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1. Purpose This document serves to provides guidelines on how to manage the various types of emergencies viz. Fire, Chemical Spill and Biological Spill in the Department of Biological Sciences.

2. Scope: Occupants of buildings in DBS (Principal Investigator, Research staff, Teaching staff, support staff and students)

3. Responsibility: All members of DBS

4. Procedures:


4.1 In the event of a fire

a. The person who discovers the fire shall immediately:

- (1) Raise the alarm by activating the nearest fire alarm “break glass” call point.
- (2) Notify Campus Security (**Tel No: 6874 1616**) and Singapore Civil Defence Force (**Tel No: 995**) of the activation of fire alarm and state the following:
 - i. Location of the fire
 - ii. Nature of fire, if known
 - iii. Injury to personnel, if known
 - iv. Informant’s particulars and contact number

The caller shall not replace the telephone set until the address has been repeated by the operator at the SCDF Control Room.

- (3) Attempt to extinguish any incipient fire without taking personal risk provided he/she has been trained in the proper use of a fire extinguisher and is confident in his/her ability to cope with the hazards of a fire.

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b. All Staff


- (1) Upon hearing the fire alarm, all staff shall stop their work, lock important documents, close doors, shut down electrical equipment etc and evacuate immediately guided by their respective Fire Wardens.(See Appendix A for escape routes)
- (2) When evacuating, do not panic but quickly walk down the staircase by the nearest exit and proceed to the assembly area. Do not use lifts.
- (3) **The assembly point for occupants of Blk S1A, Blk S1 and Blk S2 is behind University Hall. The assembly point for occupants of Blk S3 is the carpark next to LT 23.**

Building	Assembly area
S1, S1A and S2	Behind University Hall
S3	Carpark next to LT 22
S14	Multi-purpose Field

- (4) All staff/students/guests/visitors shall not re-enter the building unless instructed otherwise by the Civil Defence Officer in attendance.


Note: PI and designated member(s) of the laboratory must help to ensure the complete evacuation of lab members and bring along the laboratory's name list to the assembly area.

Please refer to OSHE's **NUS FIRE SAFETY MANUAL** (https://share.nus.edu.sg/corporate/procedures/emergency_mgt/Fire-Safety/fire-safety-manual.pdf) for more details.

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4.2 In the event of a Chemical Spill

- (1) Immediately alert others in the area and the supervisor, and evacuate the area, **if necessary**.
- (2) Attend to any persons who may be contaminated. Contaminated clothing must be removed immediately and the skin flushed with water (safety shower or eye wash) for no less than fifteen minutes. Clothing must be laundered before reuse.
- (3) If a volatile, flammable material is spilled, immediately warn others in the area, control sources of ignition, and ventilate the area.
- (4) Wear personal protective equipment, as appropriate to the hazards. Refer to your MSDS or other references available for information.
- (5) If the spill is a large one, and if there has been a release to the environment, or if assistance is needed, contact FoS safety officer or OSHE.
- (6) Consider the need for respiratory protection. The use of a respirator or self-contained breathing apparatus requires specialized training and medical surveillance. Never enter a contaminated atmosphere without protection or use a respirator without training. If respiratory protection is needed and no trained personnel are available, contact FoS or OSHE safety officer. If respiratory protection is available, be sure there is another person outside the spill area in communication or in sight, in case of emergency.
- (7) Protect floor drains or other means for environmental release. Spill socks and absorbents may be placed around drains, as needed.
- (8) Loose spill absorbents should be distributed over the entire spill area, working from the outside, circling to the centre. This reduces the chance of splash or spreading of the spilled chemical.
- (9) When the spilled materials have been absorbed, use a brush and scoop (spark-resistant if flammable materials are involved) to place materials in an appropriate container or bag (Polyethylene bags may be used for small spills. Five gallon pails or 20 gallon drums with polyethylene liners may be appropriate for larger spills).

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- (10) Complete a hazardous waste tag, identifying the spilled chemicals, and affix the sticker to the container or bag. Remember the use of an absorbent does not alter the chemical properties of the chemical.
- (11) Place the container or bag in a hood or other properly ventilated area until the next chemical waste pick-up.
- (12) Decontaminate surfaces involved in the spill using a mild detergent and water, as appropriate.
- (13) Report all spills to your supervisor or the principal investigator.
- (14) Replenish spill control materials.


Please refer to OSHE's NUS LABORATORY CHEMICAL SAFETY MANUAL (NUS/OSHE/M/02) or DBS **SOP for chemical spill drill** document for more details.

4.3 In the event of a Biological Spill

4.3.1 Spills inside a Biological Safety Cabinet

- (1) Leave the cabinet turned on.
- (2) Put on gloves and a lab coat.
- (3) Spray or wipe cabinet walls, work surfaces, and equipment with disinfectant equivalent to a 1:10 bleach solution. If necessary, flood the work surface including drain pans and catch basins below the work surface with disinfectant.
- (4) Wait at least 20 minutes.
- (5) Soak up disinfectant and spill with paper towels. Drain catch basin into a container. Lift front exhaust grill and tray and wipe all surfaces. Ensure that no paper towels or solid debris are blown into the area beneath the grill.
- (6) Autoclave all clean-up materials before disposal in the biohazardous waste container according to the procedure for biohazardous waste disposal.
- (7) Wash hands with appropriate soap/disinfectant and any exposed surfaces thoroughly after the clean-up procedure.

4.3.2 Spill outside a Biological Safety Cabinet in a BSL 1 Lab


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This is for spills that can be covered by a few paper towels.

- (1) Notify others in the area, to prevent contamination of additional personnel and environment
- (2) Put on gloves and a lab coat.
- (3) Cover spill with paper towels and gently apply disinfectant, proceeding from the outer edge of the spill to its centre.
- (4) Leave in place for at least 30 minutes
- (5) Pick up the towels and discard into a biohazard container. Use forceps to pick up any broken glass and place them into a sharps container.
- (6) Re-wipe the spill area with disinfectant.
- (7) Remove gloves and thoroughly wash hands.

4.3.3 Biological spill outside a Biological Safety Cabinet in BSL 2 Lab

- (1) Hold your breath and leave the room immediately.
- (2) Warn others to stay out of the spill area to prevent spread of contamination.
- (3) Post a sign on the door warning others of the spill.
- (4) Remove any contaminated clothing and put it into a biohazard bag for autoclaving.
- (5) Wash hands and exposed skin and inform your PI or supervisor about the spill.
- (6) Put on protective clothing (lab coat, gloves, mask, eye protection, shoe covers) and assemble clean-up materials.
- (7) Wait 30 minutes before re-entering the contaminated area to allow dissipation/settling of aerosols.
- (8) Cover the spill with paper towels and gently apply disinfectant, proceeding from the outer edge of the spill to its centre. Refer to MSDS for appropriate type of disinfectant.
- (9) Leave in place for at least 30 minutes. (Refer to MSDS for contact time).
- (10) Collect all treated materials and discard in a biohazard container. Use forceps to pick up any broken glass and place in a sharps container.
- (11) Re-wipe the spill area with disinfectant. Remove gloves and wash hands thoroughly.
- (12) Dispose biohazardous wastes according to procedures.

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Please refer to OSHE's **NUS Laboratory Biorisk Management Manual** (NUS/OSHE/M/01) for more details.

4.4 In the event of a Gas leak

4.4.1 Inert or Non-Hazardous Gas


- (1) When the alarm for "Low Oxygen" is triggered, immediately stop work and check the alarm panel to determine location of leak.
- (2) Where possible, open all windows and doors to ventilate the room/lab. Push the "Room Air Purge Button" (Red Button) to ventilate the area.
- (3) Identify the source of leakage and shut down/remove the source immediately if it can be done safely
- (4) Report to supervisor or Safety lead immediately. Consult supplier if necessary.

4.4.2 Cryogenic Gases

- (1) When the alarm for "Low Oxygen" is triggered, immediately stop work and check the alarm panel to determine location of leak.
- (2) Where possible, open all windows and doors to ventilate the room/lab. Push the "Room Air Purge Button" (Red Button) to ventilate the area.
- (3) Identify the source of leakage and shut down/remove the source immediately if it can be done safely.
- (4) Report to supervisor or Safety lead immediately the location and type of gas. Consult supplier if necessary.

4.4.3 Toxic / Flammable gas

- (1) Identify the source of leakage and shut down/remove the source immediately if it can be done safely.
- (2) Where possible, open all windows and doors to ventilate the room/lab. Push the red emergency button to ventilate the area.
- (3) If leak persist, alert the people at nearby areas and raise the building alarm by breaking the call point to start evacuation process.

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- (4) Inform Campus Security (Tel: 68741616), Singapore Civil Defence Force (Tel:995) and lab supervisor and report the location and type of gas leaked.
- (5) In the event of a fire, please follow the Fire Emergency Evacuation Response in Section 4.1. DO NOT use the “Room Air Purge Button” (Red Button)!

Please refer to DBS **SOP for Response to oxygen deficiency equipment in a lab** (DBS/SOP/024) document for more details.

4.5 In the event of other emergencies


4.5.1 Medical Emergencies

- (1) For medical emergencies (i.e cuts, abrasion, etc..), please inform the Lab Supervisor or Safety Lead immediately.
- (2) For minor injuries requiring First aid, please notify the First Aider of the respective Building (information on First Aid box).
- (3) For major/severe injuries, the victim must seek medical attention at either Wellness Centre, NUH A&E or nearby medical clinics during office hours and to NUH A&E or nearby medical clinics after office hours. If the victim has mobility issues, please call for an ambulance (Tel:995)
- (4) Please file the reports at OSHE’s AIRS webpage within 24 hours.

4.5.2 Non-Medical Emergencies

- (1) For non-medical emergencies (excluding Fire, Chemical and Biohazard Spills), please inform the Lab Supervisor or Safety Lead immediately.
- (2) For after office hours incidents, please inform Campus security (Tel: 68741616) immediately. Inform the Supervisor or Safety Lead.
- (3) Please file the reports at OSHE’s AIRS webpage within 24 hours.

Note: Please refer to OSHE’s weblink for details on management of other emergencies like (Threats, Violence and Suicide-Related Acts, Bomb Threats, etc....) <https://staffportal.nus.edu.sg/staffportal/emergency-mgt/guidelines.html>

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5.0 RECORDS


The incident report must be completed and submitted OSHE's **Accident / Incident Reporting System** (<https://wvs.nus.edu.sg/airs/report.aspx>)

6.0 REFERENCES

- (1) NUS FIRE SAFETY MANUAL
https://share.nus.edu.sg/corporate/procedures/emergency_mgt/Fire-Safety/fire-safety-manual.pdf
- (2) NUS LABORATORY CHEMICAL SAFETY MANUAL (NUS/OSHE/M/02)
- (3) DBS SOP for chemical spill drill
- (4) NUS Laboratory Biorisk Management Manual (NUS/OSHE/M/01)
- (5) DBS SOP for Response to oxygen deficiency equipment in a lab (DBS/SOP/024)
- (6) Crisis Management -Response plans and Guidelines
<https://staffportal.nus.edu.sg/staffportal/emergency-mgt/guidelines.html>

7.0 APPENDICES

Appendix A: Emergency Evacuation Routes of Blk S1A, Blk S1, Blk S2 and Blk S3.

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★ Assembly Area

Assembly Area for Occupants of Blk S14 – Multi-purpose field



