



MANL Note

Care of Collections

A Publication of the Museum Association of Newfoundland and Labrador

PREVENTIVE CONSERVATION

The survival of a collection and its continued use in exhibition and research depends on a museum's ongoing commitment to preserving its objects. In essence, preventive conservation is preventing any negative change in the artifact's condition. A preventive conservation program is the responsibility of all museum staff and will help to minimize the need for conservation treatment. A good preventive conservation program should include the following elements:

- adopting recommended conservation standards, policies and procedures
- knowing the causes and recognizing the symptoms of object deterioration
- monitoring and maintaining the best possible environment within your circumstances
- practising proper techniques for the handling, storage, exhibit, packing and shipping of objects
- understanding the principles and practices of good artifact support in storage and display
- providing a safe and secure location for objects with supervised access.

The implementation of a good preventive conservation program is much more beneficial to collections than treatment. For this reason, the contribution of well trained and committed museum staff to collections preservation is crucial.

Areas where the collections are housed, displayed and accessed for research or documentation purposes should be subject to certain conditions. Access to these areas should be restricted to authorized and trained staff, or those oriented and supervised by them. Ideally, these areas should be

kept separated from other museum functions.

- All objects must be handled with care.
- There should not be any eating, drinking or smoking permitted in the museum. These activities will only be permitted in designated area.
- Cotton gloves should be made available for those designated to handle objects.
- Ensure all work surfaces are clean, uncluttered and preferably slightly padded.
- Sharp or staining materials should be kept away from the work surface. Tools, pens and other materials may be kept in a separate tray, toolbox or side table.



Agents of Deterioration

Deterioration of an object begins from the moment it is created. Deterioration may occur as a result of inherent vice or from natural and human factors that exist in the environment.

<p><i>Environmental Agents</i></p> <ul style="list-style-type: none"> -inappropriate or unstable relative humidity -inappropriate or unstable temperature -light -air pollutants
<p><i>Biological Agents</i></p> <ul style="list-style-type: none"> -insects -microorganisms -vertebrate pests
<p><i>Human Factors</i></p> <ul style="list-style-type: none"> -fire -theft -vandalism -neglect/loss -careless or improper handling or supports -improper use of artifacts and facilities -poor facilities maintenance
<p><i>Natural Disasters</i></p> <ul style="list-style-type: none"> -forest/range fires -floods -storms

Controlling the Environment

Environmental conditions greatly affect the condition of objects. By providing a suitable and safe environment, objects can be protected from damage and reduce or eliminate the need for remedial conservation. Monitoring environmental conditions is an important element in a preventive conservation program. The following elements should be recognized and controlled: relative humidity, temperature, light, and air pollutants.

Relative Humidity

Relative humidity is the amount of moisture in the air compared to how much moisture that air can hold at the same temperature.

- The optimum relative humidity range for museum objects is 38-55% ± 5% daily. Fluctuations should be avoided.
- High relative humidity can accelerate chemical deterioration and promote mould growth.
- Low relative humidity may cause shrinking, warping, cracking, embrittlement, and desiccation.

Temperature

Temperature is a measure of heat energy which directly affects relative humidity, given the same

moisture in the air. If the temperature goes up, the relative humidity goes down and vice versa. A fluctuating temperature leads to a fluctuation in relative humidity.

- Enough heat should be provided to keep the relative humidity below 60% to prevent mould growth and discourage infestations and corrosion.
- A stable temperature helps prevent relative humidity fluctuations and the damage they cause. The optimum temperature range for museum objects is 20-25°C ± 1.5°C daily.
- Generally, cooler temperatures are beneficial to most artifacts. Any temperature above that required for human comfort can be viewed as too high.

Recommended Relative Humidity & Temperature Conditions for Storage & Display

Paper (unrestrained)/ Textiles/ Inks, dyes and other colourants

<i>Relative Humidity</i>	<i>Temperature</i>
35-55%, ± 5% per day Risk of mould above 60%	Cooler the better, 20°C maximum

Leather/Skin

<i>Relative Humidity</i>	<i>Temperature</i>
45-55%, ± 5% per day Risk of mould above 60%	Cooler the better, 20°C maximum

Bone/Ivory/Horn/Tortoiseshell

<i>Relative Humidity</i>	<i>Temperature</i>
50-55%, ± 5% per day	Cooler the better, 20°C maximum

Wood

<i>Relative Humidity</i>	<i>Temperature</i>
35-55%, ± 5% per day	20°C maximum to keep RH stable

Ferrous metals

Relative Humidity	Temperature
40% maximum, 20% if salt is present (marine or archaeology objects)	Warm enough to keep humidity low

Non-ferrous metals

Relative Humidity	Temperature
40% maximum	Warm enough to keep humidity low

Ceramics/Glass/Stone

Relative Humidity	Temperature
Insensitive 30% maximum if salt is present	Insensitive, high enough to keep humidity down

Mineral specimens (general)

Relative Humidity	Temperature
35-55% ± 5% per day	20°C maximum, 0°C minimum

Taxidermy specimens, fur, feathers

Relative Humidity	Temperature
35-55%, ± 5% per day	Cooler the better to discourage pests

Light

Light is another form of energy that promotes many chemical reactions. Light is described in waves and is composed of a wide range of wavelengths. The higher the wave length of light, the more energy it has to cause deterioration. Ultraviolet light is very high energy destructive light that is invisible to the human eye and is found in sunlight and fluorescent lights. Since it contributes nothing to viewing, UV light should be eliminated by blocking windows in artifact areas, through the use of curtains and blinds, and/or with the use of UV filters.

The effect of light on museum objects depends on the amount of light, measured by lux, length of time the artifact is exposed and the type of

materials the objects are made from. Light dose can be calculated by the following equation:
 $Intensity \times Exposure Time = Light Dose$

Materials and Light Sensitivity

<p>Extremely Sensitive Materials -Maximum 50 lux and 75 micro watts/lumen with UV filtration -3 to 6 months on display</p>	Paper Watercolour Paintings Parchment Textiles Feathers Vegetable dyed ethnographic materials Dyed Leathers
<p>Moderately Sensitive Materials -Maximum 150 lux and 75 micro watts/lumen with UV filtration</p>	Oil Paintings Organic Materials other than those listed above
<p>Insensitive Materials -Maximum 350 lux and 75 micro watts/lumen with UV filtration</p>	Ceramics Glass Metal Stone

There are many ways that the light dose of an object can be moderated:

- Where possible, move lighting fixtures back to increase the distance between the light source and artifacts.
- Install dimmer switches, allowing the light levels to be adjusted according to changing display requirements.
- The light intensity on the objects can be altered by using an indirect or oblique angle and/or by bouncing light off walls or ceilings.
- Wherever possible, use lighting with individual light controls so that each light can be dimmed or turned independently to give different zones of light.
- Rearrange artifacts so that those most sensitive to light damage are in the dimmest areas, this is called passive zoning.
- Lights in display cases should only be on during the time the exhibit is open and not left on overnight.
- Install visitor-activated light switches to reduce the overall light exposure but to permit

higher levels during shorter viewing times.

- Light sensitive artifacts should only be exhibited for a limited period of time at low levels as indicated in the above table.
- Blinds or curtains should be kept closed when the museum is not open to the public.
- Storage areas should be equipped with a level of illumination that is good enough to see by, but not necessarily to work by. All lights should be turned off when no one is in the storage areas.

Air Pollutants

Air pollutants that can cause damage in museum collections are particulate and gaseous. Particulate pollutants include dust and dirt. These pollutants can be abrasive, disfiguring and absorb moisture from the surrounding atmosphere. Dust often has a large organic component, consisting of vegetable matter, skin and hair, all of which are an excellent food source for vermin. Particulate pollutants can become concentrated or trapped close to the object's surface and over time, dust can become part of the surface of porous artifacts. As the pores expand and contract with temperature and relative humidity changes, dust can become adhered to artifact finishes that soften at warm temperatures. Dust also gives a negative message to staff, volunteers and visitors. Gaseous pollutants produce strong oxidizing agents such as sulphur dioxide which cause chemical deterioration such as corrosion, yellowing and embrittlement.

Sources of Air Pollutants in Museums:

Particulate

- dust from fibrous materials, eg. carpeting & clothing
- hair, skin and finger nail shedding
- cigarette smoke
- kitchen cooking
- oil-burning furnaces
- fireplaces

Gaseous

- newly applied oil-base paints
- wood
- adhesives
- sulphur from rubber products; wool; felt; industrial emissions (pulp & paper mills); burning of fossil fuels
- chlorides from sea air

Facilities Maintenance

Facilities maintenance is an integral part of a preventive conservation program. The buildings which house collections must be in good repair, exclude the elements, especially water, and provide good security. Collection areas must be kept clean and orderly. Dust, dirt and airborne particles attract and encourage insects and pests. A housekeeping plan and schedule helps to discourage them.

- Survey the collection areas to recognize and determine how often and what kind of cleaning is necessary. If it is not dirty, do not clean it.
- Ensure no non-collection items, such as cleaning supplies, are cluttering up spaces.
- Initiate and implement a realistic housekeeping schedule.
- Orient and supervise cleaners working in areas where artifacts are not enclosed.
- Maintenance also includes the building envelope and services. Make sure flashings, eaves troughs, weatherstripping, and other means of exterior moisture are in good repair. Ensure that electrical, plumbing, fire, and security services are functioning and monitored regularly. Discuss these issues with your Department of Public Works, Services & Transportation building maintenance person to find out who is responsible for what. Your local fire department is also an excellent resource for building maintenance.

Conclusion

Collections preservation should be a fundamental commitment of all heritage sites. All staff members working with the collections have an important role in the continual preservation of their objects. The preventive conservation measures outlined above will help extend the life of museum objects for future generations.



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