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chemicals exist on an object prior to repatriation; and second, for those objects that are contaminated, the need to identify the particular health risk posed by the contamination. These issues fall within a complex legal framework, governed by at least two separate statutory regimes--cultural resources statutes and environmental statutes--as well as by principles of tort law. Although these legal principles influence the respective rights and duties of Native people and of museums, they are not dispositive of the issues. Rather, the issue of repatriation of contaminated objects requires a restructuring of existing law and policy directives to achieve a coherent legal solution. However, before such a restructuring is possible, it is necessary to examine the legal and ethical dimensions of the problem through an intercultural lens. The nature of the problem is one that threatens human health and safety, requiring scientific study of the health effects of such contamination given the patterns of use employed by Native people. However, it is also one that requires recognition of cultural harm and the inadequacy of existing tort law to quantify the damages that are being suffered by Native people.

NAGPRA Artifact Repatriation and Pesticides Contamination: The Hopi Experience

Micah Loma'omvaya
Hopi-EPA Pesticides Program, P.O. Box 123, Kykotsmovi, AZ 86039, USA

Abstract: The possible pesticides contamination of museum collections subject to the Native American Graves Protection and Repatriation Act (NAGPRA) has challenged the Hopi Tribe of Northern Arizona to reassess the procedures and protocols involved with repatriation efforts. The utilization of the NAGPRA process in rectifying the removal of integral Hopi cultural and religious objects from their proper contexts may be difficult to realize if meaningful contamination data and funding resources are not available for informed decision making. With a lack of meaningful data from museum records or treatment documentation, repatriated objects may pose unknown health risks to Hopi religious practitioners, families, and the general public. The current problems surrounding this lack of information also relate to the tribal environmental and health regulations that exist to protect those communities. Health risks may be determined through an effort to identify or develop appropriate venues within the NAGPRA statute for testing of museum collections subject to repatriation. The Hopi have established protocol that addresses the potential hazards of contaminated collections and will work to lead research into the production of meaningful test results for review. These results must also be interpreted to tribal communities in a meaningful way so that their decisions are based on detailed and explanatory information of the circumstances surrounding contaminated objects.

Poisoning The Sacred

G. Peter Jemison
Seneca Nation of Indians, Ganondagan S.H.S., P.O. Box 239, Victor, New York 14564, USA
(No abstract)

Issues in Communication and Training Venues: Museums and Tribal Communities

Susan Secakuku
National Museum of the American Indian, Smithsonian Institution, Cultural Resources Center, 4220 Silver Hill Road, Suitland, MD 20746-2863, USA
Abstract: Communicating and building relationships with Native communities by museums is a strong element in the contamination and pesticide issue. Many concerns such as access of knowledge and concept of who is the authority have been challenged with recent work of tribes and museums on their repatriation efforts. This paper will review past NAGPRA related activity to provide examples of training methods and communication venues by museums for tribes.

Analysis of Museum Objects for Hazardous Pesticide Residues: A Guide to Techniques

P. Jane Sirois and Geneviève Sansoucy
Analytical Research Laboratory, Canadian Conservation Institute, Department of Canadian Heritage, 1030 Innes Road, Ottawa ON K1A 0M5, Canada
Abstract: Many museum objects, particularly natural history specimens and artifacts made of organic materials, have been treated with pesticides to preserve them. This has resulted in residual chemicals being present which may pose a health hazard. Since documentation of the preparation and treatment of museum objects with pesticides was often sporadic, we may not know whether an artifact is contaminated. Earlier treatment records may help determine what compounds should be tested for in a particular collection. A major concern in the analysis of museum objects and sacred objects in particular is sampling. Ideally, methods of analysis that do not require the removal of any samples from the object should be employed. If necessary, microscopic samples can be removed from objects provided they are representative of the object as a whole. The location of the pesticide residues within the object and the type of sample taken both have a critical bearing on the outcome of the analysis. Surveys of collections for the presence of chemical elements with atomic number equal to or greater than

20 (calcium) can be done without sampling using portable x-ray fluorescence spectrometers (XRF). Detection limits, cost and time are important factors to be considered in choosing appropriate techniques for analysis. Quantitative results for arsenic, mercury or lead compounds can be obtained by atomic absorption spectrophotometry (AAS) or inductively coupled plasma-atomic emission spectrometry (ICP-AES). Analysis of organic pesticide residues can be done by gas chromatography/ mass spectrometry (GC/MS). Unknown powders and residues present on the surface of an object can be analyzed by Fourier transform infrared spectroscopy (FTIR), polarized light microscopy (PLM), or x-ray diffraction (XRD) for preliminary identification. This paper provides a survey of various methods used in the analysis of pesticide residues on museum artifacts.

Poisoned Heritage: Curatorial Assessment and Implications of Pesticide Residues in Anthropological Collections

James D. Nason
Thomas Burke Memorial Washington State Museum and Department of Anthropology, University of Washington, Seattle, Washington 98195, USA
Abstract: The need to find efficient and non-destructive analytical means to detect contamination of collections from prior use of pesticides is vital for the safety of museum staff and for Native American communities receiving objects through repatriation. Yet many museums lack both records on previous treatments and the expertise to interpret the data that does exist in terms of actual health risks. This paper outlines the results of preliminary detection research using a handheld multi-element x-ray fluorescence spectrometer. These results indicate the presence of arsenic and mercury residues in a significant proportion of objects in the test group. Moreover, accession and catalog data show that a considerable number of contaminated objects were treated by private collectors prior to museum acquisition. Air sampling tests further demonstrate that object residues are not entering the work environment, although they can be transferred by direct handling of objects. New guidelines for handling are outlined along with recommendations for further research and other actions.

Tribal Repatriation of Sacred Objects: Public Health Issues

Ana Maria Osorio
US Environmental Protection Agency, Office of Pesticide Programs, 1200 Pennsylvania Ave. NW (7506C), Washington, DC 20460, USA
Abstract: A review of the scientific literature, key concepts and health effects associated with the tribal repatriation of sacred objects is provided. The discussion includes a description of current medical training efforts for tribal communities, biological and environmental monitoring, and pesticide illness

surveillance programs. A review of potential pesticide exposures during the entire tribal repatriation process will be explored: field and private collecting, museum preservation work, and, ultimately, the transport and return to the tribal community. Prevention in the form of an integrated pest management approach will be presented. In addition, recommendations for exposure prevention programs are described (e.g. training, engineering controls, personal hygiene practices, personal protective equipment, environmental monitoring, and biological monitoring). Finally, a list of informational resources (WEB, text, and a telephone hotline) will allow access to more in-depth information on pesticide intoxication.

Hazard Identification and Exposure Assessment Related to Handling and Use of Contaminated Collection Materials and Sacred Objects

Kathryn A. Makos
Smithsonian Institution, Office of Safety and Environmental Management, 750 Ninth St., N.W., Suite 9100,Washington, DC 20560-0932, USA
Abstract: Occupational and environmental risk assessment is the systematic evaluation of exposure and toxicity data for the purpose of estimating health risk to members of a population. The process includes: hazard identification, dose-response assessment, exposure assessment, and risk characterization. These processes can be applied to the determination of potential health risk to museum workers and tribal community members who handle contaminated collections materials and sacred objects. Many acquired hazards are unknown to the user, as documentation of preservative treatments is often poor. Rigorous occupational health studies are needed to fully characterize workplace exposures within this non-traditional "industry". Tribal community members, as well as the toxicologists and public health officials with whom tribes will be consulting, need to compare source contaminant data in order to make rational statements as to potential risks. Critical to this process is the need for standardized, and in some cases revalidated, assessment protocols that take into consideration the restrictions placed on traditional industrial hygiene sampling methods on sacred objects and reflect an appreciation of the cultural issues surrounding the object’s intended use.

American Indian Concepts of Object Use

Alyce Sadongei
Arizona State Museum, University of Arizona, P.O. Box 210026, Tucson, AZ 85721-0026, USA
Abstract: Tribal communities, the museum field, and conservation professionals are faced with an urgent situation: sacred objects and objects of cultural patrimony eligible for return under the 1990 NAGPRA law have

been found to be contaminated with pesticide residues. Standards for testing and possible removal of residues must be developed to reduce the physical harm these objects pose to tribal religious leaders and cultural practitioners.

The manner in which tribes use repatriated objects can indicate how residues may come into contact with the human body or the environment. Equally important is understanding how tribes define use since this can assist in developing protocols for testing that are culturally relevant and mutually beneficial to the tribes and the museum and scientific community. A general description of use as understood by tribes encompasses three categories: Physical, Symbolic and Life Ending Use. These three categories of tribal use suggest parameters for handling that can inform the preservation communities and enable them to assess mitigation and handling guidelines for objects returning to tribal communities.

Methods to Mitigate Risks from Use of Contaminated Objects, Including Methods to Decontaminate Affected Objects

Nancy Odegaard
Arizona State Museum and Department of Anthropology, University of Arizona, Tucson, AZ 85721-0026, USA
Abstract: The contamination of museum objects by residual pesticide treatments presents legal and moral issues to individuals of museum professions and tribal communities. After a discussion of general remediation, this paper considers some of the risk mitigation techniques that may be applicable to cultural objects. These include the use of HEPA filtered vacuums, compressed air, washing, ultraviolet light, chemical alteration, freeze-drying, laser, and microbial detoxification.

A Review of Methods to Mitigate the Risks from Use of Contaminated Objects

Marian A. Kaminitz
Smithsonian Institution, National Museum of the American Indian, Cultural Resources Center, 4220 Silver Hill Road, Suitland, Maryland 20746, USA
Abstract: To assure the preservation of cultural materials, past museum collecting and storage practices included the use of pesticides as a deterrent and eradication agent. Pesticide residues present on museum collections are a possible health risk. Within the museum setting, guidelines for the safe handling and record keeping of pesticide contaminated collections have been incorporated into standard collections management practices. Many museums, including some tribal museums, address the issue of pesticide contamination of collections with similar care practices. The bigger question

of how standard collections management practices can collide with cultural guidelines and preferences is addressed as a basis for understanding the impact of museum methodologies on Native sensibilities in a summary statement by NMAI Collections Management Museum Specialist, Terry Snowball.