercury’ is also useful. When designated as hazardous, heavy metals should be handled with disposable gloves as well as an FFP face mask. When in doubt, ask a conservator and/or the University Health and Safety Office.

Further Resources

Hadsund, P. ‘The tin-mercury mirror: Its manufacturing technique and deterioration processes’, 1993.

Slocum, N. ‘Toxins in the Collection: Museum Awareness and Protection’, 2018.

Poisons

Objects described as ‘poisonous’ can be expected in a collection like MAA that contains weapons, plant specimens and medicines from around the world. However, some of these poisons may have long ago stopped being a risk to humans. Others, like aconite or abrus berries, remain an acute and high risk hazard. In yet other cases, an object may be labelled as poisonous as a result of poor documentation or inaccurate collection records. Nevertheless, some of these poisons are potentially the most hazardous objects at MAA.

Identification

Like pesticides and industrial poisons, identifying biological toxins is easier when you know what you are looking for. Though there are spot tests for specific alkaloids (e.g. Dragendorff or Mayer tests), these detect only a part of an object’s potentially poisonous nature. It is sometimes possible to confirm the presence of chemical toxins through sampling and mass spectrometry, but this can be an expensive and complex process.

A confirmed specimen of aconite, or monk’s hood, likely from east Asia. Aconite is an acute and deadly toxin and should NOT be handled except when absolutely necessary and ONLY with PPE. Contact a conservator or poison control officer for guidance.

Bright red *Abrus precatorius* seeds have been used in many cultures of the Pacific, Asia and Africa as beads and decorative elements in objects of personal adornment such as this one from Nagaland (1919.103.18). This object should be handled with gloves and if any of the beads become damaged, contact a conservator or poison control officer immediately.

Historic medical collections can contain some of the more volatile substances at MAA, such as this 19th century British medical kit with empty containers for both strychnine and opium.

Safe Handling and Response

In all cases, the best way to assess risk from materials suspected as poisonous is to consider what the object or specimen was used for and where it is from: For example, did the cultural group of origin have access to marine toxins or venomous reptiles? Is it a medicine known for general well-being or one which would provoke sleepiness, numbness or induce a violent physical response? What kind of plants grew in the landscape of origin? Is it an object for daily use with which one might frequently be in contact, or one which is meant to demonstrate high status or value on special occasions? This information can help you make informed decisions about the potentially poisonous nature of the materials.

Note: Many weapons in the collection – including spears, arrows and other blades – have been coated with beeswax, which can darken and become grimy over time. Beeswax is easy to distinguish under a UV torch (365nm) where it appears yellow or yellowish-green. This wax is not only harmless to humans and most metal objects, it can easily be removed by a conservator.

A bladed weapon with a dark brown, greasy coating can be confirmed as beeswax with the use of a UV torch, under which it should appear yellowish. Several of these greasy deposits on metal weapons from various cultural groups have been sampled and confirmed as beeswax during the Stores Move project. It was likely applied to protect the blade during long-term storage.

Because it can be difficult to confirm the presence or volatility of poisonous substances without informed chemical testing, materials which are identified or suspected as ‘Poisons’ should also be labelled as ‘Hazards’ in the ‘Special collections and Hazards’ section of the object record in the collections management system and with red ‘HAZARD’ triangles. They should be photographed to promote visual or digital access, handled minimally, and packed to prevent contact with the skin or eyes. Objects which are suspected as poisonous and in stable condition can be handled with disposable gloves; eye protection, protective clothing (e.g. lab coat) and a mask can also be used if the materials are dusty or powdery*. Objects which are suspected as poisonous and in poor condition should be flagged for conservation and isolated – i.e. sealed in polythene sheeting and labelled as hazardous – immediately.*

Note: Botanical specimens and medicines like coca leaves, opium and cannabis – as well as the objects used to previously store or activate them – should be labelled as ‘Controlled Drugs’ in the ‘Special collections and Hazards’ section of the object record. MAA has a legal obligation to restrict access to these materials; curators or collections managers should advise on storage and compliance.

Further Resources

Borgia, V et al., ‘Poison, plants and Paleolithic hunters. An analytical method to investigate the presence of plant poisons on archaeological artefacts, 2017.

‘Hazards in collections - Controlled Drugs.’ https://hazardsincollections.org.uk/controlled-drugs/, 2019.

Pitschmann, V and Hon, Z., Military importance of natural toxins and their analogs, 2016.

Sharps

In many cases, sharps like blades and tools are some of the most straightforward and manageable hazards found in the collection at MAA. They are often easy to identify though they are sometimes in unexpected places like masks, household items, ritual objects and garments. Sharp objects can have metal edges but are also made from glass, stone and animal parts (e.g. sharpened teeth or quills).

Safe Handling and Response

The most important part of working safely with sharp objects is an awareness of the space around you and others within it. Assess the condition of objects to look for loose parts and plan your movements carefully. *Never try to catch a sharp object when it is falling.* In cases with smaller, mobile sharps like broken glass slides or decorative items on garments, you may need eye protection or reinforced, protective gloves and clothing. Objects can be flagged as ‘Sharps’ in the collections management system and labelled on their storage materials with a red triangle and ‘HAZARD’, but only need to be labelled as ‘Hazards’ in the digital record where they are especially high risk for handling or transport.

The new storage for spears and long-weapons at the Centre for Material Culture makes it easy to handle and access these collections, and to monitor their condition.

This costume (Z 13424.1) incorporates hundreds of sharpened porcupine quills. It should be handled wearing protective gloves and clothing; eye protection is also highly recommended.

This photograph has been printed from a broken glass negative (P.39173.ROS).

Mould, Dust and Other Pathogens

Mould, dust and other pathogens can be found at MAA in collections of plant fibre objects, on the surface of wood, skins, and gourds, and within the storage environment. Mould is more common in Anthropology collections than Archaeology, and most likely on objects which have historically stored food, been coated with a varnish or adhesive, or been exposed to water. Powdery, airborne pathogens like dry mould and dust are primarily hazardous by inhalation and both are known to aggravate respiratory conditions like asthma. This risk can be minimised with use of an FFP face mask and a well-ventilated work space. People with vulnerable immune systems should avoid prolonged exposure to mouldy or dusty environments.

Identification

Mould is most often encountered as a dry, powdery, matt and light-coloured deposit on object surfaces. Dry mould generally remains inactive in conditions under 65% RH though

A woven mat (1950.329 A) that has been damaged by a leak in museum storage, showing a combination of recently active mould – generally darker in colour – and dry powdery mould. The surface had been coated to make it glossy and the deterioration of the varnish in water has made it vulnerable to mould activity. The loose mould here was removed by a conservator with a dry brush under HEPA vacuum.

it is more mobile than active mould – which is dark or green in colour, generally well-adhered to surfaces and sometimes slimy – and therefore more potentially hazardous to people and objects.

Note: Fatty bloom can be mistaken for mould, dust and even pesticide residues. Unlike the others, fatty bloom is usually greasy and light in colour, and smears under heat or pressure from the finger. Fatty bloom is common on food storage containers as well as on objects from areas with palm oil production.

Other sources for pathogens in the collection include dust – especially fine dust or dust resulting from building works, creosote or local traffic – as well as rodent faeces, preserved soft tissues and animal dander, especially if powdery, flakey or loose. While some of these can be irritating to the skin and eyes, they are generally highest risk through inhalation and chronic exposure.

Safe Handling and Response

Where dry mould, dust or other airborne pathogens are present on objects in the collection, it is suggested to use a face mask. Consult with a conservator or occupational safety officer to check what kind of mask is recommended according to your estimated

A gourd storage container with dry mould on the interior surface, before and after treatment. Note that though the presence of dry mould has been reduced by cleaning under a HEPA filter vacuum, it cannot necessarily be eliminated and it is therefore important that the object is stored below 65% RH to prevent further growth or activity.

level of exposure. For most collections work at MAA, a FFP mask should be sufficient, or a paper surgical mask if more for comfort than safety. Disposable gloves and protective clothing can also be used to prevent transfer of harmful dusts or residues. Eye protection is also recommended for prolonged exposure to unknown dust.

Any evidence of mould should be photographed and labelled, both on object storage materials and within the digital record. If mould is found to be active (e.g. wet or dark in colour), it should first be dried in a well-ventilated area and preferably away from other collections. When dry, loose residues can be removed by a conservator using a HEPA filter vacuum. Once an object has been identified as exhibiting evidence of mould growth – even if the dry mould has been removed – it should continue to be monitored and kept in dry conditions (<65%RH).

In the ‘Special collections and Hazards’ section of the collections management system, an object can be flagged with ‘Mould’, ‘Dust’ or other biological pathogen (‘Biological’). ‘Hazards’ should also be selected if it there are powdery, loose or dusty residues present.

Further Resources

UK Health Security Agency, ‘Understanding and addressing the health risks of damp and mould’, 2024.

Flammable and combustible materials

Flammable materials can be found throughout the collection at MAA but are especially problematic in photographic objects, film and early plastics. This is especially true of cellulose acetate and cellulose nitrate, which can both become unstable and self-igniting if not stored in dry conditions at a consistently low temperature (less than 15C). Gunpowder flasks, firearms, fireworks and historic lighting or cooking equipment can also be hazardous due to risk of combustion. Note that objects identified with creosote on the surface are not only potential inhalation hazards, they are also at increased risk of being flammable.

Identification

Unfortunately the only ways to know if a material is flammable is to confirm its identity through documentary evidence or testing – or to observe it burning – which is why preventive care, labelling and the effective management of storage conditions are key to the safety of both people and collections.

An empty kerosene lamp in the collection at MAA. Kerosene will evaporate over time and like many other historic lamps, matches and inflammable objects, as long as it is kept away from high temperatures or a source of flame or ignition, it should be safe to store and handle.

One of several gunpowder flasks in the collection at MAA (1935.788). Most of these containers are empty and a low risk of combustion if stored in a stable environment with a relatively low temperature (<20 C). Note that in the UK, the storage of some firearms and other potentially explosive materials is subject to a special license from a Police Firearms Liaison Officer.

Cellulose acetate was not only used for film and photographic negatives, it was used as a tortoiseshell substitute for glasses and personal items like this one (1918.116) during the late 19th and early 20th centuries.

Safe Handling and Response

For gunpowder residues, fireworks and acetate films, smell is an important indication of the stability and safety of a flammable material: When stable, these materials should smell of acetone or alcohol, if anything. They should immediately be flagged as hazardous and moved to cold storage if they smell of vinegar (acetic acid). Film and other acetate should also be identified as ‘Plastics’ and considered hazardous if they are sticky, peeling or flaky.

In the ‘Special collections and Hazards’ section of the digital object record, select ‘Flammable’ for materials which are known to be flammable or combustible but only ‘Hazards’ if they are unstable or in poor condition.

***Note*:** MAA is required by the 1968 Firearms Act to document, restrict access and store some firearms – including blowpipes and flintlocks – according to the discretion of a Police Firearms Liaison Officer. Objects identified as ‘Firearms and Explosives’ should be labelled with a red ‘HAZARD’ triangle with the note ‘F&E’ on their storage container and flagged in the ‘Special collections and Hazards’ section of the digital object record.

In packing for storage, it is good to remember that a fire needs three things to burn: fuel, heat and oxygen. Packing objects in plastic – rather than acid-free tissue – is one way to control access to fuel and/or oxygen. For materials which can become self-combusting such as acetate and nitrate films or gunpowder, these should be stored at a stable low temperature (<20 C) to slow their deterioration and decrease risk of fire.

Further Resources

Collections Trust UK/Imperial War Museum, ‘Firearms and the law’, 2016.

Lim, X., ‘These cultural treasures are made of plastic. Now they’re falling apart,’ 2018.

Asbestos

At MAA, it is more likely that you will encounter asbestos in historic buildings or cases used for storage and display than in the collection itself. Nevertheless, there are a number of asbestos-containing materials – including soapstone and Bakelite – that can be hazardous to collections users and museum staff, especially if they are in poor condition. Unlike many of the other hazards described in this guidance, there is no safe exposure level for asbestos and it is for this reason it should be always be treated as an acute inhalation hazard. It is also harmful in contact with the skin or eyes, or ingested. However, in stable condition, asbestos-containing materials can be safely handled and risk managed.

Identification

Asbestos is a known component of soapstone and Bakelite, both found in the collection at MAA. More generally, it is associated with objects which require insulation from heat or fire such as stoves and cooking implements. Asbestos-containing minerals frequently have

Two soapstone beads in the Archaeology collection. Some forms of soapstone are formed with steatite, an asbestos-containing mineral. Unfortunately, it is not always possible to say if a soapstone object contains steatite based on its origin or context, so it is important to monitor the condition for signs of instability. If the object is powdery or deteriorating like the bead on the right, it is potentially hazardous; if it is stable like the bead on the left above, it is relatively safe.

needle-like and fibrous shapes, though they can be extremely small; contact the Sedgwick Museum of Earth Sciences or other collections managers with an expertise in industrial or geological collections for support.

Safe Handling and Response

Though it is a high risk material, objects in stable or good condition which contain asbestos are relatively safe for handling with disposable gloves, protective clothing and FFP mask. *Contact a conservator or asbestos specialist about any object which potentially contains asbestos and is flaking, powdery or otherwise deteriorating; place it immediately into a sealed plastic container, do not handle, clean or attempt to dispose of it.*

An ear ornament made from Bakelite in the Anthropology collection. Deteriorated asbestos-containing materials like this should be kept permanently in sealed plastic bags. For packing or transfer of these materials, gloves, protective clothing and an FFP mask should be worn. For further handling, storage or disposal advice, contact a conservator, occupational health and safety officer, or asbestos control specialist.

Objects identified as asbestos-containing should be labelled on their storage materials and flagged as ‘Asbestos’ in the ‘Special collections and Hazards’ section of the digital object record. Only if it is in poor condition should it be designated ‘Hazard’ and given a red triangle ‘HAZARD’ label on its storage container.

Further Resources

‘Hazards in collections - Asbestos,’ https://hazardsincollections.org.uk/asbestos/, 2019.

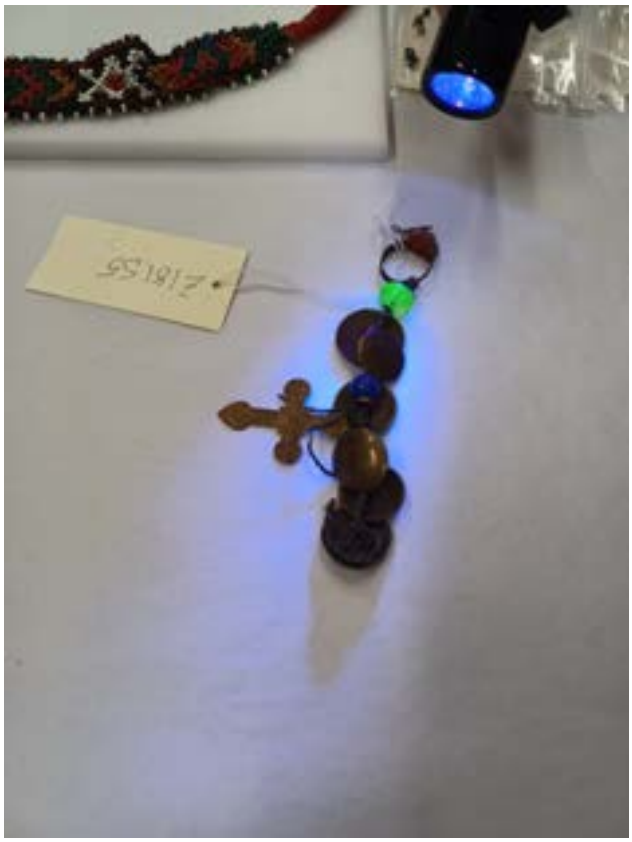
SOCOTEC, ‘A hidden legacy: The importance of asbestos management in museums, ancient collections and historic objects’, 2019.

UK Health and Safety Executive, ’Asbestos’, 2024.

Radioactive materials

Radioactive materials include the isotopes of certain elements like radium, potassium and uranium. These may be found in museums of natural history specimens, and others have been used in 20th century glass and ceramics recognisable for their unnaturally bright colours. There are very few known radioactive materials in the collection at MAA, though they may yet be identified in navigation equipment or historic timepieces. Working with these materials in a museum context is generally well within safe exposure levels, especially if disposable gloves are worn during handling and there is no prolonged or direct exposure.

Objects which are identified as radioactive should be labeled with a red triangle ‘HAZARD’ in storage to encourage limited contact and in the ‘Special collections and Hazards’ section of the digital record in the collections management system.



A personal religious item with yellow glass coloured with radioactive uranium and which fluoresces bright yellow under a UV torch. Radioactive materials like this are generally safe for limited exposure if handled indirectly with disposable gloves or inside a plastic bag.

Further Resources

Rowe, S., ‘A trouble shared is a trouble halved,’ 2017.

‘Hazards in collections - Radiation,’ https://hazardsincollections.org.uk/radiation, 2019.

Oak Ridge Associated Universities, Museum of Radiation and Radioactivity.

Corrosive materials

Corrosive materials – strong acids or bases – are very rare in the collection at MAA but might include deteriorated stone or geological specimens, batteries, or historic medicines. They can generally be recognised by their ability to affect the objects around them through dramatic changes in condition (e.g. corrosion, colour change). If you suspect something is corrosive, do not handle it without gloves and eye protection and contact a conservator to test the pH and assess the risk.

Safe Handling and Response

Corrosive materials can be extremely hazardous or relatively safe, depending on their concentration and the condition of the object. They are primarily hazardous in contact with the skin and eyes. Disposable gloves, eye protection and protective clothing are strongly recommended for safe handling. If you come in contact with a corrosive substance, wash the area immediately with lots of fresh water and seek medical attention.

A deteriorating stone object in the Archaeology collection, originally from the Arctic region. This is formed with hygroscopic minerals – capable of drawing water from the air – and produces sulphuric acid that damaged its historic wooden storage container.

Corrosive materials are especially hazardous to proteins like skin but also to inorganic objects made from stone, metal, shell or ceramic. They should be stored in contact with plastic only; polypropylene (PP) and polytetrafluoroethylene (PTFE) are both suitable to higher concentrations of corrosive substances though high-density polythene (HDPE) will work for low concentrations like those found in the collection at MAA.

Though there is no option to label a hazard as ‘Corrosive’ in the ‘Special collection and Hazards’ section of the collections management system, they should nevertheless be labelled as ‘Hazard’ and notes about their condition added in to the relevant field. Storage containers should also be labelled with a red ‘HAZARD’ triangle.

The same corrosive object (Z 46185.173) in a polypropylene container – safe for the storage of low concentrations of strong acids – and clearly labelled as ‘highly acidic’. This object has been sealed in the container with silica gel to create a dry storage environment (<30% RH) and prevent the continued formation of corrosive deterioration products.