



What's Eating Your Collection?

Further advice: Treatment options

There are a number of treatment options available. The treatment selected will depend on the severity of the infestation, what the object is made from, the value of the object and the time available for the treatment.

The treatments available can be divided into treating the space and treating the objects. Objects can be treated by low temperature, high temperature, carbon dioxide and anoxia.

Treating the space

If housekeeping has failed to eradicate the infestation, then treatment with an insecticide or desiccant dust is an effective solution. Insecticides used should break down to leave non-toxic residues and should also not be harmful to objects. A permethrin water-based, micro-emulsion leaves a residue that is harmful to insects but not humans. It is safe for museum staff to apply if the application area is small. Large scale treatments should be carried out by a pest contractor. Insects must crawl through the insecticide for it to have an effect and thus it can be most effective to spray at the junction between walls and floors.

Dead spaces, such as gaps under cabinets or under floors, can be treated with a desiccant dust. This is non-toxic, but once the insect crawls through it, it sticks to the body and causes the insect to dry out.

Although insecticides that have been licensed for use by museum staff are non-toxic, it is sensible to take precautions to avoid contact with the chemicals. Gloves and a mask should be worn when using the insecticides. COSHH assessments should be carried out for each insecticide and risk assessments should be drawn up detailing the way in which the insecticide should be used. All those carrying out insecticide treatments should be familiar with both assessments before using the material.

Treating the objects

Some robust wood can be treated for furniture beetle (*Anobium punctatum*) by painting it with permethrin based insecticides or commercial insecticidal fluid. Many other objects are damaged by the direct application of insecticides and so alternatives must be found.

Low temperature treatments will kill adult insects, eggs and larvae. Objects should be closely wrapped in polythene and sealed. The treatment time depends on the temperature that can be achieved by the freezer. At -18°C, objects should be kept in the freezer for at least two weeks. At -30°C objects only require three days. It should be noted that objects made from insulating materials (wool textiles) or those that are very thick (rolled carpet) may need one or two days fo

the centre of the object to cool down to the required temperature. A temperature probe is helpful here and the treatment time may need to be adjusted to allow the whole object to be held at the low temperature for the treatment time.

When the object is removed from the freezer it should be allowed to return to room temperature before it is unwrapped. This may take several days depending on the object.

High temperature treatments are very effective. Adults, eggs and larvae will be killed at temperatures above 50°C in 24 hours. The dramatic reduction in relative humidity that happens may cause damage to objects. As a consequence, many museums use the Thermo Lignum™ process, which maintains a stable RH during the process. Objects do not need to be bagged for this process, which makes it a rapid process, but it can be costly as objects must be taken to London or the mobile unit hired.

Carbon dioxide treatments use a concentration of at least 60% to poison insects. It must be carried out in a gas-tight bubble and treatments take at least three weeks. Objects do not have to be bagged. Carbon dioxide is registered as a pesticide and therefore treatments can only be carried out by a pest contractor.

Anoxic treatments rely on low concentrations of oxygen to kill insects. Many insects, especially wood borers, live in atmospheres of low oxygen and thus are quite resistant to this treatment. Large objects are usually placed in a gas-proof bag; the oxygen is removed and is replaced with nitrogen, usually from a cylinder. The level of nitrogen in the bag must be kept at concentration: of greater than 99.7%. Treatments take three to five weeks and the temperature must be maintained at 20°C or above. Small objects can be placed in bags made from oxygen barrier film (NOT polythene) along with an oxygen scavenger such as Ageless Z™. Provided that the bag is not opened or pierced, low levels of oxygen are maintained almost indefinitely.

Note: The treatments described above are listed to represent current practice in the UK across the museum sector. They are not all used in all museums. Inclusion in this list should not be taken as an endorsement of a particular treatment, nor should exclusion be regarded as a negative endorsement. The authors and sponsors of this CD cannot be held responsible for any failures of treatments listed above or damage to objects that may occur.

Where can I get further advice?

Pest Management a Practical Guide. David Pinniger. Collections Trust 2009.

Pest Management in Museums, Archives and Historic Houses. David Pinniger. Archetype Publications 2001.

Collections Trust Website www.collectionstrust.org.uk

Health and Safety Executive for details of writing COSHH (Control of Substances Hazardous to Health) and risk assessments and the accompanying legislation.

www.hse.gov.uk

You will also need an MSDS (materials safety data sheet) for each chemical/insecticide used to enable you to complete a COSHH assessment. The supplier will often be able to provide this, or they can be found with an internet search.

Who can I ask?

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Care of Collections Group. If you are a member of Icon (Institute of Conservation), you can log onto the group forum and post a question in the Care of Collections (CCG) area. If you are not a member, you can send a question to the office and ask them to forward it to the group on admin@icon.org.uk

Museum Development Officers or your MLA.

Pest Control Companies. If you don't have a relationship with a pest control company, the British Pest Control Association may be able to help and they maintain an accreditation system for pest control companies. Look for the letters BPCA. www.bpca.org.uk