

Laboratory Chemical Spill Response Plan

Department of Chemistry & Chemical Biology
Vertex Hall, Meridian Institute of Technology

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Revision: **D**

Review Cycle: **Annual**

Approved By: **Dr. Elena Marsh**

Revision History

Rev.	Date	Summary of Changes	Author
A	Jan. 2023	Initial release for Vertex Hall teaching and research labs.	E. Marsh
B	Aug. 2024	Added cryogenic and mercury spill procedures; new kit locations.	E. Marsh
C	June 2025	Reporting chain revised after fire-alarm integration upgrade.	R. Okafor
D	Mar. 2026	Added Tier classification color-coding, updated PPE table, annual drill requirement.	E. Marsh

Distribution

- All faculty, staff, graduate students, and undergraduate researchers assigned laboratory access in Vertex Hall.
- Posted at every laboratory entrance, spill-kit station, and the Vertex Hall main lobby noticeboard.
- Filed with Meridian Institute of Technology Campus Security and the local Fire Department pre-incident plan binder.

⚠ In a life-threatening emergency, call Campus Emergency Line ext. 5911 (or 911 from any campus phone) immediately. Do not delay evacuation to attempt spill cleanup.

1 Purpose and Scope

This plan establishes the required response actions for chemical spills occurring in any teaching, research, or storage laboratory within Vertex Hall, including satellite laboratories in the Nimbus Annex. It applies to all faculty, staff, postdoctoral researchers, graduate students, undergraduate researchers, and contractors who handle hazardous chemicals under Meridian Institute of Technology's Chemical Hygiene Plan (EHS-CHP-001).

Objectives

- Protect the health and safety of laboratory occupants and emergency responders.
- Limit environmental release and property damage from spilled chemicals.
- Provide a single, unambiguous decision path from spill discovery to closure.
- Ensure every spill, regardless of size, is logged, reviewed, and used to improve practice.

Who Must Know This Plan

- **Every lab occupant** must be able to classify a spill (§2) and know the location of the nearest spill kit and emergency pull station.
- **Principal Investigators (PIs) and Lab Supervisors** are responsible for site-specific training, kit maintenance, and initial incident triage.
- **EHS Office staff** coordinate Tier 2 and Tier 3 response, regulatory reporting, and post-incident review.

i Scope note. This plan governs *chemical* spills only. Biological material releases follow the Biosafety Spill Procedure (EHS-BIO-007); radioactive material releases follow the Radiation Safety Manual, Section 9. If a spill involves more than one hazard class, follow all applicable procedures concurrently and notify EHS immediately.

2 Spill Classification

Every spill is classified into one of three tiers *before* any cleanup begins. Classification determines who responds, what PPE is required, and whether the building must be evacuated. When in doubt, classify upward (treat as the more serious tier) and call the EHS emergency line.

TIER 1 – Minor Spill

Definition: Small quantity (typically under 1 liter or 1 kg), a single known low-hazard chemical, no fire/reactivity/inhalation risk, and within the training and PPE of the person present.

Examples: spilled dilute buffer, small volume of ethanol, a broken vial of table salt solution.

Who responds: The lab occupant who discovered the spill, or any trained lab member present, using the local spill kit.

TIER 2 – Moderate Spill

Definition: Larger quantity (roughly 1–4 liters or 1–4 kg), a flammable or corrosive liquid, a spill that has spread beyond an immediate bench area, or one that exceeds the responder's training or the kit's capacity.

Examples: a fallen bottle of concentrated hydrochloric acid, several liters of a flammable solvent, a mercury thermometer break with visible beading.

Who responds: Lab Supervisor and EHS Office; area is isolated and ventilated while awaiting EHS arrival.

TIER 3 – Major / Emergency Spill

Definition: Any spill involving a highly toxic, highly reactive, or unknown chemical; a spill accompanied by fire, smoke, or a strong/irritating vapor cloud; a spill that has caused injury or exposure; or any quantity that cannot be safely contained by trained lab personnel.

Examples: a broken container of concentrated nitric acid reacting with organic waste, a cryogenic liquid spill causing an oxygen-deficiency alarm, an unlabeled unknown liquid spreading across a hallway.

Who responds: Building evacuation, Campus Emergency Line (ext. 5911), Fire Department Hazmat Team. No lab personnel attempt cleanup.

3 Response Procedure

Immediate Actions – All Spills

1. **Alert** people nearby. Announce “chemical spill” clearly; do not shout in a way that causes panic.
2. **Assess** the spill against the three tiers in Section 2. Identify the chemical from the label or Safety Data Sheet (SDS) if at all possible.
3. **Protect** yourself first – do not walk through vapor, mist, or liquid to reach an exit or an injured colleague; go around.
4. **Act** according to the flowchart below.

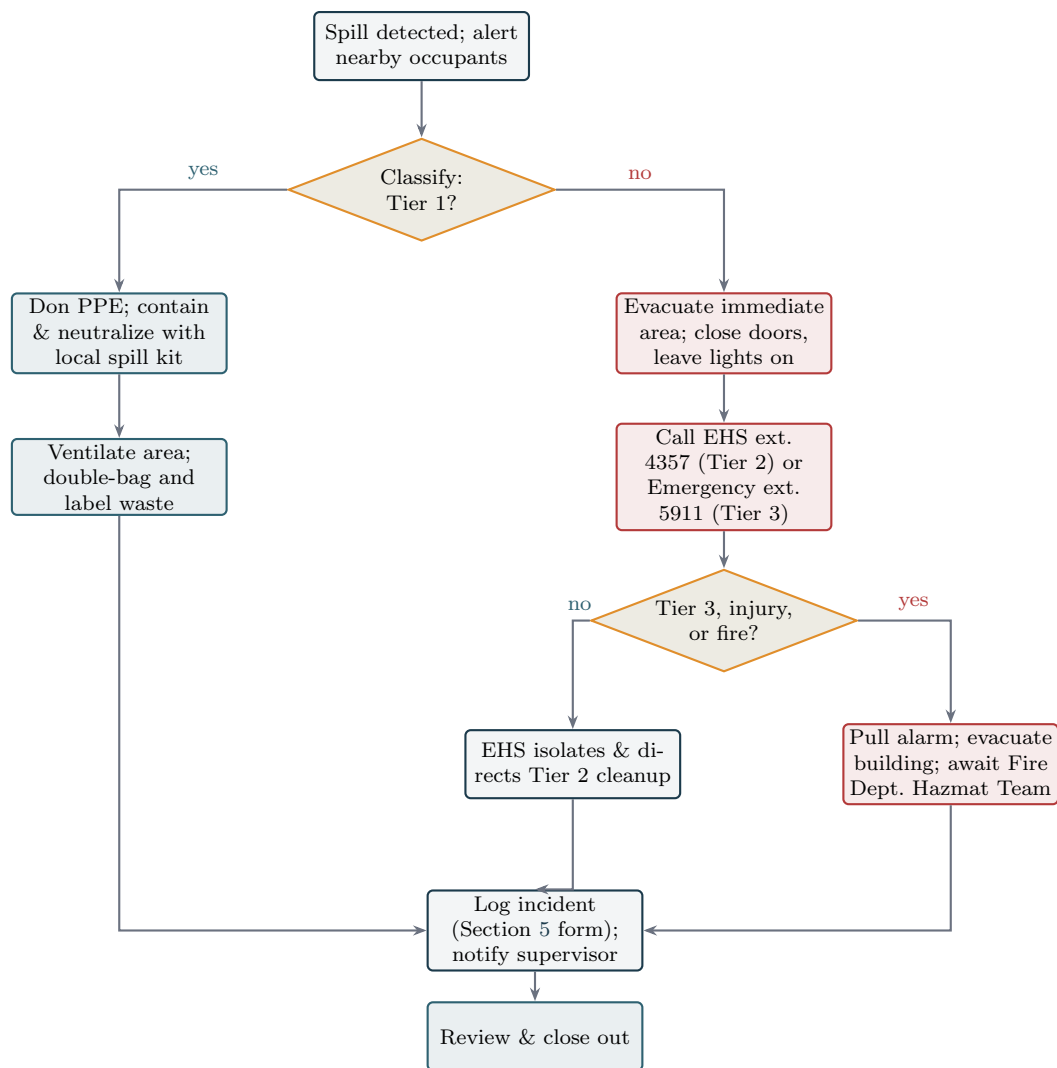


Figure 1: Chemical spill decision flow, from detection to closure.

i **Any** path through the flowchart above ends at the same place: an incident log entry. Even a Tier 1 spill cleaned up in two minutes must be logged – this is how the EHS Office spots recurring hazards before they escalate.

4 Spill Kit Contents and Locations

Every laboratory in Vertex Hall and the Nimbus Annex is provisioned with at least one wall-mounted spill kit. Kits are inspected monthly by the Lab Supervisor and restocked by EHS within two business days of use. Do not use a kit past its inspection tag expiry – report it instead.

Standard Kit Contents

Item	Purpose	Qty
Absorbent pads (universal)	Soak up liquid spills of unknown or mixed chemistry	20
Acid neutralizer (sodium bicarbonate blend)	Neutralizes acidic spills before absorption	1 tub
Base neutralizer (citric acid blend)	Neutralizes caustic/basic spills	1 tub
Solvent-rated absorbent socks	Contains and diverts flammable solvent spills	4
Chemical-resistant gloves (nitrile, extended cuff)	Hand protection during containment	4 pairs
Splash goggles & face shield	Eye and face protection	2 sets
Disposable apron	Body protection from splash	4
Dustpan and scoop (non-sparking)	Collects neutralized solid residue	1
Hazardous waste bags with tie	Double-bagging of contaminated absorbent	10
Waste labels (blank, write-on)	Labeling contaminated waste for pickup	10
Caution tape and cones	Cordons the affected area	1 roll + 2
Mercury spill sponges (select labs only)	Amalgamates and lifts elemental mercury beads	2

Kit Locations

- **Vertex Hall, Floor 1** – outside Room 104 (Teaching Labs) and Room 118 (Instrument Room).
- **Vertex Hall, Floor 2** – outside Room 210 (Organic Synthesis) and Room 227 (Analytical Suite).
- **Vertex Hall, Floor 3** – outside Room 305 (Graduate Research Labs) and the Room 318 mercury-thermometer storage cage.
- **Nimbus Annex** – main corridor, adjacent to the eyewash station.

ⓘ Kit exhausted? A partially or fully used kit is a Tier 2 trigger on its own – notify EHS at ext. 4357 even if the spill itself was minor, so the kit is restocked before the next incident.

5 Evacuation and Reporting Chain

Notification Chain



Figure 2: Escalation path for a spill notification. Any link may call the next one directly in a fast-moving emergency – the chain describes routine order, not a bottleneck.

Evacuation Rules

- **Tier 1:** No evacuation required; keep the immediate bench area clear of non-responders until cleanup is complete.
- **Tier 2:** Evacuate the affected room; close (do not lock) the door; occupants wait in the corridor or adjacent lab until EHS clears the space.
- **Tier 3:** Evacuate the entire floor via the nearest stairwell – **never** the elevator. Proceed to the designated assembly point at the Vertex Hall Quad, north of the fountain. Do not re-enter until Campus Security or the Fire Department gives the all-clear.

Incident Log Requirements

Every spill, regardless of tier, is logged within 24 hours using the EHS Incident Report Form (EHS-CSR-014-F1), available on the EHS intranet portal or as a paper copy inside every spill kit. The form captures: date/time, location, chemical(s) and estimated quantity, tier assigned, responders, PPE used, disposal method, and any injuries or near-misses. Tier 2 and Tier 3 incidents additionally receive a written root-cause review from the EHS Office within five business days, filed alongside this plan.

6 Chemical-Specific Procedures

The table below supplements Section 3 with first-response detail for the chemical classes most common in Vertex Hall laboratories. Always confirm against the chemical's Safety Data Sheet (SDS) when time permits.

Class	Immediate Action	Neutralizer / Absorbent	Special PPE
Mineral acids (HCl, H ₂ SO ₄ , HNO ₃)	Isolate area; apply neutralizer from outer edge inward	Sodium bicarbonate neutralizer, then universal absorbent	Acid-rated gloves, goggles, face shield
Caustic bases (NaOH, KOH)	Same inward technique; caustics feel slippery – flush if contacted	Citric acid neutralizer, then universal absorbent	Nitrile gloves, splash goggles
Flammable solvents (acetone, ethanol, hexane)	Eliminate ignition sources first; ventilate	Solvent-rated absorbent socks and pads	Nitrile gloves, goggles, static-safe shoes
Elemental mercury	No vacuum or broom; beads can aerosolize	Mercury spill sponge / amalgamation powder (Room 318 cage)	Nitrile gloves, N95 if beading extensive
Cryogenic liquids (liquid N ₂ , dry ice)	Evacuate enclosed space – oxygen displacement risk	Allow to sublime/evaporate; do not absorb	Cryo gloves, face shield, O ₂ monitor before re-entry
Unknown / unlabeled liquid	Treat as Tier 3; do not smell, taste, or touch	None until identified by EHS	Full Tier 3 PPE per EHS responder

⚠ Never mix neutralizer directly into a pooled liquid spill in one motion – acid/base neutralization is exothermic and can splash or generate vapor. Apply from the outer perimeter inward, in small increments, and watch for fizzing or heat.

Minimum PPE by Tier

Tier	Minimum PPE for Responder
Tier 1	Standard lab coat, safety glasses (already worn), chemical-resistant gloves from kit
Tier 2	Full lab coat or apron, splash goggles, face shield, extended-cuff gloves, closed shoes
Tier 3	No lab-personnel entry – Fire Department Hazmat Team uses supplied-air respirators and chemical-resistant suits

7 Training, Drills, and Plan Review

Required Training

- **New lab members** complete spill-response training during laboratory onboarding, before receiving unsupervised access, delivered by the Lab Supervisor and verified by EHS.
- **Annual refresher** is mandatory for all active lab personnel, covering classification tiers, kit use, and any procedure changes since the prior year.
- **Kit-specific walkthroughs** are repeated whenever a lab's kit contents change (e.g., a new mercury sponge cage is added, per Section 3).

Drills

Vertex Hall runs one unannounced Tier 2 tabletop drill and one full Tier 3 evacuation drill per academic year, coordinated with Campus Security and, for the evacuation drill, the Meridian Fire Department. Drill performance (response time, correct tier assignment, evacuation compliance) is recorded and feeds directly into the next plan revision.

Plan Review

This document is reviewed annually by the EHS Office and after any Tier 2 or Tier 3 incident, whichever comes first. Revisions follow the applicable guidance in [1], [2], and [3] for laboratory chemical hygiene, fire protection in laboratory units, and emergency eyewash/shower provision, respectively. Suggested changes may be submitted to the EHS Office at any time via the intranet feedback form.

i Questions about this plan? Contact the EHS Office at ext. 4357 or ehs@meridian.edu, or Dr. Elena Marsh directly at e.marsh@meridian.edu.

References

- [1] Occupational Safety and Health Administration. Occupational exposure to hazardous chemicals in laboratories. 29 CFR 1910.1450, 2023. U.S. Department of Labor.
- [2] National Fire Protection Association. Nfpa 45: Standard on fire protection for laboratories using chemicals, 2024.
- [3] American National Standards Institute and International Safety Equipment Association. Ansi/isea z358.1: Emergency eyewash and shower equipment, 2020.