



**VANDERBILT
UNIVERSITY**

Water Intrusion and Mold Remediation Procedure

Division of Occupational Safety and Health

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I. Purpose

To serve as a guide to identify, respond, and mitigate water intrusion events to prevent property damage and mold growth. And to respond and mitigate when mold is identified, either within a water intrusion event or discovered with no evidence of moisture damage.

II. Scope

This program applies to all employees and contractors who respond to, and those affected by, water intrusion events (current or historical) at Vanderbilt University.

III. Definitions

- A. **Category of Water:** refers to the range of contamination in water considering both its originating source and quality after it contacts the materials on the intrusion site
 - i. **Category 1** – originates from sanitary source; does not pose a substantial risk from dermal, ingestion, or inhalation exposure (e.g., broken water lines, tub/sink overflows with no contaminants, melting ice/snow, falling rainwater, broken toilet tanks that do not contain contaminants or additives)
 - ii. **Category 2** – contains significant contamination and has the potential to cause discomfort or sickness if contacted or consumed by humans; it can contain potentially unsafe levels of microorganisms or nutrients for microorganisms, as well as other organic or inorganic matter (chemical or biological) (e.g., discharge/overflows from dishwashers/washing machines, overflows from toilet bowls on the room side of the trap with urine and no feces; seepage due to hydrostatic pressure)
 - iii. **Category 3** – grossly contaminated and can contain pathogenic, toxigenic, or other harmful agents; can cause significant adverse reactions to humans if contacted or consumed; can carry trace levels of regulated or hazardous materials (e.g., sewage, wasteline backflows that originate beyond any trap regardless of visible content or color; pesticides or toxic organic substances)
- B. **Class of Water:** refers to the range of the approximate wet surface area and permeability of affected materials remaining within the drying environment at the time drying is initiated
 - i. **Class 1** – least amount of water absorption and will likely evaporate; materials are low porosity (e.g., water is retained on the surface, little or no wet carpet or cushion)
 - ii. **Class 2** – significant amount of water absorption and evaporation load; water intrusion has flowed into the area and wet materials are medium to high porosity (e.g., carpet, gypsum wall board)
 - iii. **Class 3** – greatest amount of water absorption and evaporation load; water intrusion where wet, porous materials represent majority of the combined floor, wall, and ceiling surface area in the space (e.g., carpet, gypsum wall, ceiling board)
 - iv. **Class 4** – deeply held or bound water resulting in a low potential rate of evaporation after bulk water removal; affected materials are typically low in porosity or the building assemblies may require special methods, longer drying times, or substantial water vapor pressure differentials (e.g., plaster, hardwood, concrete, masonry, gym floors, structural cavities, stone, brick)
- C. **Class of Mold Growth**
 - i. **Limited mold growth** -- Patchy mold coverage; less than 4 contiguous square

- feet.
- ii. **Excessive mold growth** -- Blanket mold coverage; covers a total of 4 contiguous square feet.

IV. Responsibilities

- A. **Occupational Safety and Health (OSH)**
 - i. Develop and implement this program.
 - ii. Respond to and investigate reported health concerns, including conducting mold investigations and if necessary, mold sampling.
 - iii. Provide technical advice.
- B. **Vanderbilt University Maintenance and Operations (VUMO)– Maintenance and Custodial Services Staff**
 - i. Respond to all water intrusion and mold growth events.
 - ii. Identify and repair the source of the water leak.
 - iii. Assess water intrusion events to determine if it can be handled internally or if a contractor is needed.
 - iv. Schedule and coordinate remediation activities, if necessary.
 - v. Notify OSH to assist with water classification or indoor air quality concerns.
 - vi. Notify Risk Management regarding any expected loss.
- C. **Office of Housing and Residential Experience (HRE)**
 - i. Respond to water intrusion, mold growth events, and identify the source of the water leak.
 - ii. Contact VUMO to repair the source of the leak.
 - iii. Coordinate student relocation and belongings management for remediation activities, if necessary.
- D. **Custodial Contractor**
 - i. Ensure good housekeeping practices are used in all buildings.
 - ii. Report any unsafe conditions to Vanderbilt, including potential mold or wet conditions that could promote mold growth.
- E. **Water Remediation Contractor**
 - i. Remove water according to ANSI guidelines or other known and accepted best practices.
 - ii. Report any unsafe conditions to Vanderbilt, including potential mold or wet conditions that could promote mold growth.
- F. **Mold Remediation Contractor**
 - i. Remove mold according to EPA guidelines or other known and accepted best practices.
 - ii. Report any unsafe conditions to Vanderbilt, including potential mold or wet conditions that could promote mold growth.

V. Water Intrusion Response Procedures

- A. **Initial Response – VUMO Maintenance Staff**
 - i. Identify the potential source(s) of the flood/intruding water.
 - ii. Don at a minimum, rubber boots, rubber gloves, and safety goggles.
 - iii. Take measures to stop active flooding.
- B. **Evaluate Level of Intrusion**
 - i. Custodial Services will handle all Category 1 (clean) water intrusion events.
 - ii. Vanderbilt does not remediate Categories 2 or 3 (contaminated i.e. sewage) and will hire a water remediation contractor (See Appendix 1 for list of pre-qualified contractors).
 - iii. Determine the route that the water is migrating from and if there was any potential for contamination along its path.

- iv. Identify potential dangers, including electrical shorts, chemical reactions, and soggy fallen ceiling tiles.
 - v. Ensure occupants have been notified of the event. If a laboratory has a water intrusion event, contact Environmental Health and Safety (EHS).
- C. Containment**
- i. For floods overhead, cover valuable equipment and supplies with plastic sheeting if possible.
 - ii. Efforts should be made to protect all undamaged surfaces and objects in surrounding areas using absorbent socks or diversion devices.
 - iii. It is recommended that containment kits, including absorbent socks, buckets, and sandbags, are located and readily accessible in buildings.
- D. Communication**
- i. When water intrusion events occur, the following groups are notified as applicable:
 - VUMO – Custodial Services and Zone Maintenance Manager, for leak repair and water/mold remediation
 - Building Manager or HRE, for occupant management
 - OSH for technical guidance regarding water category determination, remediation guidance, and mold testing
 - EHS for laboratory buildings to determine safe access
 - Risk Management for loss and insurance
 - Office of Emergency Management – for large responses requiring activation of the Virtual Emergency Operation Center or building evacuation assistance
 - VUPD for building security issues
 - Communications and Marketing for high profile or sensitive areas

VI. Water Removal

Depending on the quantity and location of water that is intruding, follow the corresponding procedures below:

A. Classes 1 and 2

- i. Smaller floods will be managed by custodial staff using wet vacuums, absorbent materials, portable fans, dehumidifiers, increasing area ventilation if possible.
- ii. To prevent mold/mildew growth and minimize long term damage, all water intrusion events must be cleaned up immediately or within 48 hours.
- iii. Additional specialized cleaning should include water extraction from carpets and rugs, and applying an anti-microbial disinfectant cleaner to surfaces (e.g. floors, walls, and furnishings), per the manufacturer's instructions.
- iv. Remove and replace all water-damaged materials, including water-stained ceiling tiles.

B. Classes 3 and 4

- i. Large floods will be managed by a qualified water remediation contractor (See Appendix 1 for a list of pre-qualified contractors) per ANSI guidelines or other known and accepted best practices.
- ii. All water-damaged materials will be removed and replaced by the water remediation contractor.
- iii. For building material removal, the materials to be removed are tested

for asbestos before cutting holes for drying or removal of wet materials. Asbestos remediation may be required prior to water remediation if asbestos is present.

- iv. Salvaging of wet documents, photographs, artwork or other important or sentimental materials is coordinated with the remediation contractor with direction from Risk Management.
- v. Upon completion of remediation, VUMO will ensure remediation is acceptable.

C. Follow-up or post-cleanup

- i. Revisit the area within the near future to confirm the effectiveness of the cleanup and drying steps.
- ii. Contact OSH if additional verification or testing is requested.

VII. Mold Remediation Procedures

If mold is discovered on environmental surfaces (e.g., walls, ceilings), follow the corresponding procedure below.

A. Initial Response:

- i. Do not disturb the affected area; and
- ii. Immediately stop any construction work that may disturb the affected area.
- iii. Immediately contact the VUMO and/or HRE assigned to the building for assessment.
- iv. Isolate the area without disturbing the mold:
- v. For areas within an unoccupied room, close the door to the room and place blue painter's tape around the door frame.

B. Occupied areas:

- i. For areas that cannot be physically isolated, such as open common areas or an occupied room, temporarily remove occupants from room and isolate the area to the greatest extent possible.
- ii. Cover the contaminated area with plastic and use blue painter's tape to seal the perimeter.

C. Mold Remediation Procedures:

- i. If mold growth is excessive, a mold remediation contractor is procured. VUMO manages the contract and ensures that the work is performed in compliance with industry standards.
- ii. If mold growth is limited and the work will be performed by VUMO, the following procedures are the minimum requirements for mold remediation, and additional requirements may be included per OSH.
- iii. For building material removal, the materials to be removed are tested for asbestos before cutting holes for drying or removal of wet materials. Asbestos remediation may be required prior to water remediation if asbestos is present.
- iv. Workers don proper personal protective equipment (PPE) such as disposable clothing consisting of full body coveralls (i.e., Tyvek® suits), head covers, gloves, and disposable shoe covers. Contact the OSH for specific PPE requirements.
- v. Occupied areas are protected by either closing the door to the affected area during work or by constructing a plastic protective barrier with zipper.
- vi. A High Efficiency Particulate Air (HEPA) filtration unit is located as close as possible to the area of demotion/remediation.
- vii. Materials are wet misted (not soaked) with an EPA registered disinfectant to prevent the mold spores from becoming airborne. Materials not removed are not left wet after using

- the EPA registered disinfectant.
- viii. Porous materials are removed in large pieces to reduce the number of spores released during demolition.
- ix. Construction debris, including PPE, is doubled-bagged, sealed, and removed in tightly covered containers. Waste is contained before transport.
- x. The affected area is cleaned thoroughly with an EPA-registered disinfectant before the area is placed back into service.
- xi. Waste materials can be placed in municipal solid waste dumpster.

VIII. Indoor Air Quality/Mold Testing Inquiries

In certain instances, indoor air quality or mold testing is necessary. The following information outlines when testing may be required:

A. New Water Intrusion Events

If the water is removed and the area is clean according to guidelines in Section VI within 48 hours, no mold sampling is required.

B. Reoccurring Water Intrusion Events

Once the water is removed and the area is cleaned according to guidelines in Section VI mold sampling will be conducted.

C. Past Water Intrusion Events and/or Employee/Student Mold Concerns

- i. Determine if there is a history of previous water intrusion events.
- ii. OSH will conduct a preliminary analysis, including measuring temperature and relative humidity, and look for visible mold.
- iii. Inquire if employee/student has allergies or pre-existing respiratory conditions and direct to the Occupational Health Clinic or Student Health Clinic for evaluation.
- iv. OSH will offer mold testing at the department's expense.

IX. Recordkeeping

- A. Water intrusion-related Work Orders are held and maintained by VUMO.
- B. OSH will retain all indoor air quality reports and exposure monitoring.

X. Regulatory Authority and Related Information

Vanderbilt and contractors will comply with the Occupational Safety and Health Administration's (OSHA) standards and any other applicable codes and standards, including:

[402-K-01-00, US Environmental Protection Agency \(EPA\) Mold Remediation in Schools and Commercial Buildings](#)

American National Standards Institute (ANSI)/IICRC S500-2015, Standard and Reference Guide for Professional Water Damage Restoration

XI. Contact

For questions, contact the Division of Occupational Safety and Health at osh@vanderbilt.edu

Appendix 1 – Pre-Qualified Water Remediation Contractors

Company Name	Contract Number	Contact Name	Contact Email	Contact Phone Number
Belfor	10000704	STEVE WHITE	steve.white@us.belfor.com	615 885-6577
ERT	10000749	KEVIN SEATS	kseats@ertnashville.com	615 525-9075
Servpro	10000703	ROB DIXON	rob@servpro9423.com	615 428-3383