

Handling Concerns for Fashion Collections

Introduction

In 2019 The Museum at FIT was awarded an IMLS grant under the Museums for America/Collections Stewardship and Public Access program. This grant-funded project enabled the museum to test a representative sample (165 objects) of the collection for the presence of inherent hazardous materials (i.e., heavy metals) known to be found in fashion objects. The objects selected included 37 costume pieces, 89 men's and women's hats and 39 other accessories including fans, handbags, parasols, fur muffs, stockings, boots, and shoes. The objects dated from 1740 to 1970.

The museum's records indicated no documentation of the use of pesticides on the collection. Although no documentation was found, it couldn't be assumed that pesticides hadn't been applied to collection objects. Museum records can't account for any pest prevention measures that may have been taken prior to objects entering the collection. However, research revealed that the methods by which fashion objects were manufactured and the dyes or mordants used to color these objects could also be problematic.

The four heavy metals of most concern found in the 165 tested objects were mercury, arsenic, lead, and chromium. They may affect museum staff through different means: lead through ingestion and inhalation of particles, mercury through inhalation of the vapor, and arsenic and chromium through skin contact.

Types of Fashion Objects that may be Problematic

As anticipated, the objects most likely to contain hazardous materials were older. However, they need not be as old as one would think. For example, the use of mercury in fur felting was banned in the US in the 1940s but was detected in MFIT felt hats from the 1970s. Arsenate pesticides were not banned in the US until the 1980s. And as recently as 2012, the Center for Environmental Health was finding levels of lead in PVC purses and wallets well over the federal limit. While the risk decreases with more modern objects, it does not altogether disappear.

Objects with which to use caution include, but are not limited to:

Wool felt hats

Plush silk top hats

Weighted silks

Feathered and taxidermy objects

Handling Guidelines for Fashion Objects

- **FRAGILITY**

Carefully and thoroughly inspect all objects before handling them. Always presume that each museum object is unique, irreplaceable and fragile. Whether it is apparent to the naked eye or not, all objects weaken by normal wear and long-term exposure to environmental changes.

- **CLEAN HANDS AND PROPER ATTIRE**

Since dirt, salts and oils from hands are transferred to the surface of an object during handling, hands must be washed frequently; use soap and water, avoid hand wipes or hand lotion. Nitrile gloves should be worn as much as possible when handling objects, not only for the objects' safety, but for the handler's as well. Be aware that fashion objects may contain hazardous materials, such as arsenic, lead, chromium, and mercury. Be sure that nitrile gloves fit well and that good manual dexterity can be maintained.

Wear a clean lab coat or smock if you suspect an object may contain hazardous materials. You do not want heavy metals to transfer to your clothes. Wear a lab coat or smock if your clothing has protruding buttons, belts, and buckles that can snag or tear a textile. Roll up sleeves and do not wear bulky or loose clothing that can catch on an object. Remove all jewelry, rings, and watches, dangling IDs or keys. Refrain from wearing heavy makeup, lipstick, and nail polish, which can transfer to objects. Tie long hair back.

- **HANDLING OBJECTS**

Focus on the task at hand and leave socializing for another time. Avoid moving objects when you are tired or not feeling well. Try to get a good night's rest before any major moving projects. Keep in mind that thoughtful, limited object handling will help to prevent damage and ensure longevity of museum objects.

Handle an object as little as possible. Remember, an object, whether it is historic or contemporary, is stressed every time it is moved or handled, so avoid all unnecessary touching. Locate and utilize trays, carts, or tables of adequate size for objects. Always avoid folding textile and costume objects. Creases produced by folding create weak areas where fibers break more easily. If folding is unavoidable, crumple acid free tissue and insert in folds to prevent creases.

- **PLAN AHEAD**

Do not touch an object until you know precisely what you are going to do and how you are going to do it. Prepare all equipment beforehand. Make sure you have enough space to safely accommodate the object. Be sure you have as many people as are needed – no more and no less.

- **CLEAN SPACE**

A clean, flat, well-lit surface should be prepared to receive the object. All pens, pencils, scissors, tools or other sharp instruments should be removed from that area. Do not place any item on top of a museum object. No drinks, food, candy, gum or lozenges should be consumed while working. Use only pencils in the work space. Never place an object directly on, in or next to acidic paper, cardboard or unsealed wood.

- **MOVING OBJECTS**

The process of carrying and/or moving an object should be thought through carefully before being executed. The route should be planned and all obstructions cleared out of the way. Do not transport an object via the stairwell unless it will not fit in an elevator. If an object is oversized or heavy, always ask a colleague for assistance.

When transporting a textile, the entire object should be supported from below. A costume can be transported on a cloth or acid free paper sling, a rigid board or an appropriately sized tray, or if strong enough on its own hanger. Objects can also be transported in trays or on boards. Multiple objects should be transported on either a rack or a cart. If an object is oversized or heavy, always ask a colleague for assistance.

Accessioning, Cataloguing, Condition Reporting

When new objects enter the museum collection, special care should be taken with any suspect objects. When documenting these items, any potential exposure to staff can be mitigated by wearing nitrile gloves.

Because it is unknown how objects were stored before coming into the museum, any objects that are suspected to contain hazardous materials, should be treated as if they are contaminated. That means they should be handled with nitrile gloves and vacuumed with exceptional care.

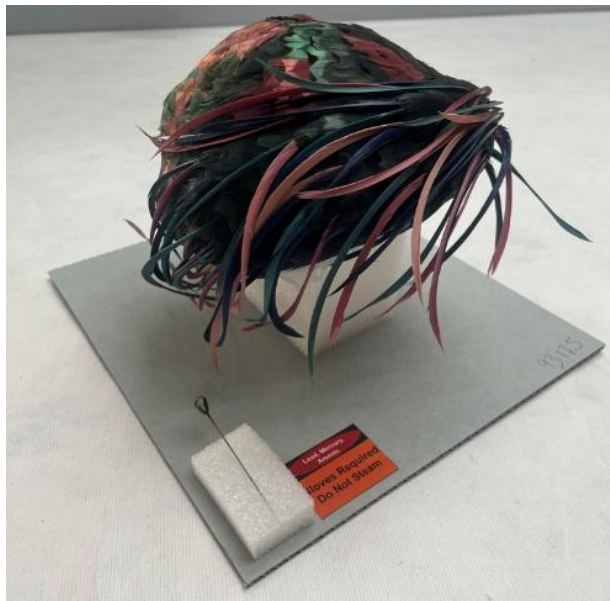
Remember to cover all surfaces that may come in contact with the object with polyethylene sheeting. After handling, dispose of contaminated gloves and polyethylene sheeting in a hazardous waste bin. Always turn gloves inward when removing them.

Storage Guidelines

Of the four heavy metals of most concern, mercury is the only one with the potential to affect museum staff through vapor. The body absorbs very little mercury through ingestion or skin contact, but mercury vapor will continue to off-gas from an artifact into its environment, indefinitely.

All objects that contain hazardous materials should be stored in such a way that minimizes object movement, prevents direct contact with the object and avoids contact with neighboring objects. Accessories (hats, bags, fans, etc.) can be mounted on a rigid blue board base, large enough to allow handling without touching the object and to prevent any part of the object from touching adjacent objects.

Here are some examples from MFIT's collection:





Hanging garments can be housed in a stitched Tyvek garment cover, to prevent any fiber or dust particulates that contain heavy metals from transferring to adjacent objects. When the presence of hazardous materials is confirmed, warning labels will be affixed to the mount where they can be clearly seen.



Maintenance

One of the most effective ways to reduce arsenic, lead, and chromium is to thoroughly vacuum each object with a HEPA-equipped vacuum. According to a study published by Rebecca Tinkham, an average of 70% of the arsenic present in textiles could be removed through thorough vacuuming, although it is noteworthy that the arsenic in question was applied topically as a pesticide and not as part of manufacture.¹ Nevertheless, since arsenic and chromium are most likely to affect museum staff as skin irritants, and lead is most likely to affect staff through inhalation or ingestion, it is important to keep any loose dust and fibers produced by the object to a minimum. To this end, it is recommended that objects of concern be vacuumed each time they are removed from storage, such as before research appointments and before exhibition installation.

¹ Tinkham, Rebecca. A Case Study of Arsenic Mitigation from Textiles Prior to Exhibit. ICOM Committee for Conservation 16th Triennial Meeting Lisbon Portugal 19-23 September 2011