

Northwestern

Water Intrusion Guide

Environmental Health and Safety

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I. Purpose

This program is to serve as a guide to identify, respond, and mitigate water intrusion events in an effort to prevent property damage and mold growth.

II. Scope

This program applies to all employees and contractors who respond to, and those affected by, water intrusion events at Northwestern 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 rain water, 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 predominantly 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)

IV. Responsibilities

- A. **Environmental Health and Safety (EHS)**
 - 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. **Facilities Operations**
 - i. Respond to all water intrusion 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 EHS of property damage or indoor air quality concerns.
- C. **Athletics/Residential Services**
 - i. Respond to water intrusion events and identify the source of the water leak.
 - ii. Contact Facilities Operations to repair the source of the leak.
 - iii. Assess water intrusion events in order to determine if it can be handled internally or if a contractor is needed.
 - iv. Schedule and coordinate remediation activities, if necessary.
 - v. Notify EHS of property damage or indoor air quality concerns.
- D. **Custodial Contractor**
 - i. Ensure good housekeeping practices are used in all buildings.
 - ii. Report any unsafe conditions to Northwestern, including potential mold or wet conditions that have the potential to 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 Northwestern, including potential mold or wet conditions that have the potential to 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 Northwestern, including potential mold or wet conditions that have the potential to promote mold growth.

V. Water Intrusion Response Procedures

- A. **Initial Response**
 - i. Identify the potential source(s) of the flood/intruding water.
 - ii. Take measure to stop active flooding.
- B. **Evaluate Level of Intrusion**
 - i. Custodial will handle all Category 1 (clean) water intrusion events.
 - ii. Northwestern 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 Office for Research Safety (ORS).
- 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
 - iii. It is recommended that containment kits, including socks, buckets, and sand bags, are located and readily accessible in buildings.

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, HEPA vacuuming, steam cleaning of 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. Upon completion of remediation, Facilities Operations will ensure remediation is acceptable.

C. Follow-up or Post-Clean-up

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

VII. 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. EHS 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.
 - iv. EHS will offer mold testing at the department's expense.

VIII. Recordkeeping

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

IX. Regulatory Authority and Related Information

Northwestern 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

X. Contact

For questions, contact Environmental Health and Safety at ehs@northwestern.edu.

Appendix 1 – Pre-Qualified Water Remediation Contractors

ACR, Inc.	PRSCONT2 011-021-S	Jim O'Callaghan	jocallaghan@acrrestores.com	708-417-5720	Wheeling
BMS Cat	PRSCONT2 011-021-T	Chris Smith, Regional Director	csmith@bmscat.com	773-569-8613 24-hr Emergency: 877-730-1948	Oswego
Celtic Environmental	PRSCONT2 010-017-U	Joe Smerz	celticenvironmental@yahoo.com	312-404-9403; 708-442-5823	Lyons
Superb Environmental Co.	PRSCONT2 010-017-T	Frank Hampton	superbenvironmental@sbcglobal.net	847-838-4670	Lake Villa