



West Virginia University®

ENVIRONMENTAL HEALTH & SAFETY

THE MOISTURE INTRUSION PROGRAM

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WEST VIRGINIA UNIVERSITY

THE MOISTURE INTRUSION PROGRAM

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1. PURPOSE

The Moisture Intrusion Program is to serve as a guide to identify, respond, and mitigate moisture intrusion events to prevent increased property damage and microbial growth.

2. SCOPE

The Moisture Intrusion Program applies to all West Virginia University (WVU) employees who are affected by, or who respond to moisture intrusion events at the University.

3. DEFINITIONS

Category of Water – The range of contamination in water considering both its originating source and quality after it contacts the materials on the intrusion site.

Category 1- Originates from sanitary source; does not pose a substantial risk from dermal, ingestion, or inhalation exposure. Examples may include, but not limited to:

- Broken water lines
- Tub/sink overflows with no contaminants
- Melting ice/snow
- Falling rainwater
- Broken toilet tanks and bowls that do not contain contamination or additives
- Appliance Malfunctions involving supply lines
- Runoff from stormwater

Category 2- Significant contaminated 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). Examples may include, but not limited to:

- Discharge/ overflows from dishwashers or washing machines
- Overflows from toilet bowls on the room side of the trap with urine and no feces
- Seepage due to hydrostatic pressure

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. Examples may include, but not limited to:

- Sewage
- Pesticides or toxic organic substances
- Waste line backflows that originate beyond any trap regardless of visible content or color.

Mold – Any of various fungi that can cause disintegration of organic matter.

Mitigation – The process of preventing further damage to affected property and contents by stopping the water intrusion, cleaning up the water and removing building materials as needed. Then verifying that affected area is completely dry prior to the restoration stage.

Mildew – A superficial coating of discoloration of organic material, caused by fungi, especially under damp conditions.

Restoration – The process of repairing or restoring the building materials and contents to their original or similar state. This process is started when the mitigation is complete.

Water Intrusion – Any water-based liquid that is released in such manner that it has absorbed into any building components. The components may include, but not limited to, carpet, wood, drywall, ceiling tiles, or any porous materials that absorb and hold moisture.

4. ROLES AND RESPONSIBILITIES

4.1 Facilities Management (FM) Department (Directors/Managers/Supervisors)

- Purchase and maintain water intrusion equipment.
- Ensure all employees follow this program.
- Assist in the evaluation and repair of damages to building materials furnishings, and post-event return to normal operating condition.
- Assess moisture intrusion event to determine if scope of work can be handled internally or if a mitigation and/or restoration contractor is needed.
 - Manage FM zone personnel through mitigation and restoration for internal water intrusion projects.
 - Provide restoration quotes to the insurance company as needed.
 - Manage the restoration contractor throughout the insurance claim post mitigation.
 - Complete a final walk through with restoration contractor to ensure the project is complete.

4.2 Facilities Management (FM Zone Personnel)

- Respond to all moisture intrusion events.
- Identify the category of water.
- Determine and wear the proper Personal Protective Equipment in accordance with the PPE Hazard Assessment (i.e. found in the WVU Personal Protective Equipment Program).
- Repair the source of the water leak.
- Coordinate response with various entities (EHS, Contractors, Zones, and Campus Service Personnel, ect.)
- Supply and set up drying equipment promptly to the scene of the water intrusion (industrial dehumidifiers, blowers, and fans).
- Follow recommendations from Environmental Health & Safety Department.
- Verify that all affect building material are dry prior to the start of the restoration process.
- Assist in the evaluation and repair of damages to building materials and furnishings, and post-event return to normal operating condition.

4.3 Facilities Management (FM Campus Service Personnel)

- Respond to all moisture intrusion events.
- Ask FM Zone or FM Unit 35 personnel for the category of water.
- Determine and wear the proper Personal Protective Equipment in accordance with the PPE Hazard Assessment (i.e. found in the WVU Personal Protective Equipment Program).
- Provide prompt clean-up to various water intrusion emergencies.
- Wear proper personal protective equipment.
- Assist the FM zone personnel with the cleaning and drying process using wet/dry vacuums, water extractors, fans, and industrial dehumidifiers.

4.4 After Hours Facilities Management (FM Unit 35 Personnel)

- Response to all water intrusion dispatch calls.
- Identify the category of water.
- Determine and wear the proper Personal Protective Equipment in accordance with the PPE Hazard Assessment (i.e. found in the WVU Personal Protective Equipment Program).
- Repair or stop the source of the water leak.
- Supply and set up drying equipment promptly to the scene of the water intrusion (industrial dehumidifiers, blowers, and fans).
- Inform the proper zone manager of the water intrusion in their zone.
- Inform EHS of the water intrusion.

4.5 Environmental Health and Safety (EHS)

- Develop and help support the implementation of the water intrusion program.
- Provide training to FM employees on water intrusion response.
- Respond to reported water intrusions and assist FM managers and zone personnel with assessing the extent of the water intrusion and determining next steps as needed.
- Respond to events involving sewage backflows or other category 2 and 3 water intrusions.
- Determine if any hazardous materials are effected by the water intrusion.
- Make recommendations to FM zone personnel to dry or remove affected building materials.
- Gather quotes and invoices for water mitigation if water intrusion becomes an insurance claim.
- Work with FM zone Personnel to gather scope of the water intrusion.
- Manage mitigation contractor during remediation if applicable.
- Ensure the affected areas are dry prior to the start of restoration.

4.6 Contractors or Vendors

Mitigation

- Work with EHS to develop a scope of the mitigation project.
- Provide a detailed quote that includes, at a minimum, the following: quantity, unit price, and total price.
- Remove water according to ANSI/IICRC standard and reference guide and accepted best practices.

- Meet EHS for a final walk through of both the mitigation and restoration portions of the project.
- Provide an invoice promptly after project is complete to EHS.

Restoration

- Work with FM to develop a scope of the restoration project.
- Provide a detailed quote that includes, at a minimum, the following: quantity, unit price, and total price.
- Restore and repair the affected area according to fire code, WVU, and industry standards.
- Meet FM for a final walk through of both the mitigation and restoration portions of the project.
- Provide an invoice promptly after project is complete to FM.

5. WATER INTRUSION RESPONSE PROCEDURES

Any member of the University who discovers a water intrusion is asked to call UPD Dispatch (304-293-2677). UPD will dispatch the appropriate personnel to the water intrusion. Please stay out of the affected area(s) until the scene has been deemed safe for re-entry. Mitigation within 24-48 hours of the initial event is critical in the prevention of mold growth. Please use the Water Intrusion Response Plan in [Appendix B](#) and the procedures below to determine the proper steps to take during a water intrusion event.

5.1 Initial Response

- Identify the potential source(s) of the water intrusion.
- Identify the category of water source.
 - Category 1
 - Category 2
 - Category 3
- Be aware of the unique hazards (electrical, chemical, mechanical, slips, trips, and falls ect.).
- Determine the proper PPE for the specific water intrusion.
- Take measures to stop active water intrusion.

5.2 Evaluate the Level of Intrusion

- FM will conduct an assessment to determine the route of the water migration along with all damaged content and building materials by using a moisture meter to detect wet building materials.
 - Contact EHS for assistance if needed.
- FM will determine if the water intrusion can be handled in house, or a remediation contractor will need to be called.
 - If a remediation contractor is required, EHS will document the water intrusion for the insurance company and manage the remediation contractor.

5.3 Mitigation (Clean-Up & Drying)

- Extract water until the water is fully extracted or the mitigation contractor has arrived.
- Protect furniture/contents:
 - Move furniture away from affected walls.
 - Elevate furniture from the carpet that cannot be removed from the room.

- Remove electronics from the affected room or cover to protect.
- Remove as many contents out of the room as possible.
- Place industrial dehumidifier and blowers in all affected areas.
- Dry or remove all contents and building materials in accordance with [Appendix A](#) or EHS recommendations if it is Category 2 or 3 water.
 - Building materials (except drywall, cove base and ceiling tiles) shall not be disturbed without prior authorization from EHS to determine if hazardous materials are present.

5.4 Moisture Verification after mitigation and before restoration

- Allow the affected area time to dry after the extraction and building material removal.
 - Continue to use blowers and industrial dehumidifiers in affected areas.
- Assess the remaining building material with a moisture meter to ensure all building materials are dry.
 - If all building materials are dry move onto [Section 5.6](#) of this program.
 - If the building materials are not dry after 48 hours, please see [Section 5.5](#) of this program.

5.5 Guidance on water intrusions after 48 Hours

- If a water intrusion remains uncorrected or building materials are not “dry” after 48 hours, mold has the potential to grow. Please contact EHS for recommendations for cleanup and mitigation if the building materials are not dry after 48 hours or the water intrusion has been occurring 48 hours or longer.

5.6 Restoration (Put-Back)

- After drying is complete, use appropriate detergent or biocide to clean and sanitize the impacted building materials.
- Ensure all affected areas are dry before restoration begins.
- Replace all building material that were removed and mitigated. (e.g. drywall, insulation, ceiling tiles, cove base).
 - If a contractor is required, FM Managers are responsible for acquiring quotes and managing the restoration portion of the insurance claim.
- FM Managers will provide a final evaluation of the affected areas prior to re-occupancy.
- Move furniture back into restored area(s) after all remediation and restoration is complete and areas has been cleared for re-occupancy.

6. PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE will be determined by the hazards that are present during the job tasks. The **Personal Protective Equipment Hazard Assessment Form** found in the WVU PPE Program on the WVU EHS website can be used to determine the proper PPE for the job task.

7. MOLD GROWTH

Mold growth can occur 48-72 hours after a water intrusion occurs if mitigation efforts are not successful. If mold is present, please refer to the **WVU Mold Remediation Program** located on the WVU EHS website for more guidance.

APPENDIX A: Water Damage Clean up Guidelines

Below are the recommended guidelines for response to water intrusion clean-up to prevent microbial growth on building materials and contents.

Guidelines for water damage clean up		
Water Damaged Material	Category 1 Recommendations	Category 2 & 3 (Category 1 after 48 Hrs) Recommendations
Books & Papers	<ul style="list-style-type: none"> • For non-valuable items, discard • Freeze (in frost free freezer or meat locker) or freeze dry 	Contact the Environmental Health & Safety Department
Carpet & Backing (Dry within 24-48 hrs)	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Reduce ambient humidity levels with dehumidifiers. • Accelerate drying process with blowers and fans. • Ensure subfloor is clean and dry. 	
Ceiling Tiles	<ul style="list-style-type: none"> • Discard and replace 	
Cellulose Insulation	<ul style="list-style-type: none"> • Discard and replace 	
Concrete or Cinder Blocks	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans, blowers. 	
Fiberglass insulation	<ul style="list-style-type: none"> • Discard and replace 	
Hard surfaces, porous flooring (Linoleum, Ceramic Tiles, Vinyl)	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow to dry, scrub if necessary. • Ensure sub-floor is dry 	
Non-Porous, Hard surfaces (Plastics, Metals)	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow to dry, scrub if necessary. 	
Plaster or suspect asbestos materials (Insulation, ect.)	<ul style="list-style-type: none"> • Contact EHS 	
Wallboard (Drywall and gypsum board)	<ul style="list-style-type: none"> • Remove cove base and drill weep holes immediately. • Accelerate drying process with dehumidifiers, fans, blowers. • If not dry within 48 hours, flood cut and remove insulation. 	
Window Drapes	<ul style="list-style-type: none"> • Follow laundering or cleaning instructions recommends by the manufacture or discard and replace. 	
Wood Surfaces	<ul style="list-style-type: none"> • Remove moisture immediately and use dehumidifiers, gentle heat, fans and blowers. 	

APPENDIX B: Water Intrusion Response Plan Flow Chart

