

Risk Mitigation

Your guide to better collections management.

PROTECTING COLLECTIONS

FROM THE INSIDE OUT

The primary concern of any heritage institution is collection preservation, and the ten agents of deterioration are the most devastating potential threats. Spacesaver and its network of local distributors routinely help collections managers and other professionals plan, install, and maintain systems that protect collections from these harmful agents before collections are overcome by infestations or other destructive problems.

THE AGENTS OF DETERIORATION

Direct Physical Forces

Pests

Fire

Water

Contaminants

Thieves, Vandals, Displacers

Incorrect Temperature

Incorrect Relative Humidity

Radiation (Light)

Dissociation & Custodial Neglect

TIP:

When designing storage areas, ask collection managers how they work and what they need.

"It was a purpose-built storage area, and they looked to the collection managers to tell them how to build. It was a brilliant move."

René O'Connell, Denver Museum of Nature & Science

DIRECT PHYSICAL FORCES

Sudden shock or long-term pressure breaks and deforms objects.

This can be in the form of a major event such as an earthquake or drop, but can also include small movements over time, such as vibration or movement caused by walking, rolling carts, bumping, or even chemical breakdown of materials.



HOW TO MITIGATE

- **Anti-tip rail systems** are designed to provide stability and reliability for compact shelving in seismically active areas.
- **Anti-tip bars** prevent jars and objects on shelves from accidental falls and spills.
- **Closed rib nuts on cabinets** allow cabinets to be attached to one another for additional stability.

PESTS

Insects and rodents eat and nest in organic collections.

Mold consumes and stains organic material in humid conditions.



HOW TO MITIGATE

- An **easily-cleanable, sealed cabinet** keeps pests away and allows for easy inspection.
- Choose **light-colored equipment** for detection of any infestations.
- **Seal** interior and exterior doors, ductwork, and baseboards with door sweeps and caulk.

"I'm always going off about pest issues. Is your cabinet inspectable?
Is the track underneath it inspectable, cleanable?
Is it going to be a pest problem reservoir underneath?
Pest control is such an awfully expensive problem."

Carolyn Leckie, *Canadian Museum of Nature*

FIRE

Fire, smoke, and soot destroy and dirty objects.

HOW TO MITIGATE

- Compactors can be placed in **fire park** to allow for protection or fire suppression.
- **Perforated shelves** can be made fire code compliant to allow sprinklers to function properly.
- Take fire suppression system into consideration when planning **shelf heights**.



WATER

Floods, leaky roofs, or slow drips from pipes damage collections irreparably.

HOW TO MITIGATE

- **Steel compactors** can add the 4-6" of height needed to mitigate the risk of damaged items due to flooding, and metal shelving stands up to water damage better than wood or particle-board.
- **Cabinets** should be able to protect from sprinklers and leaks. Spacesaver's Museum Cabinets feature a WaterShield cap and seals that protect objects from water damage.



"I would say, in terms of disasters, the age old wisdom that **90% of floods are four inches**, so make sure your bottom shelf is off the floor. Make sure that you don't have a reservoir of infestation under your cabinet, it's off the ground for flood, for water, and for pests - that you can clean and inspect it."

Carolyn Leckie, Canadian Museum of Nature

CONTAMINANTS

Acids and pollution that are airborne, transferred by contact, or intrinsic to the collection speed up the chemical deterioration of materials.



HOW TO MITIGATE

- Spacesaver cabinets and shelving feature **non-off-gassing paint** to avoid chemical contamination.
- Keeping collections inside **sealed cabinets** helps keep objects away from potentially harmful airborne pollutants.

THE 7 MOST HARMFUL POLLUTANTS:

acetic acid
hydrogen sulfide
nitrogen dioxide
ozone
sulfur dioxide
fine particles
water vapor

CLOSED-CELL ELASTOMERIC SEAL

Our cabinets are manufactured with a steel channel designed to house an adhesive closed-cell seal. Extensive third-party testing has proven the effectiveness and safety of this seal, and it can be easily removed and replaced after decades of use.



THIEVES, VANDALS, DISPLACERS

People steal or maliciously damage objects.
Museum personnel can simply misplace them.



HOW TO MITIGATE

We offer many locking options to secure the objects in your compactors, including:

- PIN code access
- Physical locks
- Key card access
- Audit trail to track who has accessed collections

INCORRECT TEMPERATURE

High temperatures speed up the chemical deterioration of unstable materials.

Low temperatures stress flexible structures. Fluctuating temperature causes materials to delaminate and crack.

HOW TO MITIGATE

- Smaller collections can be stored in **upright refrigerators or freezers**.
- Medium-sized collections can be stored on **shelving or museum cabinets housed in small walk-in coolers**.
- Large institutions generally invest in **compactors housed in purpose-built cold rooms and walk-in freezers**.



"It's expensive storage, but the price you pay for not doing it is **the total loss of the collection**. So I'm feeling really, really lucky that I'm in an environment where they spent the money to do it right."

René OConnell, *Denver Museum of Nature & Science*

INCORRECT RELATIVE HUMIDITY

Because different collections have different requirements, there is no single correct relative humidity level.

Low relative humidity can lead to drying and cracking, while high relative humidity encourages mold growth. Rapidly fluctuating relative humidity causes structural damage as materials expand and contract.

HOW TO MITIGATE

- **Sealed cabinets** can help maintain more constant climate condition.
- **Consult HVAC specialists**, especially if your collections are housed in a historic building.



RADIATION (LIGHT)

Radiation from light waves fades and embrittles sensitive material.

Both visible light and UV radiation have cumulative and irreversible effects, including discoloration and chemical deterioration of objects in a collection.



HOW TO MITIGATE

- **LED aisle lights** emit no UV radiation.
- **Automatic aisle lights** ensure that objects are exposed to as little light as possible.
- **Keeping compactors closed** and covering any existing windows keeps stored objects away from ambient light.

DISSOCIATION & CUSTODIAL NEGLECT

When care is not taken to maintain collections storage best practices, objects can be separated from their records or other items in the collection.



HOW TO MITIGATE

- **Good organization** is key to avoiding dissociation. Keep as much of a collection together in one physical space as possible.
- **Compactors** can accommodate cabinets, drawers, wide-span shelving, and hanging racks to allow for many sizes of objects to be stored in close proximity while maintaining easy access.

LET US HELP PROTECT YOUR COLLECTION.

Contact a local Spacesaver consultant to gain expert advice and insights regarding museums' highly specialized storage requirements. We have more than 40 years of experience in working with museum professionals to help protect and preserve collections.

Contact your Museum Storage Specialist, Stan Ruiters, today to learn more.

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References:

Science Museum of Minnesota (smm.org)

The Society For The Preservation of Natural History Collections (<http://www.spnhc.org>)

Government of Canada Museology and Preservation (<http://canada.pch.gc.ca>)

Robert Waller, President and Senior Risk Analyst, Protect Heritage Corp (<http://www.protectheritage.com>)

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