



# Smithsonian Institution

National Museum of Natural History, Department of Anthropology

## CONSERVATION AND EXHIBITION GUIDELINES

### Exhibit Display:

The Smithsonian Anthropology Conservation Laboratory (ACL) conservator must receive the following no later than six months prior to exhibit installation:

- Exhibit design
- Display designs with object elevations
- Exhibition floor plans
- Drawings of exhibit case specifications
- Exhibit case materials

Where necessary the ACL conservator will specify appropriate techniques for display based on the needs of individual objects.

Exhibit cases should not be placed:

- Near an outside door or window.
- Under exposed pipes.
- Over or near a heat source.
- Near an air conditioning unit.

In general, all materials that comprise part of the interior case environment must be free of acid or harmful volatile chemicals. Suggested exhibit case materials include:

- Inert metals, glass and acrylic.
- 100% acrylic no VOC paints.
- Dibond or Plexiglas (polymethyl methacrylate) for case inserts, object risers and back panels

Any materials used in case construction that are not considered inert such as wood products must be isolated from the case display volume with an inert barrier layer such as Dibond (Aluminum Composite Material) that is appropriately gasketed or sealed with an approved caulk or aluminum tape.

The borrower is encouraged to consult the American Institute for Conservation Wiki “Oddy Tests: Materials Databases” for information on exhibition fabrics; case construction; storage materials; adhesives and tapes; paints and sealants [[http://www.conservation-wiki.com/wiki/Oddy\\_Tests:\\_Materials\\_Databases](http://www.conservation-wiki.com/wiki/Oddy_Tests:_Materials_Databases)]. Expect to provide Oddy testing results for any materials not recently tested. This testing takes at least four weeks.

It is the obligation of the borrower to ensure that the exhibit design, display techniques and exhibit case materials meet the guidelines specified in this document. If in doubt concerning use of a material, consult the ACL conservator.

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### Object Bracketing and Mounting:

- Brackets and/or mounts for all objects will be made at the Smithsonian by an experienced mountmaker under the supervision of the ACL conservator.
- Brackets and/or mounts will incorporate only materials that will not interact adversely either chemically or physically with the specimens.
- Under no circumstances may an object be removed from a bracketing system provided by the Smithsonian ACL contract mountmaker while on loan.
- Contact the ACL conservator for mounting and bracketing requirements for art on paper, photographs, non-art on paper, and bound materials.

### Security:

The Borrowing Institution's security provisions must provide protection of objects against fire, theft, vandalism, and accidental damage. The following exhibit space conditions must be met:

- The museum must be equipped with fire detection systems monitored around the clock. Fire suppression systems may be required in some circumstances.
- Objects must be exhibited in a limited access, gallery-type exhibition space.
- Objects must be displayed in closed cases to protect against rapid environmental changes.
- Where specified by the ACL conservator, objects must be securely bracketed to exhibit case decks and/or panels.
- Free-standing cases should be over-weighted or secured to the floor.
- Exhibit cases must be fastened with security screws. Additional security in the form of locks and/or alarms on exhibit cases may be required. The Department of Anthropology will determine which level of security is appropriate, depending on the objects borrowed. See loan agreement specifications for details.
- Museum security personnel are required to be in constant attendance when the facility is open to the public and during after-hours events in the museum building. After hours security must include either periodic inspections of the exhibition space by guard personnel or continuously monitored electronic intrusion surveillance with an effective response system.
- Daily inspection of the exhibition by a member of the exhibitor's professional staff is required.
- Temporary holding and staging areas should be secure from unauthorized entry and must meet the same general requirements as exhibit areas, insuring objects are protected from environmental fluctuations, unnecessary handling and accidental damage.
- Smoking, eating and drinking are prohibited in storage, staging and exhibition spaces.

### Lighting:

Both visible and ultraviolet light (UV) can cause structural damage and color changes in displayed materials. Recommended light levels for objects on exhibition must take into consideration length of exposure on exhibition. Consult the "Recommended Light Levels" below for general recommendations.

Lighting designs for loan objects must be approved by the ACL conservator. In general:

- There should be no natural light in the exhibit area. All windows should be covered with scrims or shades that will block most of the incoming visible and infrared (IR) radiation, and all ultraviolet (UV) radiation. If this presents a problem, consult the Anthropology Conservation Laboratory.
- All UV radiation should be eliminated from the exhibition environment. When this is not possible the maximum acceptable proportion of UV is 75 microwatts/lumen. Reduction of UV can be

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accomplished through filtration. UF3 Plexiglas or the equivalent can be used in exhibition construction. In addition, filters must be installed over all light sources at their fixture. Incandescent bulbs are an exception if their manufacturer states they do not emit UV.

- Light emitting diodes (LEDs) are preferred over tungsten lamps.
- Infrared radiation is detectable as heat emitted by some light sources. All lighting fixtures must be located outside of the exhibit cases and heat from incandescent lamps in close proximity to cases must be vented away from exhibit cases.
- Lighting fixture location and light bulb wattage should be individually adjusted, depending on the type of objects/materials exhibited. Lighting fixtures should be no closer to objects than three feet for incandescent, and two feet for fluorescent. Fiber optic lighting designs also can be considered.
- Visible light levels should be monitored with appropriate light meters or other suitable equipment.
- No portion of an organic object shall be partially covered by another material or object while on exhibit. If this presents a problem for exhibit design, contact the Anthropology Conservation Laboratory for approval of alternate designs.
- UV radiation in the exhibition environment should be monitored with an appropriate UV monitor or other suitable equipment.

### Recommended Light Levels:

These are general guidelines for light levels. Contact the ACL conservator for specific information about light levels for loan objects or material types not listed in the chart. (foot-candle = fc)

Extremely Sensitive Materials	Recommended Light Level
Textiles	3 to 5 fc – limited exposure
Objects with organic pigments & dyes	3 to 5 fc – limited exposure
Colored feathers	3 fc – limited exposure
Quills	3 fc – limited exposure
Lacquer	3 to 5 fc – limited exposure
Composite organic objects	3 to 5 fc – limited exposure
Colored paper	3 to 5 fc – limited exposure
Water color paintings	3 to 5 fc – limited exposure

Moderately Sensitive Materials (unless qualified above)	Recommended Light Level
Uncolored bone, ivory, horn	5 to 15 fc – depending on duration of loan
Uncolored wood, reed, grass including tapa, basketry, mats	
Fur	
Uncolored furniture	
Oil and acrylic paintings	
Objects with mineral pigments	
Leather, parchment, rawhide, skin	

Least Sensitive Materials (unless qualified above)	Recommended Light Level
Metal, stone, ceramic, glass unless embellished with light sensitive materials.	Unrestricted

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### Environment:

The museum exhibit environment where objects are on view in sealed vitrines/cabinets must meet the following requirements:

- Temperature (T): 66-74<sup>0</sup>F (representing winter and summer extremes, not fluctuations)
- Relative Humidity (RH): 37-53% (representing winter and summer extremes, not fluctuations)

Additional moisture stabilizers such as silica gel may be required in exhibit cases to maintain a pre-established level of RH for certain objects, e.g. quillwork, lacquerware and some metals. The RH should be monitored to enable the museum to provide monthly data regarding the conditions.

If requested, site reports, including environmental data, must be sent for evaluation to the ACL conservator.

### Pesticides in the NMNH Anthropology Collections:

Beginning in the late 1800s, many organic objects in the anthropological collections of the National Museum of Natural History (NMNH) were treated with a wide variety of pesticide chemicals, including arsenic, mercuric chloride, strychnine, DDT, ethylene dichloride, methyl bromide, ethylene oxide, sulfuranyl fluoride, and others. Collectors often subjected these objects to pesticide treatments at the time of acquisition. Subsequently, upon their transfer to museums, these objects were treated with chemicals by museum staff as a routine and accepted method of preventing infestation by harmful insects on susceptible objects such as basketry, feathers, textiles, leather or other animal hide. Because the treatments were customary, no records were kept as to what treatments were applied to specific objects. As a result, the museum does not know the pesticide history for each object. Objects are tested for the existence of heavy metals (arsenic, mercury and lead) used in historic pesticide applications using a handheld x-ray fluorescence analyzer (XRF). XRF testing only detects heavy metal contaminants but it is important to recognize that other, undetected substances, such as organic pesticides and other poisons, may be present on the object. To date, testing protocols for organic pesticides and other poisons have not been developed by the Department of Anthropology. The Department of Anthropology continues to work with other museums, XRF technical experts, and toxicological experts to develop procedures for testing, interpreting and reporting XRF analytical results. Currently, no standards exist to interpret the data to determine the level of toxicity present but objects that test positive for pesticides should be regarded as potentially hazardous and must be handled with caution. Contact the Anthropology Department for a copy of the Pesticide Disclosure Statement for current handling protocols.

**Failure to comply with these guidelines, once negotiated with a borrower, may result in revocation of a loan or increased conservation fees.**

For questions contact:

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