

## Mold in Collections

Mold can never be completely eliminated or “killed,” and is managed through climate control, spore reduction, careful monitoring, and ongoing maintenance. Mold is “contagious” and spores are spread through direct contact, air movement, and via air handling systems. Most commercial products (ex. Lysol and Thymol, and bleach) are ineffective on collections and can cause permanent damages. Mold growth is controlled by maintaining environmental conditions below 68°F and 55% relative humidity.

### Wear Personal Protective Equipment

Personal Protective Equipment (PPE) is very important when handling moldy material. Wear PPE at all times. Wear N95 or P100 disposable masks or re-usable respirators with HEPA filters. Wear latex or nitrile gloves, replacing them regularly. Goggles without vent holes are recommended and should be regularly cleaned with alcohol. Wear hair covering. Clothes or Tyvek suits and booties should be removed when leaving the-contaminated site. Tyvek suits and booties should be discarded and clothes should be washed in hot water.

### Identify and Assess

- The extent and locations of mold, both in the collections and building
- The urgency to determine the order in which collections and rooms should be cleaned
- Staff capabilities, including availability and number of staff, level of training, security, etc.
- Needed resources, including room/areas to work and store collections, electricity, clean water, equipment and supplies, vendors, rental space, and/or funding

### Plan and Develop

- Reasonable goals and timelines, balancing mold reduction projects with regular daily functions
- Regular communications with staff about goals, treatment methods, and available resources
- Document changing circumstances, including collections’ conditions and location changes
- Modify the plan as circumstances change
- Monitor daily interior/exterior temperature/humidity; weather forecast; availability of staff, etc.

### Isolate Unaffected Collections from Contaminated Collections

- Place unaffected collections in rooms with the best possible climate
- Wrap or box unaffected collections with best available housing materials

- Plastic sheeting can be used to create “clean” rooms or separate spaces for work and storage, or to isolate clean items from contaminated objects

### Cleaning Mold Spores

Mold spores must be physically removed as much as possible to limit later growth. Handle collections carefully to protect their structures, damages and vulnerabilities. Use caution when handling to avoid transferring or smearing mold. Mold weakens organic materials, especially sensitive papers, soluble and particulate media (chalk, charcoal), photo emulsions, etc. Commercial cleaning agents, fungicides, or bleach will only temporarily render mold dormant. These solvents are not recommended for use on collections without consulting professional conservators as they may cause discoloration and physical damage.

If there is a consistent electricity supply, collections may be stored in refrigerators or freezers to slow mold growth until treatment can be done. Do not store with food. Careful vacuuming of mold can be done with a variable speed HEPA-filtered vacuum. Use the lowest setting sufficient to draw mold off of surfaces. Do not brush or scrub with the vacuum attachments.

### Cleaning Steps (With or Without Electricity)

- Test several areas of each object to be cleaned for safety and for efficacy of cleaning techniques. Mold may soften organic materials, and abrasive action with erasers can further disrupt and damage surfaces. Many media will be sensitive or soluble with water, alcohol, or solvents.
- Carefully clean objects starting with the outermost surfaces and working towards the interior and more detailed areas of the object.
- Dab and lift mold spores off the surface using brushes, tools, swabs, or cloths. Try to avoid wiping, which will spread spores into a broader area, or pushing down into uneven surfaces.
- Soft bristle brushes, cotton pads or swabs, and small hand tools may be used to dislodge spores.
- Erasers (vinyl, gum, and rubber) may be cut smaller to lift spores. Dispose of used erasers.
- Wash tools and brushes often during cleaning, and at end of the workday, preferably with alcohol.

### Use Dilute Alcohol for Additional Cleaning, When Tested as Safe

- Test and use and/or alcohol and water, which can cause media bleed or staining, and additional mold staining.
- Ethyl and Isopropyl alcohols are available at pharmacies and hardware stores, and grain alcohol may be available at liquor stores. Carefully read product labels to ensure there are no other substances added (such as acetone, MEK, etc.) which will harm collection objects.
- A solution of 30% water / 70% Ethanol may be used. The ratio of water may be increased, diluting the alcohol further. Isopropyl alcohol may be substituted, but it has different properties. Alcohol solutions may be applied locally with brushes, cotton cloths, cotton swabs or sprayers.



## Resources

American Institute for Conservation (AIC):

Health and Safety Wiki [http://www.conservation-wiki.com/wiki/Health %26 Safety](http://www.conservation-wiki.com/wiki/Health_%26_Safety)

Mold Segment: (Video) <https://www.youtube.com/watch?v=Yq-IUdpnlul>

National Park Service: NPS Primer for Disaster/Mold

<https://www.nps.gov/museum/publications/primer/primintro.html>

Environmental Protection Agency (EPA) Personal Protective Equipment:

<http://www.epa.gov/mold/moldcourse/chapter6/lesson4.html>

Occupational Safety & Health Administration (OSHA) Mold Portal: Mold Index

<http://www.osha.gov/SLTC/molds/index.html>

*Collecting institutions affected by an emergency event should contact the National Heritage Responders for additional response advice: 202.661.8068 or [nhr@conservation-us.org](mailto:nhr@conservation-us.org)*