

IIC-ITCC: SCIENTIFIC APPROACHES TO PREVENTIVE CONSERVATION COURSE

AGENTS OF DETERIORATION

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1. Physical forces

(shock, vibration, abrasion and gravity)

Cumulative (improper handling or support)/

Catastrophic (eg earthquake, war, floor collapse, improper handling):

- break, distort, puncture, dent, scratch, and/or abrade all types of artefacts.

2. Thieves and vandals

Intentional (criminals):

- steal small or portable artefacts.

- disfigure valuable, popular or symbolic artefacts.

Unintentional (staff, users):

- lose or misplace any artefact.

3. Fire

- destroys, scorches or deposits smoke on all types of artefacts, particularly those that contain organic materials.

4. Water

- causes efflorescence or tide marks in porous materials.

- swells organic materials.

- corrodes metals.

- dissolves some materials (eg glues).

- delaminates, tents, and/or buckles layered components of an artefact.

5. Biological – pests, mould and microbes

Insects:

- consume, perforate, cut, graze, tunnel, and/or excrete, which destroys, weakens, disfigures, or etches materials, especially furs, feathers, skins, insect collections, textiles, paper, and wood.

Vermin, birds and other animals:

- gnaw organic materials and displace smaller items.

- foul artefacts with faeces and urine.

- gnaw through or foul inorganic materials if they present an obstacle to reaching the organic material.

Mould and microbes (see also incorrect RH, Damp):

- weaken or stain organic and inorganic materials.

6. Chemical - pollutants and contaminants

Indoor and outdoor gases (eg air pollution)/

Liquids (eg plasticisers, grease) / Solids (eg dust, salt):

- disintegrate, discolour, or corrode all artefacts, especially reactive or porous materials.

7. Radiation

Ultraviolet / Visible light:

- disintegrates, fades, darkens, and/or yellows the outer layer of organic materials and some coloured inorganic materials.

8. Incorrect relative humidity (RH)

Damp (over 65%):

- causes mould (which stain and weaken organic and inorganic materials), corrosion (of metals), and shrinkage (of tightly woven textiles).

Dry (under 50%):

- causes shrinkage of moisture containing materials resulting in breakage, and desiccation (of glues).

Fluctuations:

- shrink and swell unconstrained organic materials.
- crush or fracture constrained organic materials.
- cause layered organic materials to delaminate, tent, and/or buckle.
- loosen joints in organic components (eg furniture).

9. Incorrect temperature (T)

Too high:

- causes gradual disintegration or discolouration of organic materials, especially if they are chemically unstable (eg acidic paper, colour photographs, nitrate and acetate films).

Too low:

- causes embrittlement, which results in fractures of paints and other polymers.

Fluctuations:

- cause fractures and delaminations in brittle, solid materials, especially if they are layered.
- cause RH fluctuations (see "Incorrect Relative Humidity").

From: Canadian Heritage and Canadian Conservation Institute
"Framework for Preservation of Museum Collections".