

Standard Operating Procedure for Chemical Spill

1. Purpose

This SOP outlines the emergency response procedures in case of a chemical spill.

2. Scope

It applies to all lab users.

3. Responsibility

3.1. It is the responsibility of the PI together with the laboratory staff to ensure the following:

3.1.1. Review of SDS for all chemicals used in the lab.

3.1.2. Acquire sufficient quantities and types of appropriate spill control materials.

3.1.3. Acquire recommended personal protective equipment.

3.1.4. Ensure all lab users receive appropriate chemical safety training.

3.2. It is the responsibility of all lab users to acquire sufficient knowledge in chemical safety and to follow this SOP in case of emergency.

3.3. Prior to responding to any chemical spills, lab users should be familiar with the hazards involved. Do not attempt to handle a spill without understanding of the risks involved.

4. Procedure

4.1. In the event of a chemical spill, the laboratory staff must be notified on the location and the type of chemical spilled.

4.2. If lab users are unfamiliar with handling chemical spill, do not attempt to clean up the spill. Alert others of the spill and leave the area.

4.3. Review the SDS of the chemical being spilled. Identify the hazards and emergency procedures recommended.

4.4. In any chemical spill, NERI Director and OSHE safety officer must be informed.

4.5. Online report must be submitted to OSHE through AIMS system.

4.6. If it is a small spill (≤ 2.5 L),

4.6.1 Put on personal protective equipment

4.6.2 Remove the spill with wipes or absorbents and clean up area with detergent and water.

4.6.3 The waste should be bagged, sealed and disposed as chemical waste.

4.7. If it is a medium spill (2.5 L < spill < 5 L),

4.7.1. Alert occupants in the area and ask them to evacuate if necessary.

4.7.2. Set up barricades to cordon off the chemical spill site.

4.7.3. If flammable materials have been spilled, remove all sources of ignition and hot objects in the area. Avoid plugging in equipment or turning off switches to avoid sparking.

4.7.4. Use emergency **red** purge button to remove toxic or volatile vapors from the area.

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- 4.7.5. Reach for the yellow spill response bag in Appendix 1.
- 4.7.6. Put on personal protective equipment appropriate to the hazard of the spilled chemical before proceeding with any containment or clean-up procedures.
- 4.7.7. Contain and soak up the spill using respectively; socks and absorbent pads provided in the chemical spill response bag.
- 4.7.8. When spilled materials have been soaked up, use tongs to pick up and bagged the contaminated waste before placing them into the drum.
- 4.7.9. Decontaminate the surface where the spill has occurred using a mild detergent and water, when appropriate.
- 4.7.10. Dispose the spill control materials as chemical waste accordingly.
- 4.7.11. Confirm lab is ventilated with the Portable Multi-Gas Detector (Refer to NERI/LAB/SOP-EQU-016) and all risks are cleared before returning to lab.
- 4.8. **If it is a major spill ($\geq 5L$),**
 - 4.8.1 Call Campus Security at **6874-1616** and SCDF Control Room at **995** immediately and state the following clearly:
 - i. Location of incident
 - ii. Nature of material spilled
 - iii. Injury to personnel (if any)
 - iv. Informant's particulars and contact number.
 - 4.8.2 Inform NERI's Lab Manager.
 - 4.8.3 Lab Manager will alert NERI's Director, OSHE safety officer and building management staff.
 - 4.8.4 Alert occupants in the area and ask them to evacuate.
 - 4.8.5 Assist the injured person and evacuate from spill site if possible.
 - 4.8.6 Close doors or set up barricade to cordon off the spill site.
 - 4.8.7 Communicate critical spill information to first responder.
- 4.9. **First Aid Procedure**
 - 4.9.1 **Chemical splash on the skin.**
 - i. Remove contaminated clothing.
 - ii. Flush contaminated area with running water for at least 10 minutes.
Use the emergency shower if necessary. Get medical help.
 - 4.9.2 **Chemical splash in the eyes.**
 - i. Flush the eyes with eye wash for at least 15 minutes.
 - ii. Seek medical treatment.
 - 4.9.3 **Inhalation of gases or vapours.**

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- i. Remove casualty to a safe area.
- ii. Apply cardiac pulmonary resuscitation (CPR) if breathing has stopped.
- iii. Send for medical aid immediately.

4.9.4 Ingestion of poisonous chemicals.

- i. Wash mouth with water.
- ii. Do not induce vomiting.
- iii. Seek medical treatment immediately.

4.9.5 Contact with cryogenic liquid

- i. Warm the affected area of the body rapidly by immersion in water not to exceed 40 °C, with body heat, or by exposure to warm air.
- ii. In the event of massive exposure, the emergency shower should be used to warm the body. All clothing must be removed prior to showering.
- iii. Maintain the affected area of the victim at normal body temperature until medical help arrived.
- iv. Flush eyes, if affected, with warm water for 15 mins.

5. Chemical Spill Response Bag and Personal Protective Equipment

Lab user must undergo fit test and medical examination before the use of a respirator.

- Location:**
- 1) Beside NERI Safety Board and Outside Metabolomics Lab - #02-03
(Refer to Appendix 1)
 - 2) Outside Chemical Store - #08-03
(Refer to Appendix 2)

5.1. Chemical Spill Response Bags

- 5.1.1. Absorbent Mats
- 5.1.2. Absorbent Socks
- 5.1.3. Disposal bags for used absorbents
- 5.1.4. Tongs

5.2. Chemical Spill Response Personal Protective Equipment

- 5.2.1. Two Full Face Chemical Respirator Masks (Size M)
- 5.2.2. Two Half Face Chemical Respirator Masks (Size S)
- 5.2.3. Two pairs of Respirator Cartridges
- 5.2.4. Two Face Shields
- 5.2.5. Two pairs of Natural Rubber Gloves
- 5.2.6. Two pairs of Neoprene Gloves
- 5.2.7. Two pairs of rubber safety boots

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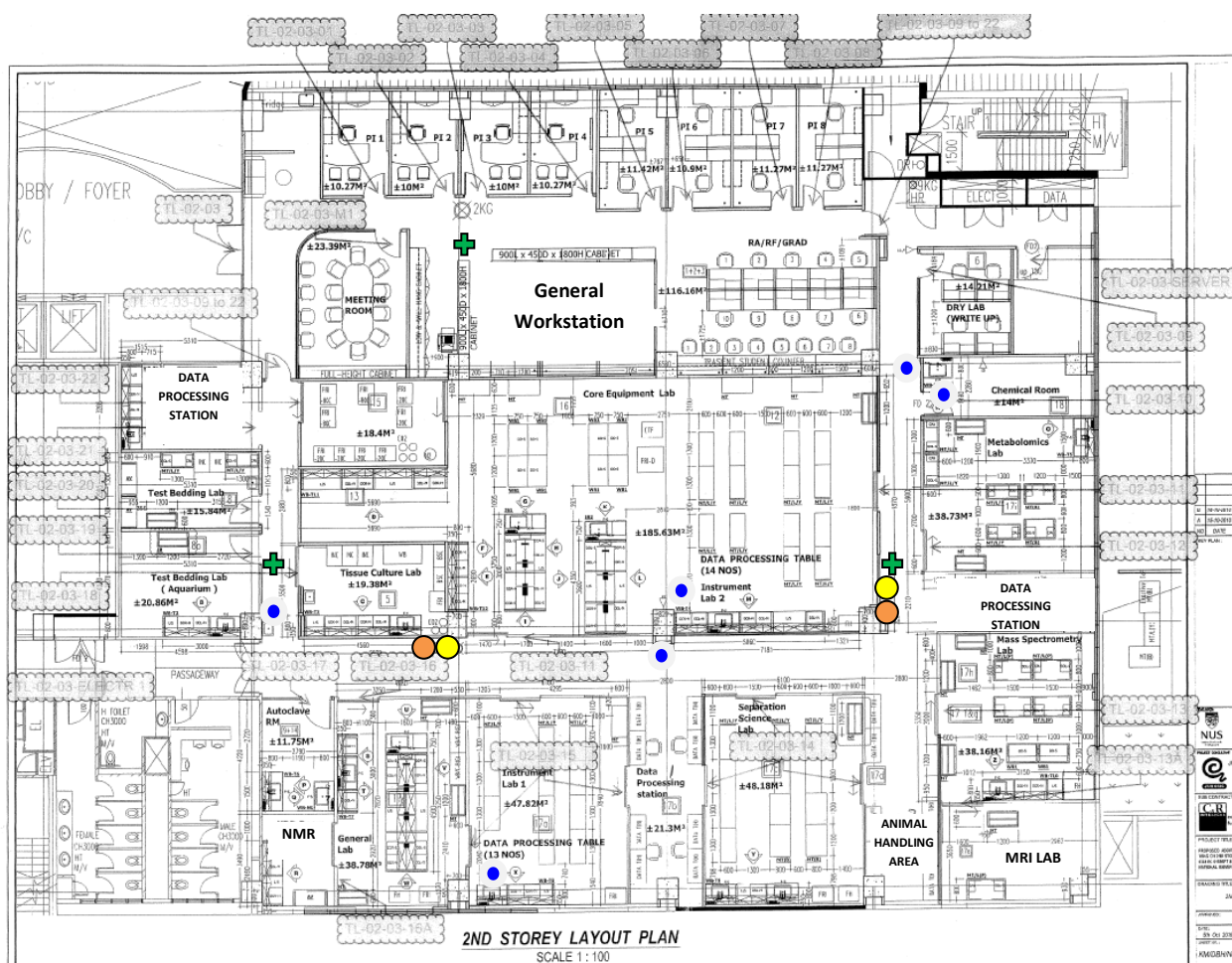
5.2.8. Two Chemical Resistant Apron

6. References





NUS Laboratory Chemical Safety Manual

7. Appendix

Appendix 1: Location of Chemical Spill Emergency Equipment (T-Lab #02-03)



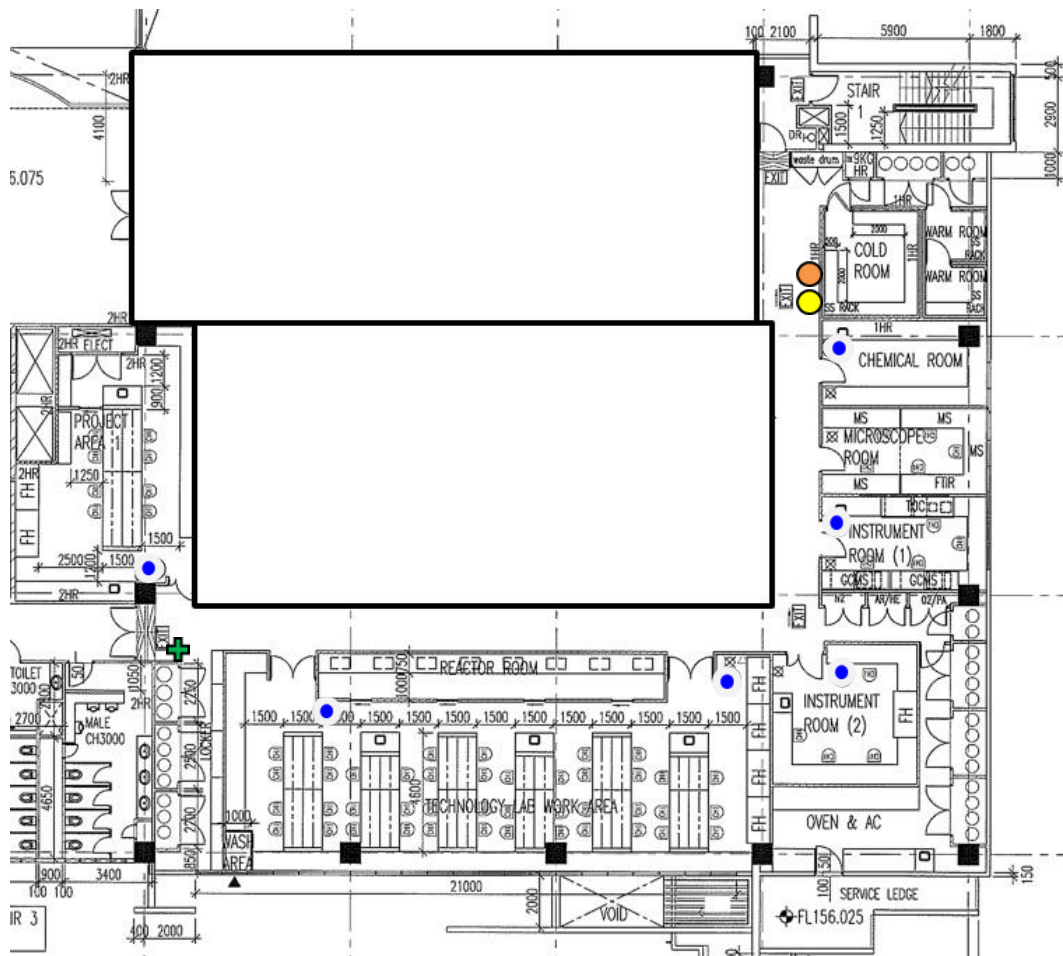
LEGEND

	Emergency Shower	6
	Chemical Spill Response Bags	2
	Chemical Spill Response PPE	2
	First Aid Kits	3



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Appendix 2: Location of Chemical Spill Emergency Equipment (T-Lab #08-03)



LEGEND

	Emergency Shower	6
	Chemical Spill Response Bags	2
	Chemical Spill Response PPE	2
	First Aid Kit	1