

Integrated Pest Management Policy and Procedures

I. INTEGRATED PEST MANAGEMENT POLICY

A. Introduction

All pest control procedures at the University of Pennsylvania Museum, including but not limited to collections, food service, service areas, and the grounds, are governed by the principles of Integrated Pest Management (IPM). IPM theory and practice emphasize non-chemical methods, such as good housekeeping, non-toxic traps (glueboards and snap-traps), the freezing of collections, and centralized planning to deal with all the problems of a building in a coordinated manner. The use of toxic pesticides (especially sprays), once extremely common, is now only a last resort and used with strict adherence to federal and state mandated procedures. Should chemicals be required, they are used following federal, state, local, and university-mandated precautions and notification procedures.

B. History

As a designated Child Facility (which provide services to children and students), the University of Pennsylvania Museum must maintain an Integrated Pest Management Program in accordance with federal and state legislation.

In 1981 an aggressive IPM Program was established throughout the building. Features of this program include good housekeeping, improvement of collections' storage and exhibition methods, surveillance, and documentation. [See IPM Appendix A for complete program history].

C. Implementation

All occupants of the University of Pennsylvania Museum building are responsible for maintaining a pest-free environment in accordance with specified institutional IPM policies and procedures.

All pest control activities and the people hired to carry them out must be approved by the Integrated Pest Management Committee, which includes representation from the departments in the museum building.

The IPM Manager, under the authority of the Deputy Director, is responsible for ensuring the implementation of the Integrated Pest Management Policy.

II. INTEGRATED PEST MANAGEMENT PROCEDURES

A. Staff and Committee Responsibilities

1. IPM Manager: The day-to-day management of the IPM Program is carried out by the IPM Manager, who must be a member of the Museum Registrar's Office staff.
 - a. Maintains documentation of IPM problems [see Appendix B for Guide to IPM Documentation]
 - b. Maintains information on common museum pests
 - c. Maintains information on IPM treatments which have been or may have been used in the Museum and/or on the collections.
 - d. Coordinates the treatment of artifacts for pest and mold problems and maintains the Treatment (Freezer) Log.
 - e. Arranges for the annual IPM workshop and IPM services.
 - f. Arranges escort for the IPM Service provider during bimonthly inspections and treatment.
 - g. Consults with the Conservation Staff and the Curatorial Sections on problems with collections.
 - h. Consults with the Facilities and/or Deputy Director of Operations on problems involving the building or grounds.
 - i. Consults with the IPM Service Provider and/or Consultant(s) on both routine and special problems.
 - j. Documents the history of the IPM program and makes recommendations for procedural changes based on building conditions and new IPM strategies.
1. Building Occupants: All museum building staff have a role in maintaining an effective Integrated Pest Management Program.
 - a. Staff should report pest sightings and potential infestation to the IPM Manager, and housekeeping problems to the Museum Facilities Office.
 - b. Glue boards and snap traps are used to monitor pest activity and must remain where placed in building. They may be removed by staff members *only* if the devices are found with trapped rodents in them; the staff may then bag and dispose of the entire trap themselves and call Facilities for a replacement, or call upon a member of the Facilities Office to assist with the removal and to replace the trap.
2. IPM Committee: The IPM Committee, with representation from the departments in the museum building, as well as outside consultants and University personnel, oversees the IPM Program, Policies and Procedures. This Committee is designated as a standing committee which meets only as needed.
 - a. Should a significant IPM problem arise, the IPM Manager will call a meeting of the Pest Control Committee, which is jointly chaired by the Deputy Director and the IPM Manager. The Committee will review the problem and proposed treatment plans, and comment accordingly.
 - b. The Committee composed of representatives of the following departments/sections:
 - Deputy Director
 - Deputy Director of Curatorial Affairs
 - Keepers' Representative
 - Anthropology

Museum Library
 Facilities
 Archives
 Conservation
 Exhibits
 Museum Shop
 Café / Catering / Events
 IPM Manager (Registrar's Office)
 IPM Consultant
 IPM Service Provider
 Environmental Health and Radiation Safety

3. IPM Consultant: The IPM Consultant is a specialist in Integrated Pest Management for Museum and Library Environments. The Museum has retained the services of a consultant since the start of the IPM program.
 The role of the consultant is to educate the staff in the practical aspects of IPM and to assist in planning treatment strategies for both routine and unusual problems.
4. IPM Service Provider: Pest Control services are provided by a contract IPM Service Provider with established qualifications as stated in IPM Appendix C.
 - a. The IPM Service Provider is responsible for inspecting the building on a bimonthly basis, providing traps, baits, and chemical treatments, and distributing them in accordance with approved practices.
 - b. The Schedule of Services follows a trimester cycle barring any unforeseen pest emergencies. During each trimester, the following should be done:
 - i. Full rotation/examination of devices within the building
 - ii. Inspection of galleries.
 - iii. Two annual examinations of exterior of building are also conducted by the Service Provider. In the event of an infestation, services will be increased to deal with the problem.
 - c. Services to Food Service Areas are provided under a separate contract with the Museum's contracted provider.

B. Housekeeping

Housekeeping must be the core of a good IPM program. Three areas are particularly susceptible and need to be monitored as follows:

1. Food Consumption/Storage
 - a. Food may not be carried into or consumed in collections storage areas or mechanical spaces.
 - b. Food should be consumed only in authorized areas such as the café, children's lunchroom, or at authorized gallery events.
 - c. Food in private offices must be kept in durable glass or plastic containers to minimize pest activity; plastic bags and cardboard boxes are not pest proof.
 - d. Trash from food consumed in offices should be removed to hallway receptacles, which are emptied twice a day. It should not be deposited in office trashcans, which are emptied once a day. Likewise, bathroom receptacles, except those in the Mainwaring wing, are emptied only once a day.

- e. The Mainwaring Wing is a combined collections and office area. Therefore, separate guidelines have been established for eating and drinking in this area. [See Appendix D]
2. Trash Removal
 - a. Boxes and packing materials should be disposed of in a timely manner
 - b. Hallway trash receptacles are emptied at least twice a day.
 - c. Office and bathroom trash is removed daily.
 - d. Mainwaring bathroom trash is removed twice daily.
 - e. Trash dumpster areas must be kept clean. This area is maintained by the Museum Facilities Office and Museum Catering Company staff.
 3. General Housekeeping and Inspections
 - a. Food areas such as kitchens, dining areas, and vending areas require a monthly intense cleaning by Museum Facilities and Museum Catering Company staff. Attention should be paid to floors and trash receptacles.
 - b. Common areas such as bathrooms and lounges require quarterly inspections and intense cleaning by Museum Facilities staff
 - c. Departmental Offices (Facilities, Business Office, Museum Shop, Registrar's Office, and the Anthropology Office) should be inspected on a quarterly basis. Cleaning should be scheduled accordingly by Museum Facilities Staff.
 4. Live Plant Material

Live plants are both aesthetically pleasing and beneficial. However, live plants present distinct IPM problems which are separate from but relevant to the collections. Care must be taken to maintain healthy live plants; dead or infested plants should be removed from the building promptly. Guidelines have been established to assist staff in the use of Live Plant Materials. [See Appendix E]
 5. Mold
 - a. The term "molds" refers to all members of the fungi family including unicellular yeasts, multi-cellular molds, mildew, and mushrooms. Almost all molds identified in museum environments are common types normally found in the environment and in daily life.
 - b. Molds feed on the substrate (i.e. object) on which they are growing, thereby damaging and/or destroying it. The threat to humans arises when individuals with compromised immune systems (i.e. allergies, respiratory problems, post-operative recovery, significant illness, etc.) become exposed to molds. Furthermore, the danger increases when molds occur in large quantities and/or in confined spaces.
 - c. Once mold growth occurs either in the building or in the collections, care must be taken to minimize the spread of spores and the threat to both collections and staff. Therefore, specific procedures have been established [see Appendix F].
 - d. Proper regulation of temperature and humidity is important in mitigating mold growth. Water infiltration from leaks should be closely monitored and dealt with immediately by Facilities staff. Abatement of moldy building materials is overseen by the Office of Environmental Health and Radiation Safety and the Museum Facilities Office; outside abatement contractors may be required depending on the severity of the growth. Fungicides, commonly used to treat molds in the past, may be applied only by licensed providers.

- e. The Office of Environmental Health and Radiation Safety, and the Conservation and Collections staff have established policies and procedures for mold as part of the Hazardous Materials Policies and procedures.

C. Treatment

1. In accordance with federal, state and university regulations, pesticides, including those available for home use, are not used in the museum building except under unusual circumstances and only after consultation with the IPM Committee. These chemicals can be distributed by the IPM Service Provider only after full notification of staff and visitors.
2. In accordance with federal, state and university regulations, commercial baits for silverfish and roaches may be distributed by the IPM Service Provider without advance notification of staff or visitors.
3. Trapping and monitoring devices, such as glue-boards, are the preferred method of dealing with insect problems. Occasionally, enclosed bait stations may be distributed by the IPM Service Provider.
4. Trapping and monitoring devices, such as glue-boards and snap-traps, are the preferred method of dealing with rodent problems. Poisons cannot be used within the building because of the danger they pose to staff and visitors, as well as the fact that the dead rodents will attract vermin which pose a threat to the museum collections.
5. In rare instances, live animal traps may be used within the building. Only the IPM Service Provider is authorized to handle these devices because of health reasons.
6. Freezing is the current method for prevention and treatment of pest problems in collections, including webbing cloths moth, silverfish, beetles, etc. All organic objects entering the museum, including those coming in as a loan, returning from loan, acquisitions both to the accessioned collections and to the Education Department (including International Classroom), items for sale in the museum shop, and office/event decorations, require preventative freezing. [See Appendix G for freezing procedures].
7. In certain circumstances, freezing can be used to temporarily halt active mold growth. Freezing does not destroy mold spores.

D. Notification of Pesticide Use

1. Procedure for Notification of Pesticide Use on Museum Premises
Should an IPM problem which requires pesticide use arise within the building proper:
 - a. The IPM Manager will call an emergency meeting of the IPM Committee, which includes representatives from Environmental Health and Radiation Safety.
 - b. The IPM problem and its proposed treatment plan will be presented to the committee by the IPM Manager and IPM Service Provider for questions, comments, and approval.
 - c. Once approval is received, the date of treatment will be scheduled allowing sufficient time (14 days) for both internal and external notification. [See Appendix H for statement on the use of pesticides].
 - i. Museum Staff will be notified of the proposed treatment via the internal web and bulletin board notices.

- ii. Signage will be prominently displayed at each entrance, notifying visitors and students of the treatment. Signs will remain in place for **seven days** after the treatment date.
 - iii. The Education Department will notify by telephone school groups scheduled to visit the museum on the day of the treatment and for **seven days** thereafter.
2. Procedure for Notification of Pesticide Use on the Museum Grounds
- a. Museum grounds are under the management of the University Facilities Department and the Museum Facilities Office.
 - b. A yearly schedule for maintenance and treatment of the grounds will be provided to the Museum Facilities Office each spring. A copy of the treatment schedules will be forwarded to the IPM Manager and the Education Department.
 - c. The Education Department will make schools scheduling tours aware of any lawn treatments at the time their reservation is made.
 - d. The Grounds' Service Provider will prominently mark any and all museum grounds treated with chemicals.

E. IPM Education / Training

Integrated Pest Management is the responsibility of everyone in the museum building. Therefore, the museum provides annual training by the museum's IPM Consultant for staff on IPM issues. In addition, the Registrar's Office maintains an assortment of reference materials, including Dr. Tom Parker's IPM booklet (1975). Lastly, we have prepared a series of Frequently Asked Questions (FAQ's), which are available to staff on the Museum's Internal Web Site. [See Appendix I.1 and I.2]

Approved by Jeremy A. Sabloff, The Charles K. Williams II Director, June 24, 2003

IPM Appendix A: Integrated Pest Management History

- 1904 Arsenic Treatment Chamber located in area of Lower Courtyard.
- pre-1971 American ethnographic collections packed in barrels containing paradichlorobenzene (PDB) for off-site storage.
- 1971 Fumigation Chamber in the Academic Wing utilizing methyl bromide began operation. Artifacts taken to Winterthur Museum for ethylene oxide treatment. Periodic pesticide spraying of collections and non-collections areas.
- Mid to late 1970's American Section use of PDB discontinued.
- 1978 Collections Management Inventory and Storage Renovations begins.
- 1980 Four-day "blind" IPM inspection of building by Dr. Tom Parker. Written report generated. (September/December)
- 1981 Initial response to IPM report, followed by strategy planning. (February/March). Initial Phase of IPM Program administered by Museum Conservation Department in conjunction with collections' storage renovations.
- Fumigation Chamber damaged in pipe leak. Proposal for new chamber written, but chamber not constructed. Decision made to discontinue in-house fumigation based on reported effects on both collections and personnel. (August)
- 1982 Mold Infestation I in B27 (Oceania Storage). Ethanol cleaning and bagging of affected objects undertaken. (November, ongoing)
- 1984 IPM workshops implemented (October)
- 1985 Implementation of IPM Program and Procedures initiated. Services of IPM consultant/educator contracted; IPM Committee initiated with IPM Manager/Committee Chair appointed from Registrar's Office. IPM for collections vs. building managed more or less separately. (October)
- Raven's Journey Exhibit opens
- 1986-87 Webbing Cloth Moth Infestation – Pre-infested object(s) in Museum Shop, Library carpet, Saudi Arabian Bedouin Exhibit (Loan-in Exhibit) and some collections affected. Library fumigated and carpet replaced.
- 1987 Fumigation Chamber used for treatment of artifacts with Vapona and PDB

- Raven's Journey Collections infestation active. Note that this becomes a recurring problem in the exhibition
- 1988 Use of PDB and Vapona, as well as building spraying halted.
- 1989-90 Mold Infestation II occurred in B-Complex area (B22, B25, B26 and B27). Mycologist, Dr. Karin McGowan, from Children's Hospital consulted. Ethanol cleaning and bagging of affected objects continued
- 1991 Chest freezer acquired for treatment of infestations of smaller collections. Oversized objects taken to the Academy of Natural Science (walk-in freezer)
- 1994 Review of IPM Program effectiveness. Building and Collections IPM integrated under IPM Manager with shared financial responsibility between Registrar's Office and Facilities. Increase in IPM Services with separate contracting for Food Areas. Standing IPM Committee changed from regularly meeting to meeting only as needed.
- 1996-97 Brown Recluse Spider - Loxosceles species infestation in room 155 (Asian Storage). Area sprayed with pyrethrin-based pesticides after consultation with Dr. Tom Parker, UP Environmental Health and Radiation Safety, and UP Risk Management. Infestation/treatment overseen by Safety and Security Committee, as opposed to IPM committee, due to staff risks, etc. (Fall and Spring)
- 2000 Facilities Department requested greater involvement in IPM, in particular IPM building walk-through and housekeeping. Additional training for Housekeeping staff arranged.
- 2001 Federal and State mandated IPM policy initiated. IPM Policy and Procedures amended in accordance with Federal and State mandates.
- Initial policy and procedures on Hazardous Collections and Pesticide Use developed with the support of the University Environmental Health and Radiation Safety Office.
- Mold Infestation III (B27 – Oceania Storage)
- 2002 Opening of Mainwaring Wing for storage of ethnographic collections / walk-in freezer.

IPM Appendix B: Documentation of Infestation Problems**A. Procedure for the reporting/recording of general IPM problems**

1. Staff should notify the IPM manager in writing of all IPM problems they encounter. The memo will be filed in the chronological IPM file. There is no need to provide captured insects or debris with the report.
2. Staff should report problems involving housekeeping issues to the Facilities Office for follow-up.
3. Staff should immediately report problem involving the collections to the IPM Manager. The IPM manager will consult with Conservation and arrange for treatment and documentation of the problem in the object files and in the collections database.

B. Procedure for database recording of past infestation in collections

1. Enter the information under the Argus 'Condition' Screen
2. Under the First Condition Field, enter 'damaged'
3. Under motive, first put K (for Keeper) or R (for Registrar), then the term 'condition report'. (The term 'treatment: infestation' is only used when we're taking some anti-active-pest measures).
4. Under the date fields put the dates when the note is being made.
5. Under the 'notes' text field, record a short note saying what was seen, that there was no sign of activity as of that date, etc.

C. Procedure for recording freezer treatment

A standard record form has been established for logging objects into/out of the freezer.

1. Under Object Number record the Object number if the object has a number, *OR* donor's name if the object is part of a new acquisition, *OR* shop merchandize
2. Under Object Name record what the object is.
3. Under Treatment choose from the following options: Infestation or Preventative.
4. Enter starting date of first freeze
5. Enter end date of first freeze.
6. Enter start / end date of second freeze if required.

D. Procedure for database recording of freezer log information

At quarterly intervals, the log book data will be checked against and/or entered into the collections database as follows:

1. Enter the information under the Argus 'Condition' Screen
2. Condition:
3. Motives:
4. Done by: IPM manager's, keeper's or conservator's initials.
5. Dates: Earliest day in / Latest day out.

IPM Appendix C: Pest Control Service Provider Qualifications / Requirements**A. Qualifications**

1. Must be familiar with the specific kinds of problems and pest common to museum and museum artifacts.
2. Must be familiar with non-chemical treatments for killing pest, including but not limited to freezing and oxygen deprivation.
3. Must have at least 5 years experience with IPM in a museum environment and be able to provide references.

B. Requirements

1. Will provide services and supplies (traps, bait, etc.) to non-food service areas on a bimonthly schedule as contracted by the Museum Registrar's Office and Museum Facilities Office.
2. Will provide services and supplies (traps, bait, etc.) to all food-service areas on a bimonthly schedule as contracted by the designated Café / Catering Provider.
3. Will make full inspections of the building interior and grounds on a trimester cycle (3 times a year). Will be accompanied by the IPM Manager or a member of the Facilities Office throughout the entire building.
5. Will work with the IPM Manager and other museum staff to develop, implement and maintain an effective IPM program.
6. Will assist with the presentation of IPM problems and proposed treatment plans to the IPM Committee for approval.
7. Will not apply pesticides or other chemicals anywhere within the Museum without the express approval of the IPM Committee.
8. May apply rat bait on the museum grounds as needed.

IPM Appendix D: Basic Guidelines for Eating/Drinking in Mainwaring Collections Wing

A. Eating in room 201

- from 9:00 - 9:30am & 11:30am - 1:30pm
- use good judgement
- clean up after yourself
- dispose of all trash appropriately (restroom trash containers)
- be aware of meetings scheduled for room 201

B. Microwave and refrigerator are located in basement, in room B 01

C. Use of refrigerator:

- be considerate of others
- you may want to label your food containers
- food is to be stored in refrigerator for several days only
- you are responsible for throwing out your unused food and retrieving your food containers
- refrigerator will be cleared out entirely every Friday at 4:30pm
- please keep refrigerator clean, wipe up spills, etc.

D. Use of microwave:

- while warming food, do not leave microwave unattended
- clean up after yourself
- please keep microwave and countertop clean, wipe up spills, etc.
- be aware that there is no smoke detector in room B 01

E. Drinks in offices:

- keep lids on all coffee cups, juice bottles, drinks, etc.
- food/food wrappers that might attract pests should NOT be in offices
- dispose of all trash appropriately (rest room trash containers)

F. Trash:

- All trash is to be disposed of in the trash containers in the restrooms at the end of every hall.

IPM Appendix E: Use of Live Plant Material

1. Soil used for potted plants may have sawbugs or millipedes, but it will not have dermestids (i.e. "carpet beetles"). Soil used by reputable commercial providers of indoor ornamentals is treated and should be pest-free when the plant is delivered. Over-watering should be avoided, because of the danger of mold/fungus growth.
2. Maintenance of plant material is critical. Spilled water and dead and fallen leaves must be removed promptly. This debris may attract insects which are not in themselves a danger to the collection, but which may die and attract dermestids, which are a serious danger. Lack of proper attention also results in an appearance which does not enhance the Museum
3. Owing to the difficulty of ensuring proper maintenance, the use of live plants, as well as plant materials either dried or in water, should be restricted to special events such as exhibit openings or "Artifacts in Bloom." For long term display in exhibits, artificial plants should be used.
4. For "Artifacts in Bloom" and similar events, the following guidelines should be followed:
 - a. No part of the plant display may touch any exhibit case, base, or object.
 - b. All water and plant debris from the installation must be removed promptly.
 - c. Displays must be tended regularly to ensure removal of all dead and fallen material. All displays, including those in entrance foyers, must be removed after the close of the event.
5. If a plant needs treatment for insect pests it should be returned to the rental agency, or if owned by the Museum, taken outside to be treated. Identification of insects, and appropriate treatment, should be carried out only with the advice of a licensed pest control operator.
6. The use of any non-artifact plant material such as leaves, bark, seeds, beans, and other food products (as well as animal products of any kind) in an exhibit must be approved by the Conservation Laboratory. Standard low-temperature preventative treatment is required, and additional preparation may be necessary to prevent potential infestation. Reproduction material or photographs should be used whenever possible.

IPM Appendix F: Procedures for Mold Infestation

Mold proliferation can pose a serious threat to collections and may cause adverse health effects to museum occupants. The term "molds" refers to all members of the fungi family including unicellular yeasts, multi-cellular molds, mildew, and mushrooms. Almost all molds identified in museum environments are common types normally found in the environment and in daily life. Molds feed on the substrate (i.e. object) on which they are growing, thereby damaging and/or destroying it. The threat to humans arises when individuals with compromised immune systems (i.e. allergies, respiratory problems, post-operative recovery, significant illness, etc.) become exposed to molds. Furthermore, the danger increases when molds occur in large quantities and/or in confined spaces.

1. Museum staff members who suspect a mold problem in the collections or building should notify the IPM Manager.
2. The IPM Manager will investigate the situation. If an active mold growth is observed, the IPM Manager will notify the following parties:
 - a. Deputy Director
 - b. Environmental Health and Radiation Safety
 - c. Facilities
 - d. Conservation
 - e. Collection Keeper, if the area houses collections
3. Environmental Health and Radiation Safety Staff will investigate the problem and advise the museum on the corrective action to be undertaken.
4. General mold abatement requires specialized techniques or the services of a contracted specialist to minimize exposure and the spread of spores. The use of fungicides, which was once standard in treating mold infestation, has been banned or restricted to licensed operators.
5. In an area with a mold problem and/or moldy material, signage will be posted advising individuals with compromised immune systems or who are pregnant or taking certain medications such as steroids to avoid the area and/or moldy materials. Under-age volunteers and students are prohibited from working in moldy areas and handling moldy materials.
6. Personal Protective Equipment, as recommended by Environmental Health and Radiation Safety (EHRS), will be worn by staff working with infested collections. Disposable lab-coats and gloves are essential protection; goggles and masks may also be advisable. The use of dust masks or respirators must be approved by EHRS. Staff using masks will be provided with a copy of the OSHA Voluntary Use Respirator Standard.
7. Decontamination of moldy objects is discussed in the Hazardous Materials Policy and Procedures.

IPM Appendix G: Freezing Protocol for Pest Control

1. The required temperature is at least -20 degC; -30 degC is now considered more effective.
2. The temperature must be lowered rapidly. If the fall in temperature is too slow, the insects can adapt quickly enough to live through the process (this is called 'cold-hardening').
3. Objects should be placed in polyethylene bags; single or double bagging is standard. Objects should be unfolded as much as possible given the size of the freezer, and old paper wrapping and/or stuffing removed if this can be done without allowing live insects to escape. The less dense the package the easier it is to lower the temperature rapidly. As much air as possible should be squeezed out. The bags do not need to be airtight, twist-ties are as good as tape.
4. Bagged objects should be at room temperature when they are placed in the freezer, which should already be down at least to -20 degC. There should be adequate air circulation, so that the object will cool to 5 degC in 4 hours. Very dense materials, such as wood or boxes of paper, will take longer to cool, and this should be allowed for in calculating treatment time if no more than the minimum recommended time is used.
5. The object should remain in the freezer for a minimum of 72 hours at -20 to -30 degC. Furniture conservators are now recommending that wooden objects be frozen for at least a week, and this can be done for all objects without risk.
6. The objects should then be removed from the freezer and allowed to gradually reach room temperature. They should then be returned to the freezer for another 72 hours (or another week). After they again reach room temperature, the objects should be vacuumed to remove all loose frass, cocoons, etc., and all old wrapping material should be discarded. Bags should not be removed while the objects are cold.
7. Materials such as resins and waxes become brittle at low temperatures. This is reversible upon warming, but while they are cold, the materials and the objects they are in will be much more vulnerable to damage from careless handling. This should be kept in mind when removing objects from the freezer. Objects which contain materials prone to embrittlement can be tied to rigid cardboard mounts before freezing to prevent accidental damage.
8. Acetate film and modern photographic prints on standard photo paper can be safely frozen as long as they are dry. Do not freeze other photographic materials without specific instructions.
9. Ethnographic materials of all kinds have been frozen safely, including unlikely pieces such as Huichol gourd bowls lined with resin and beads. At present, there are no cautions about specific types of objects.

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Appendix H: Statement on Pesticide Use on Museum Premises

The Museum building is designated a Child Facility by the University of Pennsylvania. In accordance with federal, state, and university regulations, Pest Control Chemicals, including those available for home use, are not used in the museum building except under unusual circumstances. Should an IPM problem which requires pesticide use arise within the building proper:

1. The Deputy Director of the Museum calls an emergency meeting of the IPM committee, which includes representatives from Environmental Health and Radiation Safety.
2. The problem and treatment plan is presented to the committee by the IPM Manager and IPM Service Provider for questions, comments and approval.
3. Once approval is received, the date of treatment is scheduled allowing sufficient time (**14 days**) for both internal and external notification. Advance notification is required, as rescheduling of Education Department tours may be necessary.
 - a. Museum Staff are notified via the internal web and bulletin board notices of the proposed treatment
 - b. Signage is prominently displayed at each entrance, notifying visitors and students of the treatment. Signs remain in place for **seven days** after the treatment date.
 - c. The Education Department notifies by telephone school groups scheduled to visit the museum on the day of the treatment and for **seven days** thereafter.

IPM Appendix I.1: Frequently Asked Questions - INTEGRATED PEST MANAGEMENT (IPM)**1. What is IPM?**

Integrated Pest Management is the means by which institutions such as museums, historical facilities, libraries, schools, etc. manage pest problems related to the building, the occupants, and the collections. IPM theory and practice emphasizes non-chemical methods, such as good housekeeping, non-toxic traps, freezing, and centralized planning to deal with all the problems of a building in a coordinated manner. The use of toxic pesticides, once extremely common on all levels, is now only a last resort and used with strict adherence to Federal and State mandated procedures.

2. How long has the Museum used IPM?

The University of Pennsylvania Museum has maintained an aggressive IPM program since 1981. Nevertheless, infestations do occur in organic (fur, feather, wood) artifacts. Insect eggs, including those of the Webbing Cloth Moth (which feeds on protein materials including fur and feathers), and wood-boring ("furniture") beetles, may lie dormant for many years and hatch when the temperature and humidity reach ideal levels for development. Likewise, wood-boring insects have equally long dormancy periods, laying eggs while the tree was alive and hatching long after the tree has been cut down and turned into a museum artifact.

3. Why Freezing?

Freezing is the ideal method of dealing with the pest problem in a non-toxic manner. Developed by a Canadian Conservation Scientist, Mary-Lou Florian, freezing has become a standard method of insect control in museums. UPM has been freezing objects since 1991, using a chest freezer. Objects are placed in sealed polyethylene bags. They are frozen for 5-7 days at temperatures of -20 to -30 degrees C. They are removed from the freezer and allowed to rest in room temperature for 7 days. Then the objects are plunged back into the cold freezer, thereby killing any larvae which have become active. The key to the process is the rapid change in temperature, as insects can easily adapt to slow temperature changes (called 'cold-hardening'). Preventative freezing is also a common practice. Objects which are new donations to the museum, or that have been out on loan, are frozen when they come into the building. The Mainwaring walk-in freezer will allow the Museum collections staff to finally treat not only large objects, but large numbers of objects in an efficient manner.

IPM Appendix I.2: Frequently Asked Questions - PESTS!

1. I saw a bug / mouse! What do I do?

All pest observations should go to Chrisso Boulis, Registrar for Records / IPM Manager (8-4088) or Yolanda Esteves, Facilities (8-2455). They will investigate and, if the problem requires immediate attention, they will contact the Museum's IPM service provider.

2. There are bugs in my offices. Can you come and spray?

We do not use any spray pesticides in the museum because of State laws. We have other means of dealing with the problem.

3. Can I bring spray from home to use in my office/lab?

No, this is illegal in the state of Pennsylvania. These sprays are authorized ONLY for home use and cannot be used in an Educational Building.

4. I have a dead mouse in my office. What do I do?

Please report the mouse to Chrisso Boulis. You may dispose of the entire glueboard and/or snap trap yourself, or request assistance from Facilities staff.

5. I hate glue boards! Is there anything better?

We use glue boards for bug trapping and monitoring. We have snap traps for mice. Live trapping of mice is not an option for the following reasons: a.) mice do not accept relocation and will die within a day or two once relocated. b.) Live animals present certain problems (they bite!) so that live animal traps can ONLY be handled by specially trained IPM people.

6. If there is one bug, there must be millions! Right?

Wrong! Generally bugs are solitary, so that one bug is one bug. Ants, however, do hang out in packs and swarms, but they are generally very short lived and do not bother the collections.

7. What about the really big bugs?

There is a wide variation in bug size so that the really big bugs are no different from the really small bugs. Size does NOT matter. And, they are not mutants from the x-ray department of the hospital!

8. Where can I get more traps?

Just let Chrisso or Facilities know; we have a supply of extras in stock. The IPM service provider does rounds and replaces missing traps throughout the whole building 3 times a year.

9. I hate the smell of the glueboards! Can you get something that smells better?

Believe it or not, peanut butter flavor is the preferred flavor of pests. It works. It's cheap. And it's what we can get.

10. I got stuck to a glueboard!

This sometimes happens. Sorry! Removal instructions are located on the non-sticky side of the glue board. Or, simply peel off and clean glue with soap and water or mineral/vegetable oil.

11. I caught this bug for you!

Thank you! Just bring it to Chrisso and she'll identify it for you. We've been monitoring pest activity for 20 years, so we know what's out there. We've come across a couple of surprises, so your continued vigilance is appreciated.

12. I saw this huge disgusting bug with lots and lots of legs!

What you probably spotted was a centipede or millipede. Yes, they are disgusting but they are our friends. They eat the silverfish which are a threat to some of our collections.

cb11/02