

**WATER INTRUSION AND
MOLD CLEANING OR REMEDIATION POLICY****Procedure: 6.22
Version: 2.1
Effective: 04/01/2017****A. Purpose.**

The purpose of this policy is to establish standard procedures for addressing water intrusion (e.g., water leak or flood) to minimize or eliminate the potential for fungal (i.e., mold) and microbial growth and responding to potential fungal growth in accordance with city, state and federal guidelines and rules. . Additionally, this policy endeavors to minimize property damage, remediation cost, and to enable prompt resumption of routine activities in affected areas through appropriate execution of accepted procedures.

B. Applicability/Scope:

This policy covers all Columbia University campuses and properties within which a water leak, flood, condensate, or high humidity may occur causing building materials or furnishings to become moist to the extent that remedial action (e.g. system repair, dehumidification, water extraction, building material removal/replacement/restoration) is necessary.

C. Responsibility**1. Columbia University Facilities**

- a. Maintain the building infrastructure in a manner that minimizes the possibility of water damage and moisture build-up.
- b. Ensure water intrusion is addressed expeditiously (i.e., as soon as identified/reported or within 24-48 hours following the appearance of conditions that promote mold growth).
- c. Provide and install appropriate protection (e.g., plastic protective sheeting) or take action to prevent property and equipment damage during a water intrusion event.
- d. Follow procedures described in the policy related to water intrusion and visible mold.
- e. Initiate mold complaint investigations and communicate with the complainant and other affected stakeholders, and EH&S, as to findings and actions. Where such complaint originates in a laboratory setting, coordinate the investigation with EH&S.
- f. Share investigation findings and any environmental sample results with EH&S.
- g. Establish and implement a remedial action plan, as necessary, inclusive of repair of the underlying source of the conditions that promote mold growth, and coordinate such plan with the complainant, other affected stakeholder and EH&S.

2. University Administrative and Research Personnel

- a. Report a leak or flood to the appropriate Facilities Management Office.
- b. Avoid actions that contribute to water intrusion and conditions that promote mold growth (e.g., turn off ventilation systems, obstruct ventilation systems, spill water/leave water running, store paper and cardboard in wet/humid environment, etc).
- c. Take action to prevent property and equipment damage during a water intrusion event.
- a. Remove hazardous materials, including chemicals, biological materials, and radioactive materials from areas that are directly impacted by water intrusion to allow for timely remedial action.
- b. Interior conditions of environmental rooms and walk-in freezers are primarily the responsibility of the Principal Investigator assigned to its use, but will be evaluated on case-by case basis. Guidance for safe work practices in environmental rooms and walk-in freezers should be followed to prevent mold growth (<http://www.ehs.columbia.edu/Environmental%20Room%20Guidance.pdf>).
- c. Perform cleaning on laboratory equipment or seek recommendation for the safe cleaning of laboratory equipment that may be affected by microbial growth from EH&S.

**WATER INTRUSION AND
MOLD CLEANING OR REMEDIATION POLICY**

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3. Environmental Health & Safety (EH&S)

- a. Initiate mold complaint investigations originating in a laboratory setting and communicate with the complainant and other affected stakeholders, and Facilities Management, as to findings and actions.
- b. Assist Facilities Management in investigating mold complaints originating in non-laboratory settings, as necessary.
- c. Share mold investigation findings and any environmental sample results with Facilities Management.
- d. Assist Facilities Management in developing an appropriate remedial action plan to address mold growth, inclusive of repair of the underlying source of the conditions that promote mold growth.
- e. Assist laboratories affected by water intrusion in securing hazardous materials from being impacted.
- f. Provide clearance for *chemical, radiological, and biological hazards resulting from research activities* in areas where such activities have taken place upon request from Facilities.
- g. Provide health and safety guidance to University personnel whose work areas may have been affected by water intrusions and/or mold upon request.

D. Definitions: N/A

E. Procedures:

1. Water Intrusion

In the event of a flood, leak, or other water intrusion, the following actions should be taken:

- a. Upon notification or discovery, Facilities Management should determine the source of the water and stops or limits the flow of water.
- b. If the water intrusion is occurring in a laboratory or space otherwise storing or using hazardous materials, these materials should be removed from the path of the intrusion or otherwise protected from impacting the repair and ultimate clean-up of the area by laboratory personnel and/or EH&S.
- c. In non-laboratory spaces, to the extent feasible, protect property from water damage.
- d. Dry out porous building materials (e.g., sheetrock, carpeting, etc), supplies (e.g., paper and cardboard) and furniture that become wet, following EPA¹ and/or restoration contractor recommendations (e.g., typically within 48 hours). Note, EPA¹ recommends that ceiling tiles and insulation be discarded and replaced, as opposed to dried and reinstalled.
- e. Remove and replace water-damaged sheetrock if the wall cavity cannot be accessed and ventilated to ensure thorough drying. If the sheetrock and wall cavity can be thoroughly dried, then the sheetrock can be cleaned and repainted once dried.
- f. Inspect areas above ceilings for water-damaged HVAC filters, sheet rock, insulation, etc.
- g. Discard upholstered furnishings that cannot be dried.
- h. Wet-vacuum and thoroughly dry carpets. If necessary, move cabinets, desks, etc. to allow carpeting beneath to be wet-vacuumed and thoroughly dried. ***Wet or damp carpets are problematic sources of microbial growth, so it is essential that these activities be undertaken as soon as possible.***

**WATER INTRUSION AND
MOLD CLEANING OR REMEDIATION POLICY**

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- i. Instruct occupants to inspect books, journals, and other papers and then either discard unsalvageable or unwanted materials, or thoroughly dry items that must be kept.

2. Visible Mold

The presence of visible mold or suspected mold should be reported immediately to EH&S and/or Facilities Management. EH&S and/or Facilities Management will coordinate an investigation to determine an appropriate course of action in accordance with NYC Department of Health and Mental Hygiene’s “Guidelines on the Assessment and Remediation of Fungi in Indoor Environments.”² The following summarizes the steps to be taken from the Guidelines².

- a. **Assessment**– the presence of mold growth should be addressed quickly. In all cases, the source of water must be identified and corrected.
- b. **Visual Inspection** – the extent of any water damage and mold should be identified. It should include both visible and hidden areas, as necessary. Ceiling tiles, drywall, structural wood and other porous surfaces should be inspected closely. The use of a moisture meter is suggested to detect moisture in such materials that are susceptible to microbial growth and spread. The EPA⁶ recommends an upper level moisture content of 19% in wood, while drywall moisture content by weight should be below 1% moisture content to be considered structurally sound and free from mold or decay⁷.
- c. **Sampling** – Sampling is not typically recommended by the Guidelines, as there are no clear standards or widely accepted guidelines. If sampling is determined necessary, sampling should be conducted by a professional trained in the appropriate sampling methods and is aware of the limitations of the methods used. It is recommended that an accredited microbiology laboratory specializing in environmental mycology is utilized for sample analysis. A sampling plan should be developed that includes a clear purpose, strategy, and discusses interpretation of results.
- d. **Cleaning or Remediation** – The goal of cleaning or remediation is to clean or remove and replace mold damaged materials using methods that protect occupants and Facilities Management personnel from mold exposure. Consideration must be given to the possible presence of other environmental hazards, such as asbestos-containing materials and lead-based paint. The steps for remediation include the following:
 1. **Moisture Control** – The underlying moisture problem must be addressed to prevent recurring mold growth.
 2. **Training** – Workers should be trained as appropriate. Facilities Management and laboratory personnel cleaning of mold is typically limited to *small isolated areas* as defined in the NYC DOHMH Guideline² and below. Certain *Medium-Sized Isolated Areas* may also be safely cleaned by personnel, with consultation from Facilities Compliance and/or EH&S. Large Areas, or Medium-Sized Isolated Areas deemed to be beyond the scope of services of Facilities Management, require Facilities Management retain the services of a licensed mold remediation contractor. For reference, the NYC DOHMH Guidelines define:
 - A small isolated area as less than 10 square feet
 - A medium-sized isolated areas as 10 – 100 square feet
 - A large area as greater than 100 square feet in a contiguous area

Additionally, mold remediation contractors must be licensed and trained in accordance with Article 32 of the New York State Labor Law³. Evidence of licenses

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must be obtained by Facilities Management prior to hiring such contractors for mold remediation work.

3. **Cleaning Methods** – All cleaning should be performed with a soap or detergent solution using the gentlest cleaning method that removes the mold without causing airborne particle distribution/generation. Non-porous surfaces can almost always be cleaned. Porous surfaces should be evaluated on a case-by-case basis by Facilities Management and EH&S.
 4. **Quality Assurance Indicators** – Evaluations should be performed by Facilities Management and Facilities Compliance, in conjunction with EH&S, during and after any cleaning or remediation effort to determine the following:
 1. Underlying moisture problem was addressed.
 2. Mold was removed effectively and thoroughly without spreading to new areas.
 3. Surfaces are free of visible debris and dust.
- e. **Mold Remediation Work Plan** – Article 32 of the New York State Labor Law³ requires that a mold remediation work plan is written by a licensed mold assessor for areas greater than 10ft² that cannot be effectively cleaned by Facilities Management personnel. The work plan establishes minimum practices for a licensed mold remediation contractor to perform the remediation in a manner that protects occupants, effectively addresses the source of mold, and addressed re-occupancy of the affected space(s). The licensed mold assessor must return after the mold remediation contractor completes remediation to determine if the work area is free from visible mold and that the work was performed in compliance with the work plan. The post-remediation assessment determines if the underlying cause of the mold has been addressed and will not reoccur.

F. Emergency Contacts:

1. Manhattanville, Morningside & Nevis campus: Columbia University Facilities (CUF) 212-854 -2222
2. CUMC campus: Facilities Management -212 – 305 - HELP (4357)
3. LDEO campus: Safety Manager (845- 365-8822)
4. EH&S 212-305-6780 (CUMC) or 212-854-8749 (Morningside)

G. Medical Surveillance:

Medical surveillance is not anticipated to be applicable. Concerned individuals should be referred to their department’s human resources representative or EH&S for guidance.

H. Recordkeeping:

1. Records of investigations performed by the EH&S personnel will be maintained by EH&S office.
2. Records of investigations and actions performed by Facilities Management will be shared with EH&S upon request and maintained by respective Facilities Management offices.

I. Forms: N/A

J. References

1. EPA- Mold Remediation in Schools and Commercial Buildings Guide¹
(<https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>)
2. NYC DOHMH - Guidelines on Assessment and Remediation of Fungi in Indoor Environments²
(<https://www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>)

**WATER INTRUSION AND
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3. Article 32 of New York State Labor Laws³ –
(https://labor.ny.gov/workerprotection/safetyhealth/mold/pdf/Chapter_Amendment.pdf)
4. A Brief Guide to Mold in the Workplace (<http://www.osha.gov/dts/shib/shib101003.html>)
5. Preventing Mold-Related Problems in the Indoor Workplace
(https://www.osha.gov/Publications/preventing_mold.pdf)
6. Moisture Control Guidance for Building Design, Construction and Maintenance
(<https://www.epa.gov/sites/production/files/2014-08/documents/moisture-control.pdf>)
7. How to Interpret Moisture Meter Readings on Different Scales, Delmhorst Instrument Co., 2016.
(<http://www.delmhorst.com/blog/bid/302623/How-to-Interpret-Moisture-Meter-Readings-on-Different-Scales>)

K. Acknowledgements: NA