UNIVERSITY OF ROCHESTER
ENVIRONMENTAL HEALTH & SAFETY

Policy No.: OS006	**Approved by: Mike Liberty**
Title: Mold and Water-damaged Building Materials Management Policy	**Date: 4/13/2018**
Revision No.: 3	**Page 1 of 9**
Updated by: Phil Rogerson	

I. PURPOSE

New York State laws (effective January 1, 2016) regulate the professional assessment and remediation of mold. The laws, which are contained in the New York State Labor Law, Section 1, Article 32, Chapter 551, Titles 1 and 2, and administered by the New York State Department of Labor, set minimum work standards for mold assessment and remediation and establish minimum requirements for professional mold assessors and remediators. While it does not appear that University of Rochester personnel engaged in mold assessment or remediation projects for the University are required to be licensed at this time, the procedures and requirements set forth in the State regulations should be followed to ensure such work is conducted in accordance with the practices established by the law.

This procedure establishes guidelines for dealing with mold in the workplace in accordance with New York State regulations.

A building and systems management approach is generally taken that emphasizes management of water-damaged and/or mold-contaminated building materials through proper assessment, development of a work plan, and proper execution of remedial activities before microbial content becomes problematic. Procedures for water-impacted building materials and mold cleanup are based on exposure control objectives, the extent of contamination, site-conditions, and the sensitivity of the area. Objectives of remediation and restoration projects are to:

A. Assess the extent of water damage and mold contamination

B. Identify and eliminate underlying moisture sources

C. Restore building conditions (repair water damage, control musty odor, restore esthetic conditions, etc.).

D. Maintain buildings and systems to prevent or minimize the likelihood of mold contamination.

E. Establish conditions acceptable for the general patient populations (e.g., minimize potential for adverse health effects, etc.).

F. Protect the health of extremely sensitive individuals (e.g., against adverse responses in the general or known susceptible/sensitive populations).

G. Evaluate each event or project on a case-by-case basis

II. PERSONNEL AFFECTED

All University personnel

Note: Strong Memorial Hospital maintains its own specific policy for hospital and patient care areas; reference “SMH Mold and Water-Damaged Building Materials Management Policy” http://intranet.urmc-sh.rochester.edu/policy/infControl/Documents/

SMHMoldInfectionControlPolicy.pdf for more information.

III. DEFINITIONS

EH&S - Environmental Health and Safety
UHS - University Health Services
ICRA-Infection Control Risk Assessment

IV. RESPONSIBILITIES

A. Environmental Health and Safety (EH&S) will:

1. Provide oversight and guidance as needed to assure compliance with this policy.
2. Consult with Infection Prevention, upon request, for SMH-related cases.
3. Consult with University Health Services regarding potential work-related cases.
4. Provide awareness training for employees who must comply with this policy.
5. Coordinate and assist in arranging for any air, bulk, or other sampling, and evaluating any data generated from the sampling.
6. Maintain this policy, and associated documentation necessary to support this policy.
7. Maintain indoor air quality reports on file as necessary for future reference
8. Distribute written final reports to affected parties.

B. Directors, Supervisors, and Managers will:

1. Notify EH&S of any University employee health concerns or questions pertaining to microbial content or general air quality of their work environment, or when there are employee questions pertaining to the health impacts of water-impacted building materials upon their general work environment.
2. Consult with EH&S whenever there are significant restorations, particularly those projects where employee health could be impacted by either microbial content within the employee's work environment, or released materials.
3. Provide documentation, building/systems and other information, and on-site assistance to EH&S and/or Infection Prevention (as requested) to assure that all reasonable steps have been taken to identify and evaluate the source and impact of excessive moisture and potential microbial content in the work environment.
4. Notify Infection Prevention when there are mold or water intrusion concerns that could impact Hospital and Patient Care or other areas.
5. Assure that employees who are involved in cleanup, remediation, and restoration activities are aware of and know how to protect themselves and comply with this policy
6. **Ensure that any and all outside assessment or remediation contractors or consultants are licensed by New York State to perform the required work.**

C. All employees affected by this policy must:
1. Comply with the procedures described in this University-wide policy.
2. Follow ICRA, the SMH Mold and Water-Damaged Building Materials Management Policy, and related Infection Prevention policies as they apply to Hospital and Patient Care areas.
3. When performing cleanup and restoration, report any signs or symptoms that may indicate a reaction to mold exposure, or other agents associated with the work, to their Supervisor.

V. PROCEDURES

Each project or restoration must be evaluated on a case-by-case basis. The following information provides general, minimal procedures to manage these projects.

A. Hospital and Patient Care Areas

Refer to and follow the Infection Prevention Unit's "Mold and Water-Damaged Building Materials Management Policy" for cases involving Hospital and/or Patient Care Areas.

B. Managing Water-Impacted Building Materials and Mold

If water/moisture is present in sufficient quantity in organically-based materials for more than about 48 hours, the likelihood of mold growth becomes significant (sufficient quantity would be a moisture content of greater than 19% in the materials or relative humidity greater than 60 %.) It is vital that standing water is removed and water-affected materials are dried as quickly as possible to minimize mold growth potential.

An important goal of mold remediation is to prevent migration of contaminants into ventilation systems and adjacent building areas, especially if those areas are occupied. Appendix B of this policy contains more detailed recommendations on managing water-damaged building materials from the EPA's "Investigating, Evaluating, and Remediating Moisture and Mold Problems" tables. Additional, material-specific cleaning and remediation guidance is available from IICRC S500 Standard on water damage remediation and S520 Standard on mold remediation.

Assessment

The extent of water infiltration and damage and the degree of mold contamination present must be determined. Evaluation of damage can include:

- Visual inspection
- Use of a moisture meter to measure moisture content of affected materials
- Air sampling using spore traps, agar plates, or both, to determine levels of airborne mold (if counts are significantly higher indoors than outdoors, or if

there are mold species that are present indoors, but not outdoors, it may signal that active mold growth is taking place). Similarly, surface or bulk samples may be used to ascertain whether mold contamination is likely.

Remediation Plan

A mold remediation plan, specific to the incident should be prepared prior to commencement of work. The plan must specify:

- Areas in which the work will be performed
- Estimated quantities of material to be removed or cleaned
- Work area containment measures to be implemented, including negative pressurization and decontamination procedures
- Notification procedures for occupants
- Required PPE for remediation workers
- Cleaning methods and materials to be used for each material present (SDS information must be available to workers in the area). Note that any disinfectants, biocides, or antimicrobial materials must be Environmental Protection Agency (EPA) registered for the intended use and may need to be applied by a licensed pesticide applicator.
- Correction of underlying moisture sources
- Clearance procedures and criteria

1. Minor Restorations (< 10 square feet) in Non-Sensitive Occupied or Unoccupied area

The following minimum steps should be applied to all remediation projects, and for minor restorations in non-sensitive or unoccupied areas:

a. Trace and eliminate the source of unwanted moisture and mold.

b. Confirm that sources of water and/or mold have been eliminated or minimized where possible before proceeding.

c. If room items could become contaminated with mold spores or construction debris, remove all room items from the remediation/construction area (e.g., computer equipment, upholstered furniture, etc.) or cover/seal with plastic.

d. Any building or other material that cannot be entirely dried out within 48 hours should be removed from the area and disposed of [exception: some "hard" materials and furnishings may be evaluated for salvageability]. Materials that have been affected by grossly contaminated (black) water must be removed unless they are non-porous and can be adequately cleaned.

e. Clean work area and surrounding surfaces.

(1) Use a HEPA vacuum where possible.

(2) Non-porous (e.g., metals, glass, and hard plastics) and semi-porous to non-porous (e.g., wood, and concrete) materials that are structurally sound and are potentially or visibly moldy can be cleaned and reused.

(a) Use a mild cleaning solution, and rinse well and dry.
(b) Surfaces may also be cleaned/disinfected with the Hospital-approved cleaner (e.g., Virex II or similar mild cleaning solution).
(c) In most cases, bleach should not be used as it can damage or pit metallic and other hard surfaces, requires excessive contact time to work effectively on mold spores, and can produce strong odors.

(3) Building materials such as wallboard, drywall, ceiling tiles, wallpaper, and other cellulose-based materials that become wet and remain moist for more than 48 hours must be removed and replaced. This guideline also applies to materials that can house mold spores but that cannot be cleaned (e.g., damaged and contaminated fiberglass insulation and insulation wrap).

(4) Carpet that remains wet for more than 48 hours, or that becomes repeatedly wet due to recurrent water intrusion events, should be evaluated for possible removal. If the area is below-grade (e.g., basement work area), carpet should not be reinstalled if the area is susceptible to recurrent water-intrusion or high relative humidity levels (e.g., greater than 60%).

f. Use dust suppression methods on materials that should be cut out (e.g., moisten surfaces prior to cutting-**DO NOT soak or saturate the material**).

g. Remove mold- or water-damaged materials in sealed bags or sealed containers.

h. Leave area dry and clean.

2. Medium (10-100 square feet) and Large (> 100 square feet) Restorations in Occupied, or Sensitive Areas

Additional control measures should be applied to larger projects or sensitive areas such as patient care or vivarium spaces. Application of these measures must be made on a case-by-case basis:

a. Enclose and contain critical areas (e.g., openings to adjacent areas) with plastic sheeting.

b. Protect the HVAC system (e.g., seal supplies and returns and shut off the system where possible).

c. Maintain a slight negative or neutral pressure.

d. Recirculate air through a portable HEPA filter. If use of a HEPA or other portable system could disturb more dust and particles than it captures, or there is no possible discharge point away from occupied areas, it must not be used during the demolition or cleanup. [Note: the portable Microcon Units must <u>not</u> be used for this purpose. Microcon units are for relatively "clean" patient care environments, and not for managing dusts and particles associated with demolition or construction projects.]

e. Place a drop cloth and step-off mats outside of the work site.

f. Clean all surfaces potentially impacted by the remediation work (including areas beyond the immediate work site). Cleaning includes use of a HEPA

vacuum, damp cleaning of desks or other hard surfaces where people could come into contact with released mold spores, and in Hospital/Patient care or other highly sensitive areas it may also include damp cleaning of walls and ceilings to remove released materials.

Verification/Completion of Restoration (Post-Remediation Clearance)

- After repairs and remediation are complete, re-inspect the area after 24-48 hours to confirm conditions are acceptable (no visible mold) and in accordance with any other clearance criteria established in the Remediation Plan
- If air or surface sampling was conducted as part of the assessment, it is recommended that post-remediation samples be collected for use in determining clearance.
- If the remediation has been deemed successful, a clearance report should be drafted.
- If it is determined that the remediation was not successful, a new assessment should be considered. Remediation work should be continued, and the underlying cause(s) of the mold must be addressed.
- The Supervisor and/or project manager must verify satisfactory completion for small jobs or jobs where there is little or no potential impact on University employee health.
- The Construction Supervisor and/or Departmental Supervisor/contact should contact EH&S to help verify that large or complicated projects, or sensitive areas, have been restored to acceptable conditions.

C. Indoor Air Quality Investigations for Occupant Health Concerns

EH&S investigates mold and related indoor air quality complaints and distributes written final reports as necessary to affected parties. The format followed is similar to EH&S' "Indoor Air Quality Program" and consists of the following basic steps:

1. Phase I Assessment or preliminary assessment. Phase I assessments include interviewing occupants using an employee questionnaire and occupant diary found in the IAQ policy: http://www.safety.rochester.edu/ih/iaq/iaqpolicy.html. The questionnaire is used to obtain information about the nature of the employee complaints and symptoms and also to determine the magnitude of the problem.
2. A walk through of the affected area or building is performed. Building materials, ventilation and other mechanical systems are evaluated and potential sources of excessive moisture or microbial contamination are evaluated. If the immediate cause for concern cannot be found, a Phase II assessment is required.
3. Phase II Assessment: During a Phase II assessment, common indoor air quality parameters including temperature, relative humidity, and carbon dioxide levels are measured. The purpose of this assessment is to determine whether basic indoor air quality parameters are within recommended ranges.

4. Phase III Assessment: A Phase III Assessment may be performed when a definitive cause for the symptoms cannot be determined during the Phase II Assessment of the investigation.
5. Phase III Assessments consist of extensive and more specific monitoring and sampling for microbial contaminants. In some cases, destructive sampling of building or other materials might be recommended. Environmental Health and Safety may recommend contracting Phase III Assessments to Professional Indoor Air or Building-Condition Consultants.
6. EH&S may also recommend that the occupant seek the services of an occupational health physician depending upon the findings.
7. Appendix A of this policy contains a building history and investigation form that can be used as part of an investigation.

D. Remediation Worker Protection (PPE)

1. The following practices are ***required*** for employees performing the demolition/restoration work.
   - **a.** Wear disposable foot covers and appropriate disposable gloves during the remediation. Discard these items in a sealed container or bag before leaving the remediation area to prevent tracking or release of contaminated materials. Don new foot covers and gloves when you re-enter the area.
   - **b.** Tyvek suits/coveralls, and hairnets in some cases, are required to protect the employee and minimize spreading of dusts and contaminants outside the worksite. If disposable protective clothing is worn, dispose of it in a sealed bag or container before leaving the remediation area.
   - **c.** Wear appropriate eye protection for tasks that might expose you to eye hazards.
   - **d.** Wash your hands, face, and any exposed skin before leaving the area, or as soon as possible afterwards.
   - **e.** Any tools or materials for re-use that may have become contaminated must be inspected and cleaned before leaving the worksite if possible, or at the earliest possible moment. Heavily contaminated items must be bagged if they cannot be decontaminated on-site.
   - **f.** Respiratory protection must be used if mold spores or nuisance dusts could be released during the demolition, cleanup or restoration operations. An N95 disposable or tight fitting respirator with N95 filter is generally effective in minimizing exposure to nuisance dusts and microbial spores; however, if there are any questions about the proper respirator to use, EH&S should be consulted. Employees must have medical clearance and be trained and fit-tested before donning a respirator.
   - **g.** If tight-fitting disposable or cartridge respirators cannot be used, a Powered Air Purifying Respirator (PAPR) with N-95 filter cartridges may be used if the

employee is trained and medically cleared for PAPR use.

h. Universal Precautions and/or Contaminated Systems procedures must be followed if the moisture source could also contain blood/body fluids or other potential sources of bloodborne pathogens, or chemicals.

i. Employees performing restoration/demolition work must wear an N95 respirator if the potential exists for exposure to aerosolized bloodborne pathogens or building materials potentially contaminated with bloodborne pathogens. These University employees must have medical clearance, and be fit-tested before donning an N95 respirator for this purpose.

j. If chemical contamination is a possibility, a chemical cartridge respirator might be required. Contact EH&S for a consultation. Employees must receive medical clearance, and be trained and fit-tested before donning any respirator.

2. Employees performing this type of remediation work must report any signs or symptoms that may indicate a reaction to mold exposure, or other agents associated with the work, to their Supervisor.

E. Microbial Sampling

In most cases, air sampling, or sampling of potentially impacted surfaces or bulk materials for microbial content is not required or recommended as part of the assessment or remedial process. In particular, if the assessment discovers obvious mold growth, sampling is not usually required. In the event that air sampling might be necessary to provide specific information to guide remedial activities or to address specific medical and health concerns for patients, the Occupational Safety Unit of EH&S will initiate this action.

VI. REFERENCES

A. "Mold Remediation in Schools and Commercial Buildings," United States Environmental Protection Agency: http://www.epa.gov/iaq/molds/mold_remediation.html

B. "Mold Facts," Center for Disease Control http://www.cdc.gov/NCEH/airpollution/mold/moldfacts.htm

C. "Guidance for Clinicians on the Recognition and Management of Health Effects Related to Mold Exposure and Moisture Indoors," UConn Health Center, Farmington, Ct - http://oehc.uchc.edu/clinser/MOLD%20GUIDE.pdf

D. "Standard and Reference Guide for Professional Water Damage Restoration," Institute of Inspection, Cleaning and Restoration (IIRC S500)

E. "Standard and Reference Guide for Professional Mold Remediation," Institute of Inspection, Cleaning and Restoration (IIRC S520)

F. "Mold and Fungi," and "A Brief Guide to Mold in the Workplace," Occupational

Safety and Health Administration Health & Safety Topics:
http://www.osha.gov/dts/shib/shib101003.html

G. "Army Facilities Management Information Document on Mold Remediation Issues" February 2002, US Army Center for Health Promotion and Preventive Medicine:
http://chppm-www.apgea.army.mil/mold/TG277.pdf

H. "Industrial Hygiene and Preventive Medicine Mold Assessment Guide", February 2002, Army Center for Health Promotion and Preventive Medicine
http://chppm-www.apgea.army.mil/mold/TG278.pdf

I. "SMH Mold and Water-Damaged Building Materials Management Policy"
http://intranet.urmc-sh.rochester.edu/policy/infControl/Documents/SMHMoldInfectionControlPolicy.pdf

VII. APPENDICES/FORMS

A. Appendix A - Mold and Water-Impacted Building Materials Investigation Form
http://www.safety.rochester.edu/pdf/moldpolicyappendixA.pdf

B. Appendix B - EPA's Investigating, Evaluating, and Remediating Moisture and Mold Problems (see EPA website for complete details)
http://www.safety.rochester.edu/pdf/moldpolicyappendixB.pdf;
http://www.epa.gov/mold/append_b.html

C. Appendix C - NY State Labor Law, Section1, Article 32: Licensing of Mold Inspection, Assessment, and Remediation Specialists and Minimum Work Standards
https://www.lawserver.com/law/state/new-york/ny-laws/new_york_laws_labor_article_32

VIII. REVISION HISTORY

Date	Revision No.	Description
4/29/2005	New	Establish procedure for handling materials from a mold and water-damaged building
2/24/2009	1	Reviewed, slight wording changes
12/28/2012	2	Reviewed, wording changes, references added
4/13/2018	3	Reviewed, revised to reflect NY State Mold Assessment and Remediation Law.