

Frequently Asked Questions about Contaminated Museum Collections

The U. S. Department of the Interior (DOI) provides the following notification to users and recipients of museum collections under the control of the Department that may contain toxic substances.

“This document serves as official notice to the recipient that the items being repatriated, lent, or handled may have been treated with potentially toxic substances for purposes such as conservation and preservation. Treatment may have occurred either while the item was in the collections of the U.S. Department of the Interior or prior to acquisition by the Department. Handling any of the items without proper safeguards and precautions may cause the user to come into contact with these substances. Upon request, the Department will make information available on safe handling of treated items. The Department does not warrant that the use of these procedures will eliminate all risks.”

The questions and answers below provide additional information regarding the notification.

BASIC INFORMATION ABOUT CONTAMINATED COLLECTIONS

1. What is a contaminant?

A contaminant in museum collections is any chemical or biological material found on museum items that poses a potential hazard to those who use or care for them. The contaminant may be inherent, such as heavy metals that occur in pigments, it may have been acquired later inadvertently, or through treatments such as chemical preservatives and pesticide application.

2. What are the most frequently encountered contaminants associated with museum collections?

Contaminants will vary among museums depending on the museum collections management processes and types of items in the collection. Commonly found inherent contaminants include heavy metals, such as lead or mercury in pigments. Inadvertent contaminants such as mold spores and rodent excrement may also be present. Acquired contaminants have varied throughout the 19th and 20th centuries. In the past, museums often applied pest-control materials such as arsenic, mercury, paradichlorobenzene (PDB), and ethylene oxide to organic materials.

The National Park Service has published a list of over 55 pesticides that may have been used on its collections in *Conserve O Gram* 2/16 and 2/17. That list of pesticides and their physical properties and health effects is available at http://www.cr.nps.gov/museum/publications/consveogram/cons_toc.html). American museums operating from the 18th century onward are likely to have used many of these pesticides.

3. How unsafe are various contaminated items in museum collections?

The degree to which a collection is unsafe depends on the type, concentration and toxicity of the contaminant present. This degree also depends on the length and risk of exposure. This risk can be measured in terms of frequency, duration and routes of exposure. An example of high toxicity with a high risk of exposure is an item treated with heavy metals, such as arsenic or mercury with surface particulates that can become airborne if the item is handled. Not only is there an airborne route of exposure, but there may also be hand-to-mouth ingestion of the contaminant or absorption through the skin. If, however, the same item is stored in a case and rarely handled, the toxicity remains high, but the overall risk of exposure is substantially reduced. You can reduce the risk either by reducing the contaminant or by reducing the possibility of exposure. Eliminating the contaminant is preferable but rarely possible.

The risk of exposure varies dramatically depending on the concentration and toxicity of the contaminant, the form of the contaminant for exposure (for example, loose particulate, or volatile chemical), the length and frequency of exposure, the route of exposure, and the use of the item (for example, handling and marking artifacts, or using masks or garments in ceremonies).

The best course of action is to consult an industrial hygienist who can evaluate the potential for exposure and the degree of toxicity. If you are uncertain about the status of an item, handle it as though it were contaminated.

4. How can potentially hazardous materials be stored safely on-site?

Although removal of all hazardous substances may not be practical, you can reduce the potential for exposure through awareness and appropriate storage and management techniques. A conservator may choose to clean items contaminated with PDB, arsenic, or mercury, for example, if the items must be handled. Conservators are trained to use appropriate safety precautions when removing surface residue, such as vacuuming the items with a HEPA-filtration system. Testing before and after is the only way to determine if the cleaning is sufficient for handling.

Minimize handling of all items suspected of containing contaminants. When contaminated items must be handled, follow pre-approved procedures, including:

- Proper work practices to minimize the exposure
- Use of appropriate personal protective equipment
- Good personal hygiene practices
- Health and safety awareness training
- Proper labeling and signs of containers, shelves, cabinets, etc.

5. Can objects become contaminated by being in the same room, cabinet, or drawer as contaminated items?

Yes. Hazardous materials can be transferred from one item to another in close proximity through direct contact, air movement or chemical vapors. Avoid placing uncontaminated items near items that are contaminated to reduce potential for cross-contamination.

6. Should I store contaminated items separately from other collections?

Yes. Store contaminated items separately from other items. If this is not possible, isolate the contaminated items by storing them in containers with hazard labels. Label all storage containers with proper hazard labels. Use labels recommended by the National Fire Protection Association (NFPA) <http://www.nfpa.org/index.asp> or the Hazardous Materials Identification System (HMIS) <http://www.paint.org/hmis/index.cfm>. In addition to the hazard codes and the contaminant, be sure the label includes the type of personal protective equipment (PPE) needed when handling these items.

7. What kinds of collection management records may be helpful in determining if an item may be contaminated?

While collection management records may document past treatment with pesticides or other chemicals, many such treatments were not routinely recorded. Records may not be specific to individual items but, unit-specific procedure manuals or standard reference texts may provide clues to past treatments. Procurement records may identify which chemicals were purchased or contracted for use.

Each museum should make a list of hazardous materials that it has used based on treatment records, the museum's past written procedures, procurement records, and books on collections management and preservation practices that the museum staff has used.

8. Can I assume that an item is free of contaminants if no documentation exists indicating that the item has been treated?

No. Individuals treating items often did not keep detailed records. The absence of treatment information in collection management records provides no assurance that the items are free of pesticides or other potentially hazardous materials. Original records may be incomplete or missing. Collection items may have been treated prior to acquisition, or some treatments may not have been recorded. For items that lack detailed documentation, assume that they were treated with contaminants until you learn otherwise.

9. Could DOI collection items have been contaminated before they were accessioned?

Yes. Many chemicals for conservation and preservation of objects were more widely used in the past than they are now. Anyone wanting to protect vulnerable items from pests might have applied pesticides to the items. Treated items could have later been added to a DOI collection.

10. What should I do with storage boxes and materials that have housed contaminated items?

Storage boxes and materials that have housed contaminated items should never be re-used for housing other items. Reuse of boxes can result in contamination of uncontaminated items.

You must dispose of storage boxes and other materials that have housed contaminated items in accordance with federal, state, or local regulations. State regulations must be at least as stringent as federal regulations, and in some states, may be more stringent.

For guidance on disposal of contaminated waste, contact your local environmental office. Phone numbers for state offices can be found in the State Government section of your local phone book. You can also find information on the Environmental Protection Agency (EPA) Website at <http://www.epa.gov/ebtpages/wastehazardhazardouswastedisposal.html>

Useful general guidance regarding waste disposal issues can be found in an article by M. White, J.J. Bischoff, and C. Stavroudis, entitled “From Cradle to Grave: Waste Management for Conservators” (AIC News 4/1, November 2001). The article can be found at http://aic.stanford.edu/health/guides/guide4_1.html.

11. Must NAGPRA cultural items in DOI collections be tested for contaminants before repatriation?

No. Under Native American Graves Protection and Repatriation Act (NAGPRA) a museum or federal agency official must inform the recipients of repatriations of any presently known treatment of the items with pesticides, preservatives, or other substances that represent a potential hazard to the items or to persons handling the items. Testing may be allowed, but is not required by NAGPRA. See questions 21 and 23.

MINIMIZING HEALTH RISKS ASSOCIATED WITH HANDLING COLLECTIONS

12. Who can help me evaluate the health risks associated with contaminated collections?

Professionals who are best qualified to help evaluate the health risks or symptoms associated with contaminated collections are industrial hygienists and medical personnel with specialized training in occupational health or in the specific types of contamination. Not all physicians are knowledgeable about the symptoms of pesticide poisoning or contaminant exposures associated with collections, so it is important to ask about their experience with these evaluations. Some helpful information and referrals can be obtained through your agency or local safety and health Offices or officials, the Center for Disease Control, the Environmental Protection Agency, and occupational/environmental health

organizations, such as the Association of Occupational and Environmental Clinics at <http://www.aoec.org/>, telephone (202) 347-4976, or e-mail: aoec@aoec.org .

13. What techniques, procedures, and personal protective equipment should be used when handling potentially contaminated collections?

Exposure sampling shows that the best method of controlling exposures is through stringent work practice controls, adequate hygiene practices, and the use of personal protective equipment when handling these items. Recommendations include the following:

- Wash hands frequently with soap and water after handling potentially contaminated items.
- Wear barrier gloves (for example, nitrile) rather than cotton gloves, and wear an apron or lab coat to prevent contact with skin or clothing.
- Remove gloves properly and dispose of them promptly after each use. Training on the proper technique of removing and disposing of contaminated gloves is extremely important. (See Question 14.)
- Do not reuse personal protective equipment that is contaminated.
- Launder aprons and lab coats after each use and place them in properly labeled bags, or use disposable aprons and lab coats. (See Question 15 for guidance on disposal of such items.)
- Do not bring food or drink in the work area.
- Do not put pencils, glasses, or other items in your mouth.
- Do not circulate dust or other particulates from museum items by brushing, shaking, using compressed air, or using non-HEPA-filtered vacuum cleaners.
- Clean work tables thoroughly, by HEPA vacuuming and/or wet cleaning.
- Maintain separate, specially marked pencil jars and clipboards in work areas for use with contaminated items.
- Provide training on hazards of contaminants and ways to reduce risk of exposure. Include all affected individuals in the hazard communication program.
- Properly label shelves and storage containers holding potentially contaminated items.

Note: Unpublished exposure sampling data from studies done by the National Institutes of Occupational Safety and Health (NIOSH) do not indicate the need to wear respiratory protection when handling some potentially contaminated items. Contact your local safety and occupational health office for further guidance.

See Question 38 for additional resource information.

14. Should personal protective equipment used to handle contaminated collections be considered hazardous waste?

Yes. You should treat personal protective equipment used to handle contaminated collections as hazardous waste unless your local authority responsible for hazardous waste has determined the equipment not to be hazardous.

See Question 15 for information on laundering such items.

15. Can certain personal protective equipment such as smocks and coveralls be laundered and reused? If so, what procedures should be used?

Yes. Contaminated personal protective equipment to be laundered must be sealed in a labeled bag, box, or carton. The labeling must identify the contaminants and their associated hazards and warn against the release of airborne chemical vapors, fibers or particulates during cleaning. The following are examples of such labeling:

- Arsenic (29 CFR 1910.1018) – “CAUTION: Clothing contaminated with inorganic arsenic. Do not remove dust by blowing or shaking. Dispose of inorganic arsenic contaminated wash water in accordance with applicable federal, state, or local regulations.”
- Lead (29 CFR 1910.1025) – “CAUTION: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable federal, state, or local regulations.”
- “CAUTION: Clothing may be contaminated with chemicals. Do not remove dust by blowing or shaking. Dispose of potentially contaminated wash water in accordance with applicable federal, state, or local regulations.
- “CAUTION: Clothing may be contaminated with mold. Dispose of potentially contaminated wash water in accordance with applicable federal, state, or local regulations.

Provide information meeting the Hazard Communication Standard (29 CFR 1910.1200) to the launderers. See Question 20.

Do not launder contaminated personal protective equipment at home or in a public laundry unless it is a commercial laundry that offers this service.

16. When are contaminated collection items considered to be hazardous waste? Whom should I contact to ensure compliance with all applicable laws and regulations pertaining to disposal?

Contaminated collection items are considered to be hazardous waste only when they are earmarked for disposal. Until that time, they are considered hazardous materials, but not waste. Prior to disposal, contact your local environmental office. Information on EPA regional offices and on state and local offices is available at <http://www.epa.gov/epahome/postal.htm> and <http://www.epa.gov/epahome/state.htm>.

It is important to note that state regulations must be at least as stringent as federal regulations, and indeed may be even more stringent. Therefore, your state EPA office will be able to help you comply with all applicable laws and regulations pertaining to disposal. For more information on dealing with hazardous waste, see “From Cradle to Grave: Waste Management for Conservators” at http://aic.stanford.edu/health/guides/guide4_1.html.

17. Can contaminated items in museum collections be decontaminated?

Collections can sometimes be partially decontaminated. Little is known about detoxification of residues from pesticide use, but the topic is the subject of current research. See “Methods to Mitigate Risks from Use of Contaminated Objects, Including Methods to Decontaminate Affected Objects” at http://www.spnhc.org/documents/CF17-1_2.htm. Even if detoxification methods are applied, 100% removal of a contaminant is not likely. Tests may not reveal the full extent of residual toxins. Therefore, it is important to handle even detoxified items as though they are contaminated.

18. Are existing exposure standards applicable to collection-based hazards?

Yes. If testing is performed for airborne contaminants, employees are covered by the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs). The PELs are legal standards that establish the highest concentration of airborne chemical substances to which workers may be exposed over an 8-hour period. Another organization, the American Conference of Governmental Industrial Hygienists (ACGIH), has established Threshold Limit Values (TLVs®) for airborne chemical substances, based on currently available information from industrial experience and/or from human and animal research studies. TLVs® will vary with age and susceptibility. For example, those who suffer from chronic illnesses are at greater risk. TLVs® are intended to provide guidance, but are not legally binding exposure limits. Documentation is available for purchase on the ACGIH Website. Both PELs and TLVs® are designed to protect healthy working adults over an 8-hour day, 5 days per week.

Additional information is available at

- <http://www.acgih.org/home.htm> or <http://www.acgih.org/store/>,
- <http://www.cdc.gov/niosh/homepage.html>,
- <http://www.cdc.gov/niosh/topics/chemical-safety/default.html>,
- <http://www.cdc.gov/niosh/npg/npg.html>,
- <http://www.cdc.gov/niosh/ipcs/nicstart.html>,
- <http://www.cdc.gov/niosh/idlh/idlh-1.html>, and
- <http://www.cdc.gov/niosh/81-123.html>.

19. How can I get information on exposure limits?

You can get Material Safety Data Sheets (MSDS) for information on exposure limits. Federal regulations require worksites to have MSDS for all onsite chemicals. MSDS are also available from the chemical provider or from several Internet sources. See Internet

sources listed in *Conserve O Gram* 2/17 at <http://www.cr.nps.gov/museum/publications/conservoogram/pesticides2-17.pdf>.

An interactive database of technical information on historic and contemporary materials used in the conservation, preservation, and production of artistic, architectural, and archeological materials created by the Conservation Department at the Museum of Fine Arts, Boston is available at <http://www.mfa.org/cameo/frontend/>. Information on individual contaminants can be referenced on the OSHA Website at <http://www.osha.gov>.

20. What hazard communication statements or warnings are appropriate when lending items from a collection that may be contaminated?

The OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200, requires employers to inform their employees, contractors, or others working with hazardous material at their facilities of the chemicals present, known specific hazards, and means to protect themselves. This also applies when sending potentially hazardous materials off-site. Details of the HCS can be found at <http://www.osha.gov>.

When available data are not sufficient to know if contamination is likely to be present, notification should state that contamination may be present but is unconfirmed. Information on the health hazards associated with some chemical or particulate materials is provided in 29 CFR 1910.1000, available at <http://www.osha.gov> and <http://gpoaccess.gov/index>.

If you have a question regarding compliance with the HCS, contact your local OSHA Area Office for assistance. In addition, each OSHA Regional Office has a Hazard Communication Coordinator who can answer your questions. The telephone number for the OSHA office closest to you should be listed in your local telephone directory. You may contact OSHA's Office of Information and Consumer Affairs at (202) 219-8151 for further assistance in identifying the appropriate contacts, or check the OSHA Website at <http://www.osha.gov>.

TESTING COLLECTIONS FOR CONTAMINATION

21. May I arrange to test items from DOI collections before agreeing to accept them for loan or repatriation?

As a prospective user or recipient of a DOI museum item, you may request authorization to test the item before acceptance of a loan or repatriation. Tell the responsible DOI official what tests you would like done and which laboratory you would like to do the work. The DOI unit official will consult with you and then evaluate the proposal in consultation with an industrial hygienist, a conservation scientist, and the unit curator.

22. Is a DOI unit required to pay for testing requested by a potential loan recipient?

No. Testing is not required for loaned items, but testing may be negotiated as part of the loan agreement.

23. Is a DOI unit required to pay for testing that a potential repatriation recipient requests?

No. Native American Graves Protection and Repatriation Act (NAGPRA) documentation grants may be used by tribes to pay for testing of DOI collections. For more information, see <http://www.cr.nps.gov/NAGPRA/grants>.

24. Are there special requirements for packing and shipping contaminated or potentially contaminated collections?

Yes. Packing and shipping collections that may have potentially hazardous residues requires use of personal protective equipment (PPE). Inform all staff involved in packing the items of the potential hazard and provide them with PPE. Ensure that the item and its contamination are isolated to prevent cross-contamination and the possible leaking of hazardous chemicals from the package. Label the item to indicate that it is potentially contaminated.

25. What kinds of tests for potential contaminants are available? How conclusive are the results?

Analytical methods are specific for individual contaminants. There is no single test that can detect all possible contaminants. Negative test results do not necessarily mean that the tested item is free of contaminants; testing in one area of an object may reveal no contamination while testing in another area may reveal otherwise. Therefore, all suspect items should be handled as if they are contaminated. Assessment of potential uses of the item and possible routes of exposure are equally important considerations. Someone trained to evaluate exposures, such as an industrial hygienist, should interpret test data and the potential for exposure.

Tests available for potential contaminants fall into several categories. Destructive tests require removing a sample from the item and consuming the sample during the test. The sample *cannot* be recovered. Chemical spot testing is an example of a destructive test. Non-destructive tests require taking a sample, but the sample is not consumed in analysis. For example, in some Fourier-transform infrared analysis (FT-IR) a sample must be removed but *can* be recovered intact. Non-invasive tests are another type of non-destructive test. Both non-destructive and non-invasive tests can be done directly on the item. In this case, no sample is removed or consumed in the analysis.

Another way to categorize the types of tests is to divide them into “low-tech” and “high-tech” tests. Low-tech tests tend to be less expensive and quick to run, but often indicate only the presence or absence of the contaminant. These tests include chemical spot testing and require taking samples from the item or the item storage area. Contaminants such as lead and arsenic may be identified this way. High-tech tests are generally more expensive and require the expertise of a trained analyst to perform them.

For detailed explanations of these methods, their advantages and disadvantages, and the sampling requirements, see “Analysis of Museum Objects for the Hazardous Pesticide Residues: A Guide to Techniques” by P. Jane Sirois and Genevieve Sansoucy at http://www.spnhc.org/documents/CF17-1_2.htm.

26. Must an item be handled to determine the type and/or quantity of the contaminant and to reduce the amount of contaminant on the item?

Handling of an item may or may not be required to determine the type and/or quantity of the contaminant. It may be possible to visually inspect an item without handling it to look for powdery materials on the surface. A conservator can sometimes estimate the amount of material present merely by careful visual examination. However, it may be difficult to tell the quantity of a material without some handling since some materials may be hidden in folds or on the inside of an item. Determining the type of material requires some type of testing. In most cases, a minimal amount of handling is required to obtain samples to determine the type of contaminant.

Reducing the amount of a contaminant requires that an item be handled. The amount of handling will depend on the size and complexity of the item, the fragility of that item, and the method used to remove the contaminant. Estimates of the amount of handling can best be made in consultation with a conservator familiar with removal methods. For a discussion of removal methods, see the papers by Nancy Odegaard and Marian A. Kaminitz at http://www.spnhc.org/documents/CF17-1_2.htm.

For information on how to handle a contaminated item safely, see Question 4.

27. What sample size is needed to test an item for contamination?

The sample size and even the necessity of taking a sample will depend on the type of contaminant and the types of tests to be performed. For example, X-ray fluorescence analysis can be done without actually touching the item. For some types of analyses, such as spot tests or gas chromatography/mass spectrometry, a few milligrams of sample must be removed from several areas on the item. Since contaminants most likely were not applied evenly, it is better to take several samples from different areas in order to ensure a “representative” sample. In some cases, it may be acceptable and/or necessary to take samples from storage area shelves or boxes or from item housings. Make this decision in consultation with a conservation scientist familiar with culturally sensitive materials. For more detailed sampling requirements for the various tests, see the paper by P. Jane Sirois and Genevieve Sansoucy at http://www.spnhc.org/documents/CF17-1_2.htm.

28. Will the item have to be sent away for testing? If so, where? How will it be transported?

In many cases an item does not have to be sent away for testing; however, as discussed in Question 27, sometimes an item must be sampled for analysis. You should consult with a conservation scientist familiar with culturally sensitive materials before doing any testing to determine if the item must be sent away for testing. You should also have the scientist doing the analysis visit your site to take samples, unless you are very familiar with the sampling requirements for the tests being used.

When sampling on-site is not possible, items should be sent to a laboratory that is experienced in performing tests on museum items. For example, an environmental testing lab experienced with only air, soil, and water would not be an appropriate lab. If items need to be sent to a laboratory, the transportation method should be determined in consultation with a conservator, the laboratory, an industrial hygienist, and the unit curator. Items that may be contaminated with hazardous materials must be transported in compliance with Department of Transportation codes and other federal, state and local regulations. See Question 24 for more information on packing and transporting items.

29. How long does it take to test an item? When can I expect the results?

The length of time it takes to test an item and to receive results depends upon many factors, including:

- Types of tests requested
- Level of their complexity
- Size of the samples
- Quality of the samples
- Number of samples
- Time to actually perform the analysis
- Level of detail you require in a report and whether or not you require interpretation of the results
- Location of the testing facility

Discuss your needs and expectations with the laboratory manager or analyst doing the tests.

30. What does a positive test for contamination mean?

A positive result is one where the testing protocol has been able to actually detect a contaminant, that is, there is sufficient material to be above the Limit of Detection (see Question 18). There are two types of positive results that can be reported, qualitative and quantitative.

- “Qualitative” results simply state that the contaminant in question is present. It says nothing about the amount of contaminant found.
- “Quantitative” results report results as a number.

In general, most testing protocols do not test the total amount of contaminant in an object, but how much was found in the sample. Especially with contaminants that may have been applied in powder or spray form, uniform deposition is highly unlikely. If multiple samples are taken, it is quite possible to find variable amounts of a contaminant, even though all samples were taken from the same object.

It is difficult, if not impossible, to assess the correct level of risk using either qualitative or quantitative results.

If testing was performed by a laboratory unfamiliar with interpreting results of samples taken from museum objects, you should enlist the assistance of a conservation scientist and an industrial hygienist to help you understand what the testing results mean and determine what the level of risk may be.

31. If an item tests negative for a contaminant, could it still pose a hazard?

Yes. Negative test results do not necessarily mean that an item contains no hazardous materials. An item is usually tested for the most commonly used preservation chemicals. It is not practical to test each item for all chemicals.

Testing protocols have Limit of Detection (LOD) levels at which a chemical or particulate concentration cannot be adequately determined. The hazardous material may be present but in concentrations below what can be detected. The term “safe” is relative. If you minimize handling and follow recommended handling procedures, you will minimize exposure to any hazardous material that may be present.

32. Is there a list of possible testing laboratories?

The American Industrial Hygiene Association maintains lists of laboratories at <http://www.aiha.org/LaboratoryServices/html/lists.htm>, many of which can test for hazardous materials.

Before working with a laboratory, you should:

- Check the laboratory’s certifications
- Inquire about previous experiences handling and testing collections and culturally sensitive items
- Consult with a conservation scientist and/or industrial hygienist to help assess the laboratory’s capability to provide the needed services

If a laboratory lacks relevant experience, find out if the laboratory is willing to work with you and/or your conservation scientist to expand its lab testing capabilities. Refer to Question 24 for information on transporting the item to the testing laboratory.

33. What rules apply to testing that includes medical monitoring?

Medical monitoring is not routine practice and is generally based on contaminant-related sampling. If medical monitoring is conducted, records must be maintained in accordance with 29 CFR 1910.1020. Details on medical surveillance can be found at <http://www.osha.gov/SLTC/medicalsurveillance/index.html>.

The collection and maintenance of records containing sensitive personal information (for example, medical evaluations, physician statements clearing you to wear a respirator, and personal air and biological monitoring data) must be consistent with the provision of 5 U.S.C. 552a (Privacy Act of 1974). Details on access to exposure and medical records can be found at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10027.

CONSIDERATIONS FOR REPATRIATING POTENTIALLY CONTAMINATED COLLECTIONS

34. If an item is determined to be hazardous, will DOI still repatriate the item and allow the recipient to determine its disposition?

Yes. DOI has adopted universal language (refer to the first paragraph of this document) that must be used by all DOI units when providing access to collection items, including those that may be offered for repatriation. The museum official or federal agency official must inform persons allowed access to the collections of any presently known treatment with pesticides, preservatives, or other substances that represent a potential hazard to the items or to persons handling the items. At the time repatriation takes place, control of the item is transferred to the recipient. Under NAGPRA, the lineal descendant or culturally affiliated tribe decides the final disposition of repatriated items.

Refer to Question 23.

35. If a tribe chooses to postpone or decline the return of a potentially contaminated item before repatriation, can DOI staff choose to provide “traditional care” and/or limit access to the item?

Yes, within existing regulations such as 36 CFR 79 and Departmental standards such as 411DM3. Determining what types of care are in the best interests of the collections must be done in consultation with the lineal descendant or culturally affiliated tribe(s). This is a good opportunity for staff to share information on recommended treatments, if any, and on proper handling of the collections.

Refer to Question 23.

36. If a tribe chooses to postpone or decline the return of a potentially contaminated item after repatriation, can DOI continue to care for the item?

Maybe. After an item is repatriated, it is no longer federal property. A federal agency usually cannot use federal resources to provide care for nonfederal property. However, it may be possible for a repatriation recipient to loan a repatriated item to a DOI bureau after repatriation. For more information, contact your bureau's museum property manager.

Refer to Question 23.

37. Can contaminants be mitigated or reduced sufficiently from a repatriated cultural item so that the recipient can use the item, for example, wear a repatriated mask during a ceremony? [See also Question 17.]

Whether enough contamination can be mitigated or removed from a cultural item so that the item can be used depends upon several factors, including:

- Type of contaminant present
- Level of hazard posed by the contaminant
- Extent to which the contaminant is adhered to or incorporated into the item
- Whether any methods have been developed for removal of that particular contaminant or group of contaminants
- Intended use of the item
- Sensitivity of the user to that particular contaminant or group of contaminants

There are various strategies to mitigate the risk posed by a contaminant:

- Complete removal of the contaminant, assuming that methods to accomplish this are known and have been tested to verify that they are effective
- Partial removal of the contaminant by a cleaning method, for example, removal of loose contaminant residues that are not chemically bonded to the item using a HEPA vacuum
- Alteration of the contaminant to create a less hazardous material (It is possible that over time this occurs with some contaminants through breakdown of the original chemical.)
- Creation of a barrier between the contaminant and the user, for example, use of gloves or application of a liner to a mask to reduce transfer of the contamination from mask to the user
- Complete replacement of the item with a duplicate, reproduction, or alternate item
- Practices known only to the tribal group receiving the repatriated items

You should also consult an industrial hygienist and a conservator. More research must be conducted to develop new methods to mitigate or remove contaminants. For a discussion of current mitigation and removal methods, see papers by Kathryn A. Makos and by Nancy Odegaard and Marian A. Kaminitz at http://www.spnhc.org/documents/CF17-1_2.htm.

Refer to Question 23.

RESOURCES FOR MORE INFORMATION

38. Where can I get more information?

For additional information, refer to the National Park Service (NPS) *Conserve O Gram* (COG) series available on the web at http://www.cr.nps.gov/museum/publications/conservedgram/cons_toc.html. The following COGs are relevant to issues concerning contaminated collections:

- 2/2 — “Ethylene Oxide Health and Safety Update.”
- 2/3 — “Arsenic Health and Safety Update.”
- 2/4 — “Dichlorvos (Vapona) Update.”
- 2/10 — “Hazardous Materials in Your Collection.”
- 2/13 — “An Introduction to Respirator Use in Collections Management.”
- 2/14 — “DDT Health and Safety Update.”
- 2/16 — “Chronology of Pesticides used on National Park Service Collections.”
- 2/17 — “Physical Properties and Health Effects of Pesticides used on National Park Service Collections.”
- 2/19 — “Guidelines for the Handling of Pesticide Contaminated Collections.”

You may also want to contact your agency’s industrial hygienist or a contract industrial hygienist to determine if your collection’s conditions warrant any additional precautionary procedures and/or protective equipment.

The number of Internet Websites with information regarding the use and/or disposition of contaminated collection items is growing. You may find additional research materials at your local or university library. A number of research institutions continue to test items to determine the hazardous materials used for preservation and are conducting research on ways to mitigate the danger that could result from handling contaminated items.

Website list:

The Websites listed below provide a wide range of information related to contaminated collections.

Occupational Health and Safety

Hazardous Materials Identification System

<http://www.paint.org/hmis/index.cfm>

The Hazardous Materials Identification System (HMIS) was developed by the National Paint & Coatings Association (NPCA). It helps employers comply with OSHA's Hazard Communication Standard (HCS). The program uses a numerical hazard rating system, labels with colored bars, and training materials to inform workers of chemical hazards in the workplace. Personal protective equipment information is supplied to give employees information needed to protect themselves from hazardous materials they might encounter on the job.

Health and Safety Committee of the American Institute for Conservation of Historic and Artistic Works (AIC)

<http://aic.stanford.edu/health>

The Health & Safety Committee of the American Institute for Conservation of Historic and Artistic Works (AIC) was created to increase the awareness of safety hazards and general health issues related to the conservation profession; and to provide educational and technical information through contributions to the *AIC Newsletter*, the AIC Website, lectures, workshops and displays.

Association of Occupational and Environmental Clinics

<http://www.aoec.org/>

The Association of Occupational and Environmental Clinics (AOEC) is a non-profit organization committed to improving the practice of occupational and environmental health through information sharing and collaborative research.

The National Fire Protection Association

<http://www.nfpa.org/index.asp>

The National Fire Protection Association (NFPA), established in 1896, serves as the world's leading advocate of fire prevention and is an authoritative source on public safety. The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.

The National Institute for Occupational Safety and Health

<http://www.cdc.gov/niosh/homepage.html>

The National Institute for Occupational Safety and Health (NIOSH) is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. NIOSH is part of the Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services.

Chemical Safety

<http://www.cdc.gov/niosh/topics/chemical-safety/default.html>

Chemical safety links to NIOSH databases and other resources, other government agency resources, and Material Safety Data Sheets.

Occupational Safety and Health Administration

<http://www.osha.gov>

The Occupational Safety and Health Administration (OSHA) is part of the U.S. Department of Labor. Its mission is to save lives, prevent injuries and protect the health of America's workers.

<http://www.osha.gov/SLTC/medicalsurveillance/index.html>

This OSHA website includes links to information and Federal requirements concerning Medical screening and medical surveillance.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10027

Regulations (Standards 29 CFR), 29 CFR 1010.1020. This OSHA website provides access to employee exposure and medical records.

Industrial Hygiene

The American Conference of Governmental Industrial Hygienists

<http://www.acgih.org/home.htm>

The American Conference of Governmental Industrial Hygienists (ACGIH®) advances worker health and safety through education and the development and dissemination of scientific and technical knowledge.

<http://www.acgih.org/store/>

Purchase American Conference of Governmental Industrial Hygienists (ACGIH®) publications and products online.

American Industrial Hygiene Association

<http://www.aiha.org>

The American Industrial Hygiene Association (AIHA) promotes, protects, and enhances industrial hygienists and other occupational health, safety and environmental professionals in their efforts to improve the health and well being of workers, the community, and the environment.

<http://www.aiha.org/Content/LQAP/accred/AccreditedLabs.htm>

This site provides a list of American Industrial Hygiene Association (AIHA) accredited testing laboratories.

Pesticides

Association of American Pesticide Control Officials

<http://aapco.ceris.purdue.edu/>

The Association of American Pesticide Control Officials was formed in 1947. Members of AAPCO consist of essentially state and federal pesticide regulatory officials; however, federal and provincial Canadian officials are eligible for membership, as are officials of all North American countries, including heads of experiment stations, research workers,

Departments of Agriculture, and other government officials with responsibility for examination of pesticides.

***Conserve O Gram* September 2001, Number 2/17.**

<http://www.cr.nps.gov/museum/publications/conservoogram/pesticides2-17.pdf>

This publication discusses physical properties and health effects of pesticides used on National Park Service Collections.

California Department of Pesticide Regulation

<http://www.cdpr.ca.gov/>

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and fostering reduced-risk pest management.

U.S. Environmental Protection Agency

<http://www.epa.gov/pesticides/>

The U.S. Environmental Protection Agency web pages include much information about pesticides.

Hazardous Waste Disposal and Transportation of Hazardous Substances

U.S. Environmental Protection Agency

<http://www.epa.gov/ebtpages/wasthazardhazardouswastedisposal.html>

The U.S. Environmental Protection Agency web page links to information about hazardous waste disposal.

<http://www.epa.gov/epahome/state.htm>

<http://www.epa.gov/epahome/postal.htm>

Links to U.S. Environmental Protection Agency regional offices and to State Environmental Departments can be found at these URLs.

49CFR—Transportation, Subtitle B--Other Regulations Relating to Transportation, Chapter I – Research and Special Programs Administration, Department of Transportation.

<http://www.myregs.com/dotrspa/> This document provides information on topics such as defining hazardous materials, general procedures, and requirements for shipping, packaging and transporting hazardous materials.

Collections Conservation

From Cradle to Grave: Waste Management for Conservators.

http://aic.stanford.edu/health/guides/guide4_1.html

AIC Health & Safety Guides, November 2001, volume 4(1).

Conservation and Art Material Encyclopedia Online

[http://www.mfa.org/ cameo/frontend/home.asp](http://www.mfa.org/cameo/frontend/home.asp)

Conservation and Art Material Encyclopedia Online (CAMEO) is a searchable encyclopedia developed at the Conservation and Collections Management Department at the Museum of Fine Arts, Boston. CAMEO contains chemical, physical, visual, and analytical information on over 10,000 historic and contemporary materials used in the conservation, preservation, and production of artistic, architectural, and archaeological materials.

The Society for the Preservation of Natural History Collections

<http://www.spnhc.org/>

The Society for the Preservation of Natural History Collections (SPNHC) is a multidisciplinary organization composed of individuals who are interested in development and preservation of natural history collections.

http://www.spnhc.org/documents/CF17-1_2.htm

The Society for the Preservation of Natural History Collections *Collection Forum* Fall 2001, Volume 17, Numbers 1 & 2. Proceedings of the conference on *Contaminated Collections: Preservation, Access and Use*, National Conservation Training Center, Shepherdstown, WV, April 6 – 9, 2001.

Repatriation

Identifying poisons in California NAGPRA Artifacts

<http://bss.sfsu.edu/calstudies/arttest/rec.htm>

This document summarizes recommended actions regarding the pesticide contamination of museum materials. These recommendations were discussed and reviewed by participants at a working conference on “The Contamination of Museum Materials and the Repatriation Process for California,” held at San Francisco State University, September 29 – October 1, 2000.

National NAGPRA--NAGPRA Grants

<http://www.cr.nps.gov/NAGPRA/grants>

NAGPRA Grants are awarded to Indian tribes, Alaska Native villages and corporations, Native Hawaiian organizations, and museums for financial assistance in carrying out projects associated with NAGPRA compliance.

National NAGRPA Program Special Topics

<http://www.cr.nps.gov/nagpra/special/INDEX.HTM>

The National NAGPRA program serves as a resource on a variety of topics related to repatriation, including contaminated collections.

Federal Regulations and Publications

U.S. Government Printing Office

<http://gpoaccess.gov/index.html>

The U.S. Government Printing Office disseminates official information from all three branches of the Federal Government.