Interior Health
INFECTION PREVENTION & CONTROL

**STANDARD OPERATING PROCEDURE**

# IPAC INITIAL FLOOD RESPONSE

Interior Health would like to recognize and acknowledge the traditional, ancestral, and unceded territories of the Dãkelh Dené, Ktunaxa, Nlaka'pamux, Secwépemc, St'át'imc, syilx, and Tŝilhqot'in Nations where we live, learn, collaborate, and work together.

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A ***PRINTED*** copy of this Standard Operating Procedure may not be the most recent version.

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# Purpose

To provide guidance on the initial response to a flood within a healthcare facility. This procedure is intended to protect the health and safety of healthcare workers and occupants and minimize the current and future impacts to the facility.

To be used by Facilities Maintenance and Operations (FMO) for the initial response to a leak or flood event within an IH facility.

# Procedures

Refer to document: Checklist in Event of Flood or Water Activity Shutdown
If a flood is noted by a non-FMO staff member, contact the local FMO and site manager immediately.

On weekends or after hours:

- Plant services on call (1-855-851-4182)
- For acute care—medical microbiology on call
- For LTC—MHO on call (1-866-457-5648)

## Complete Initial Risk Assessment

- Ensure the flood location and surrounding areas are assessed for potential hazards.
    - Assess for structural, gas and electrical hazards.
    - Determine need and extent of power shut down and lock out.
    - Consider dedicated circuit or alternative power source for air handler or dehumidifiers.
- Isolate/stop the source of water as soon as it is safe to do so.
- Identify the source of the leak and type of water (e.g. clean, grey, or black).

| Category 1<br>Clean Water | Category 2<br>Grey Water | Category 3<br>Black Water |
|---|---|---|
| ✓ Potable tap water from clean water source. | ✓ Water (as from a sink or bath) that does not contain serious contaminants (as from toilets or diapers). | ✓ Waste water containing sewage contaminants. |

- Note confined spaces and the presence of any hazardous materials.

## Infection Control

- Identify any patients, visitors and health care providers that need to be evacuated and assess for worker health and safety hazards.
- If necessary, follow Code Green policies and procedures for evacuation of wards, facilities, or areas.
- If evacuation can be avoided, cordon off potentially affected areas with barrier tape, cones, and signage as needed.
- Consider need to seal off effected areas for any flood which has been wet for >48 hours, or if the flood is grey or black water.
    - Areas wet for >48 hours are at risk for mould growth.

## Mitigate Further Damage

- Contain and extract bulk water to minimize impact to building structure and finishes (use contents of spill kit, if available). Examples:
- Use dykes/sandbags to contain water on floor.
    - Use vacuums or portable extraction equipment to remove bulk water.
    - Towels, mops, rags, etc. to remove excess water.
    - Install ceiling tile leak diverter.
- Remove clinical equipment, furniture, etc.
- If equipment is contaminated, it must be cleaned and disinfected by Environmental Services (EVS) prior to being moved into a clean area.
    - EVS should designate a “cleaning area” just outside the affected leak zone.
    - If equipment is contaminated, it shall be cleaned and disinfected before use. Only non-permeable products can be cleaned and disinfected, the remainder are to be discarded. Consult IPAC.
- Assess for invisible water infiltration.
    - Visual inspection as well as moisture readings.

**Note:** prior to leaving the location of the leak, workers must ensure all PPE is properly removed and any contaminated clothing/equipment/materials are appropriately cleaned. If water is tracked out of the leak area on worker’s shoes, EVS must clean immediately.

## Clean and Dry affected Areas – Building Materials. Systems, Contents

- Coordinate with EVS to complete terminal clean of affected areas.

| Category 1<br>Clean Water | Category 2<br>Grey Water | Category 3<br>Black Water |
|---|---|---|
| ✓ General clean | ✓ Disinfected with hospital-grade disinfectant | ✓ Disinfected with hospital-grade disinfectant |

- Coordinate with department leaders to ensure all equipment/furniture is appropriately dealt with.
- Install hoarding/containment with negative pressure.
    - Depending on the location and extent of the leak. See Infection Control Measures Permit for reference.
    - When hoarding is constructed around the location of the leak, more aggressive drying techniques can be undertaken with minimal risk to patients.
- Dry building materials, systems, and contents using the following methods as applicable:
    - Ensure all standing water is removed. Extraction is the most critical step to achieving dry standard.
    - Remove all wet materials that can be removed.
- If needed, remove baseboards and open wall cavities/openings that can safely be opened.
    - Drilling holes in the bottom of the wall cavity may assist in air movement and drying.
    - Install the following equipment. Monitor humidity and temperature to determine dry goals are being met.
        - Air movers (the more the better)
        - Low-grain refrigerant (LGR) dehumidifiers
        - Space heaters
        - Negative air machines

**Note:** Consult infection control protocols and hazardous materials regulations shall be followed:

⚠ Fans shall not be used to blow potential contaminants (dust/debris) within patient care areas that are not hoarded off.

⚠ **Building materials should not be disturbed until the presence of asbestos, lead, or silica is known (i.e., the asbestos management inventory is reviewed, or a hazardous building materials survey is completed).**

## Evaluate the Effectiveness of the Drying

- In consultation with a qualified abatement contractor or by qualified plant services health care workers, team members will evaluate the effectiveness of the drying and determine the need for further restoration and remediation.
- If after 48 hours, materials are not sufficiently dried, activate abatement process.

## Next steps

- Determine the level of abatement and remediation required.
- Ensure a hazardous materials survey and preventative measures analysis are completed prior to any remediation work is started.

## Responding to Black Water Leaks

Black water leaks contain microbiological organisms such as bacteria, fungi, parasites, and viruses that can cause serious illness or disease. Sewage originating from a healthcare facility is at higher risk of containing highly pathogenic organisms due to the patient population that is served.

⚠ Always assume **all surfaces** touched by sewage are contaminated.

⚠ Always don appropriate PPE before entering an area impacted by a sewage leak.

- Don and doff PPE following guidance from IPAC:
  - Donning PPE
  - Doffing PPE
- Perform hand hygiene practices following the guidance from IPAC:
  - Hand Hygiene Policy
  - Hand Hygiene Guideline
- Vacate all sewage-contaminated areas right away. Unless wearing appropriate PPE, no one should be present near a sewage leak.

⚠ **When sewage is present within a confined or concealed space (such as a crawlspace), DO NOT ENTER until it has been deemed safe to do so.**

- Always consult with Industrial Hygiene & Environment Team prior to any work in a confined or concealed space.

⚠ **Protect the HVAC system.**

- Seal supply and return grilles in the area.

⚠ Assess to ensure HVAC system was not impacted.

⚠ Prioritize construction of containment with negative pressure around areas impacted by a black water leak.

⚠ Any tools and equipment used to respond to a black water leak MUST be cleaned/disinfected after use or discarded.

# Appendix A

## PPE For Flood or Leaks In IH Facilities

- Personal Protective Equipment (PPE)

| Category 1 Clean Water | Category 2 Grey Water | Category 3 Black Water |
|---|---|---|
| PPE for cleanup<br>✓ None required | PPE for cleanup<br>As needed, depending on the source and potential for exposure:<br>✓ Waterproof boots or covers<br>✓ Liquid-repellent coveralls<br>✓ Goggles + protective face mask, or splash-proof face shield<br>✓ Waterproof gloves<br>✓ Respirator may be required | PPE for cleanup<br>*Always:*<br>✓ Waterproof boots or covers<br>✓ Liquid-repellent coveralls<br>✓ Goggles + protective face mask, or splash-proof face shield<br>✓ Waterproof gloves<br>✓ Elastomeric half-face respirator (EHFR) with P100/OV/AG cartridges |
| Additional PPE may be required dependent on hazardous materials impacted by the flood. All workers must be familiar with the hazardous material present in their area and must be able to recognize if a hazardous material has been impacted. | | |
| **Health care workers are required to adhere to the Respiratory Protection Program, including the requirement to have had an N95 fit test within the past year to using a respirator.* | | |

  - Don PPE as required (before any contact with water).
  - It is important to wear waterproof boots and boot covers if the water source is Category 2/3 (grey/black water). This will protect both the workers boots and will prevent tracking of contamination throughout the hospital (as boots/covers can be removed before leaving the work area).

# Appendix B

## Other Flood and Leak Equipment

| | |
|---|---|
| • Spill kit, containing most if not all the equipment listed below<br>• Appropriate HEPA-filter equipped vacuum<br>• Buckets<br>• Covered waste containers<br>• 6-mill ploy sheeting<br>• Emergency plumbing kit (includes assortment of fittings, etc.)<br>• Materials to construct hoarding (coroplast, poly sheeting, tape, etc.)<br>• Construction air handling units (for negative air)<br>• Dehumidifiers<br>• Fans<br>• Thermal imaging infrared camera<br>• Moisture meter | • 6-mil poly waste bags<br>• Barrier tape and warning signs<br>• Extension cords<br>• Wet floor cones<br>• Means to clean hands (bucket with warm soapy water or alcohol-based hand rub (ABHR)<br><br>**Water Extraction Equipment Options:**<br>• Towels/rags<br>• Mops<br>• Water diversion dikes<br>• Absorbent pads<br>• Water extractor wand + portable flood extractors<br>• Vacuums |

- Vacuum Selection Guidance

**Note:** shop-vacuums do not have filtration of exhaust. Any contaminants present will be aerosolized and can pose a risk to any nearby patients or health care workers.

**Only use shop-vacuums if safe to do so.**

Water extractor wand + portable flood extractors


Shop-vacuum (no HEPA filtration)
**Use only when:**
- Category 1 (clean water)
- In a non-patient care area, or
- Within a containment

HEPA-Filter equipped vacuum
**Use when:**
- Category 2 (grey)
- Category 3 (black)
- In a patient care area

# Definitions

**Flood**
An uncontrolled leak from a water distribution system, supply system plumbing, drainage systems, or resulting from a failed moisture barrier, such as exterior siding, or roof systems.

**Clean water**
Potable tap water from a clean water source such as a water supply line.

**Grey water**
Water from a sink or a tub, which does not contain human waste.

**Black water**
Water that contains sewage.

# References

Canadian Standards Association. (2022) Z317.13-22. Infection control during construction, renovation, and maintenance of healthcare facilities.

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|---|---|---|---|
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