Hudson Valley Community College
Mold and Moisture Management Program

Overview

Mold spores are found almost everywhere throughout all indoor and outdoor environments. Mold will grow on virtually any organic substance as long as moisture, oxygen, and certain temperature ranges are present. It can grow on wood, paper, carpet, foods and insulation. Mold can also grow on moist, dirty surfaces such as concrete, fiberglass insulation and ceramic tiles. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed.

It is not possible or warranted to eliminate the presence of all indoor mold spores, however, mold growth indoors should be prevented and removed promptly if found to be present. This program presents guidelines for the prevention and remediation/cleanup of mold and moisture problems in facilities at HVCC, including measures designed to protect the health of building occupants and remediation workers.

Health Considerations

Currently, there are no established regulations or enforceable legal standards that specify safe levels of airborne mold exposure. This is largely because there are over 100,000 known mold/fungal species, and it is estimated that up to 10 million species may actually exist in nature. Healthy individuals are not normally affected by exposure to mold, even in short duration/high exposure situations. There are two general conditions where mold hazards could exert an undesirable health effect:

- When an individual has a medical condition making them more sensitive to the presence of everyday mold—such as an illness resulting in their being immuno-compromised, or severe allergies.
- When there is excessive mold growth and propagation upon interior surfaces. Disturbance of the mold could cause individuals to be exposed to higher than normal levels of airborne mold.

Water and Mold Reporting Procedures

All water, moisture and mold concerns should be addressed promptly. The following procedures provide general guidance for actions all college employees should take for various scenarios relating to moisture and mold concerns:

- In the event of flooding or larger water leaks, immediately contact Physical Plant at x7356. Physical Plant will locate and secure the source of water and make every effort to dry wet porous materials (installed carpeting, upholstered furnishings, drywall, etc.) effectively within 24-48 hours by vacuum extraction, floor fans and/or dehumidification to prevent mold growth. In an emergency situation or off-hours, contact Public Safety at x7210.
- Concerns such as smaller leaks and drips, condensation, wet or discolored ceiling tiles should be reported through the Physical Plant work order system or by contacting Physical Plant at x7356. New wet areas are especially important because they may indicate an active leak. Please try to note in the work order approximately how long a leak or discoloration has been present for.

Physical Plant personnel will investigate, correct the source of the leak or moisture and dry out or remove water-damaged materials.

- Areas of special concern such as musty or moldy odors, suspicion of hidden mold in wall cavities, recurring or unaddressed mold or moisture issues, or individuals experiencing health concerns related to possible mold exposure should be reported to Environmental Health and Safety. EHS will review the concern with the occupants and conduct an appropriate assessment with Physical Plant to determine if mold sources are present and the appropriate corrective action(s).

Mold Growth Prevention

The first and best step to the management of mold hazards is to prevent its growth/propagation in the first place. Common guidance steps to mold prevention/avoidance include the following:

- Fix leaky plumbing, areas of condensation and leaks in the building envelope as soon as possible.
- Vent moisture-generating appliances, such as dryers, to the outside
- Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
- Regularly inspect HVAC systems with a special emphasis on filters, cooling coils, fan chambers and internal insulation.
- Keep heating, ventilation and air conditioning drip pans clean, flowing properly and unobstructed.
- Keep basement areas clean and dry.
- Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.
- Following water intrusion events, initiate rapid drying techniques (i.e. floor fans) immediately.
- Dry and/or dispose of interior building materials that have been in contact with water.

Mold Removal Methods

Prompt remediation of mold-impacted materials and correction of moisture sources should be the primary response to mold growth in buildings. If visible mold is discovered, actions must be taken based on the amount of mold present and the type of material contaminated. Non-porous building materials and furnishings may be cleaned by Physical Plant employees using detergent, diluted bleach or cleaners specifically formulated for mold. Porous materials that are wet and have mold growing on them may have to be discarded because molds can infiltrate porous substances and grow on or fill in empty spaces or crevices. This mold can be difficult or impossible to remove completely.

A variety of cleanup methods are available for remediating damage to building materials and furnishings caused by moisture control problems and mold growth. The specific method or group of methods used will depend on the type of material affected. Some methods that may be used include the following:

- Wet Vacuum - Wet vacuums can be used to remove water from floors, carpets, and hard surfaces where water has accumulated.

- Damp Wipe - Mold can generally be removed from nonporous surfaces by wiping or scrubbing with water and detergent or biocide. It is important to dry these surfaces quickly and thoroughly to discourage further mold growth. Instructions for cleaning surfaces, as listed on product labels, should always be read and followed.
- HEPA Vacuum – HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums also are recommended for cleanup of dust that may have settled on surfaces outside the remediation area. Care must be taken to assure that the filter is properly seated in the vacuum so that all the air passes through the filter. When changing the vacuum filter, remediators should wear respiratory protection, gloves and eye protection to prevent exposure to any captured mold and other contaminants. The filter and contents of the HEPA vacuum must be disposed of in impermeable bags or containers in such a way as to prevent release of the debris.
- Disposal of Damaged Materials-Building materials and furnishings contaminated with mold growth that are not salvageable should be placed in sealed impermeable bags or closed containers while in the remediation area. These materials can usually be discarded as ordinary construction waste. It is important to package mold-contaminated materials in this fashion to minimize the dispersion of mold spores. Large items with heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before being removed from the remediation area. Some jobs may require the use of dust-tight chutes to move large quantities of debris to a dumpster strategically placed outside a window in the remediation area.

Mold Project Types

Generally speaking, mold response, mitigation and remediation tactics can be broken down into 5 different levels, taking several factors into consideration, as follows:

<u>Level 1: Trivial Mold Projects (limited surface contamination)</u>

- This mold project type is generally limited to surface contamination only such as grout or tile around windows or showers or limited growth on other non-porous walls and surfaces.
- Response tactics are typically associated with aggressive cleaning using standard bathroom cleaning chemicals , a mild bleach/water solution (1 cup bleach per gallon of water) or an EPA registered biocide.
- These tactics may normally be performed when the space is occupied.
- These actions are typically performed by Physical Plant staff. Safety goggles and nitrile gloves should be worn for this type of work.

<u>Level 2: Small Mold Projects (10 square feet or less)</u> - e.g., ceiling tiles, small areas on walls

- This mold project type generally involves mold impacted materials up to approximately 10 square feet in size with light or patchy mold growth. If materials have heavy mold growth, Level 3 Project procedures should be followed.
- Response tactics typically involve the removal/disposal of the affected materials by one or two people within a single workshift.
- Dust suppression methods, such as misting (not soaking) surfaces with water prior to remediation, are recommended.
- All materials removed should be placed in a sealed bag or wrapped in 6-mil polyethylene sheeting and sealed with duct tape. These materials can be disposed of in a general trash dumpster.

- All areas should be left dry and visibly free from contamination and debris.
- Worker protection should include safety goggles and nitrile gloves. An N-95 disposable dust mask and/or Tyvek suit may be worn to provide protection from inhalation or skin contact with mold spores.

Level 3: Mid-Sized Mold Projects (10-30 square feet) – e.g. individual wallboard panels

- This mold project type generally involves mold impacted structural materials greater than 10 square feet but less than 30 square feet in size (approximately the size of a single sheet of plywood/sheetrock) with light or patchy mold growth. If materials have heavy mold growth, Level 4 Project procedures should be followed.
- Response tactics typically involve the removal/disposal of the affected materials by a two-person team within one or two workshifts.
- These tactics should include the temporary isolation of the work area, or conduct of the work outside of normal business hours when the area is unoccupied.
- Dust suppression methods, such as misting (not soaking) surfaces with water prior to remediation, are recommended.
- Surfaces in the work area that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/debris and prevent further contamination.
- All materials removed should be placed in a sealed bag or wrapped in 6-mil polyethylene sheeting and sealed with duct tape. These materials can be disposed of in a general trash dumpster.
- The work area should be HEPA vacuumed and cleaned with a damp cloth or mop and a detergent solution following the completion of work.
- All areas should be left dry and visibly free from contamination and debris.
- Worker protection should include an N-95 disposable respirator, safety goggles and nitrile gloves. A Tyvek suit may be worn to provide protection from skin contact with mold spores.

Level 4: Large Mold Projects (30-100 square feet) – e.g., several wallboard panels

- EHS should be consulted prior to a large mold project to determine if work can be safely performed by HVCC staff. EHS will review the project with Physical Plant supervisors and staff to discuss concerns, determine if work can be performed in-house and determine employee and occupant protection measures.
- This mold project type generally involves mold impacted structural materials greater than 30 square feet but less than 100 square feet in size (up to 3 sheets of plywood/sheetrock) with light or patchy mold growth. If materials have heavy mold growth, Level 5 procedures should be followed.
- Response tactics typically involve the removal/disposal of the affected building materials by a two person team within more than two workshifts.
- These tactics should include the temporary isolation of the work area, or conduct of the work outside of normal business hours when the area is unoccupied.
- Dust suppression methods, such as misting (not soaking) surfaces with water prior to remediation, are recommended.
- Surfaces in the work area that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/debris and prevent further contamination.
- Depending on the area and extent of mold contamination, control of fugitive dust and spores may be needed. Control measures will be determined in conjunction with EHS and may include isolation of the area with poly sheeting and duct tape, negative pressure exhaust fans with HEPA filters, and sealing of ventilation return ducts and grills.

- All materials removed should be placed in a sealed bag or wrapped in 6-mil polyethylene sheeting and sealed with duct tape. These materials can be disposed of in a general trash dumpster.
- The work area and areas used for egress should be HEPA vacuumed and cleaned with a damp cloth or mop and a detergent solution.
- All areas should be left dry and visibly free from contamination and debris.
- Worker protection should include an N-95 disposable respirator or half-mask respirator with HEPA cartridges, safety goggles, Tyvek suits and nitrile gloves. Note that medical clearance, fit-testing and training are required for all cartridge respirator wearers.

<u>Level 5: Extensive Contamination Mold Projects (greater than 100 square feet)</u>

- EHS should be consulted prior to a Level 5 Extensive mold project. Level 5 projects are not typically performed by HVCC staff.
- This mold project type generally involves mold impacted structural materials greater than 100 square feet in size (>3 sheets of plywood/sheetrock).
- Response tactics typically involve the removal/disposal of the affected building materials by a two person team within three or more workshifts.
- These tactics should include containment of the work area:
    - Complete isolation of work area from occupied spaces using plastic sheeting sealed with duct tape (including ventilation ducts/grills, fixtures, and other openings);
    - The use of an exhaust fan with a HEPA filter to generate negative pressurization; and
    - Airlocks and decontamination room.
- Dust suppression methods, such as misting (not soaking) surfaces with water prior to remediation, are recommended.
- Surfaces in the work area that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/debris and prevent further contamination.
- Contaminated materials that cannot be cleaned should be removed from the building in sealed impermeable plastic bags. The outside of the bags should be cleaned with a damp cloth and a detergent solution or HEPA vacuumed in the decontamination chamber prior to their transport to uncontaminated areas of the building. These materials may be disposed of as ordinary waste.
- The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth or mopped with a detergent solution and be visibly clean prior to the removal of isolation barriers.
- Worker protection should include a full-face respirator with HEPA cartridges, nitrile gloves, and full-body protective clothing. Medical clearance, fit-testing and training are required for all filtering facepiece respirator wearers. Workers should have specialized training in mold abatement.

Appendix A provides a summary table of these project levels and control measures.

HVCC Physical Plant employees may complete Level 1-3 remediation work in accordance with these guidelines, consulting EHS as needed. Level 4 Projects will require an EHS assessment to determine the necessary controls to protect workers and building occupants. Level 5 projects require a more extensive assessment and complex control measures and are not typically performed by HVCC employees. In situations where mold response work is outsourced, full compliance with Article 32 of the New York State Labor Law, Licensing of Mold Inspection, Assessment and Remediation Specialists and Minimum Work Standards, is required. Mold assessment and remediation contractors must provide evidence of DOL Mold Certification to HVCC EHS prior to commencing work.

Appendix A – Mold Project Reference Table

Project Size	Control Measures	Personal Protective Equipment
Level 1 – Trivial		Safety goggles Nitrile protective gloves
Level 2 – Small <10 ft^2 with light growth	• Dust suppression (e.g. misting surfaces with water) recommended • Place contaminated materials in sealed plastic bag or wrap in poly sheeting for disposal • All areas should be left dry and visibly free from contamination and debris.	Safety goggles Nitrile gloves N-95 dust mask – optional Tyvek suit-optional
Level 3 - Mid-Sized 10-30 ft^2 with light mold growth –or- <10 ft^2 with heavy growth	• Isolate work area or conduct when area unoccupied • Dust suppression (e.g. misting surfaces with water) • Cover surfaces in work area with poly sheeting • Place contaminated materials in sealed plastic bag or wrap in poly sheeting for disposal • HEPA vacuum work area, clean with a damp cloth or mop and a detergent solution. • All areas should be left dry and visibly free from contamination and debris.	Safety goggles Nitrile gloves N-95 dust mask Tyvek suit - optional
Level 4 – Large 30-100 ft^2 with light mold growth –or- 10-30 ft^2 with heavy growth	• Isolate work area/conduct when unoccupied • Dust suppression (e.g. misting surfaces with water) • Cover surfaces in work area with poly sheeting • Place contaminated materials in sealed plastic bag or wrap in poly sheeting for disposal • HEPA vacuum work area, clean with a damp cloth or mop and a detergent solution. • All areas should be left dry and visibly free from contamination and debris. • Additional isolation and controls may be needed. **Consult with EHS prior to performing any level 4 work**	Safety goggles Nitrile gloves Tyvek suit N-95 dust mask -or- Half-face respirator with HEPA cartridges Note: Medical clearance, fit-testing and training are required for all cartridge respirator wearers.
Level 5 - Extensive Contamination >100 ft^2	Typically conducted by certified mold remediators in conjunction with an abatement plan. **All outside assessment and remediation contractors must be licensed and all work conducted in accordance with NYS DOL Mold Regulations**	Typically full-face respirator with HEPA cartridges, nitrile gloves, and full-body protective clothing.

Note: This table provides a summary of controls required for mold projects. For additional details, please refer to the full text contained in the HVCC Management Guidelines.