

Effect of common pest control treatments on collection materials

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Normal pest control procedures (applies to all types of pests):

- Good housekeeping (seal cracks, stop leaks and standing water, keep indoor plants healthy, remove trash and food waste and limit where food can be consumed, remove dust, dirt and piles of empty boxes)
- Proper storage conditions (temperature and humidity kept cool and dry, look for evidence of pests when cleaning, if insect activity is suspected monitor with sticky traps)

Inspection and bagging

- Handle carefully so as not to damage the collection materials
- Watch for insects scattering away from the area you are inspecting or cleaning
- Look for droppings, insect remains, cocoons
- Put in transparent, food grade plastic bags, squeeze out extra air and seal to keep insects from getting away and to protect contents from condensation if frozen. Keep at room temperature and low relative humidity till treatment; don't let condensation build up inside the bags and damage the materials: monitor the bags.

Treatment methods (Preferred):

- Blast freeze to constant -20° Fahrenheit (in plastic bags for 48 hours)
 - Good for almost all collection materials, including books, paper, modern photographic prints but not old photographs, AV, computer media and so on
 - Follow guidelines for what can be frozen following a water disaster. (Resource #3)
- Anoxic treatment (in a vacuum chamber that replaces oxygen with nitrogen, needs special gas-impermeable plastic bags, not for blue prints, cyanotypes and other things made with Prussian blue pigments or dyes, takes 21 days)
- Heat to 120° (effective but accelerates aging)
 - OK for circulating books but not for rare, valuable or permanent books and paper
 - Cincinnati PL reports CDs and DVDs and computers are okay, if limited to 1 hour. Do not do this for CDs or DVDs that contain files with permanent or long-term retention.

Treatment methods (Not recommended):

- Gamma radiation (accelerates aging, normally not recommended)
- Chemicals (residual chemicals on collection materials are bad for people and chemicals may damage collection materials. Except for careful application in building cracks and crevices, prefer non-chemical treatments)
- Microwaves (can scorch paper, soften adhesives, react with metal staples)
- Steam (high humidity accelerates deterioration)

If it is infested but should be neither frozen nor heated

- Inspect
- Isolate
- Ask a conservator

| OK to Heat | Do Not Heat |
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| Circulating collections including books and paper | Anything rare, valuable, permanent or needed for long-term retention, such as local history |
| Circulating CDs and DVDs (limit to 1 hour, per experiments by Cincinnati PL) | CDs and DVDs that contain your master digital files Other computer media (tapes, discs, optical) |
| | Audio tapes, for example, Oral history Other magnetic media (reel to reel, cassettes, VHS, Beta) |
| | Photographs, microfilm and film negatives |
| OK to Freeze | Do Not Freeze |
| Books, paper, leather (including rare, valuable, permanent or long-term retention) | |
| Acetate film, modern photographic prints | photographic materials |
| | Audio-visual items: check carefully for the following materials --they may not be at risk for infestation --freezing may cause damage & permanent loss of information |
| | computer media (tapes, discs, optical) |
| | magnetic media (reel to reel, cassettes, VHS, Beta) |
| | audio grooved media (cylinders, discs, LPs) |
| | cased photographs (daguerreotypes, ambrotypes pannotypes, tintypes [ferrotypes]) |
| | glass archival materials including plates negatives (collodion and gelatin [wet and dry plate methods]), glass color transparencies (autochromes), lantern & mounted glass slides |

Resources

1. *Integrated pest management* [by] Beth Lindblom Patkus. Northeast Document Conservation Center, Emergency Management leaflet 3.10. Also, ask NEDCC for advice in any preservation matter.
http://www.nedcc.org/resources/leaflets/3Emergency_Management/10PestManagement.php
2. *Controlling insect pests : alternatives to pesticides*. Conserv-o-gram number 3/8 Aug. 1998. National Park Service [by] D.B. Pinniger. Discusses Freezing, Heating, Anoxia.
<http://www.nps.gov/history/museum/publications/conservoogram/03-08.pdf>
3. See the Disaster Response and Recovery *Conserv-o-grams* for advice on recovery of specific types of materials http://www.nps.gov/museum/publications/conservoogram/cons_toc.html
4. *Information on modifying freezers for museum pest control* from SPNHC newsletter (Society for the Preservation of Natural History Collections. V.7:no.2 1993 Aug. p.4 by Ann Pinzl.
http://www.museumpests.net/resources/modifying_a_chest_freezer_for_pest_control.pdf
5. *Low temperature treatment* [by] Integrated Pest Management Working Group, Treatment Subgroup, Feb. 2010, updated Mar. 2012
<http://www.museumpests.net/treatment.asp?defaulttab=1&defaultpanel=1>
6. *An insect pest control procedure: the freezing process*. Conserv-o-gram number 3/6 July 1994. National Park Service, [by] Toby Raphael.
<http://www.nps.gov/museum/publications/conservoogram/03-06.pdf>
7. *Emergency Response and Recovery Services for books, records and collections*. The state has a contract with three vendors with experience in dealing with disasters such as a fire, flood, or mold outbreak. Their freezer service would help in an infestation too. Also, ask them for advice.
http://www.biznet.ct.gov/SCP_Documents/Results/10648/011_0299.pdf