ROYAL CENTRE FOR DISEASE CONTROL

SOP No. : RCDC/QMS/QSE/SOP/2.7

STANDARD OPERATING PROCEDURE FOR SPILL MANAGEMENT

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1. ACRONYMS AND DEFINITION

PPE	Personal Protective Equipment
RCDC	Royal Centre for Disease Control
QMS	Quality Management System
AFB	Acid Fast Bacilli
NA	Not Applicable

2. PURPOSE

This SOP describes management of spills in RCDC.

3. APPLICATION

This SOPapplies to all staff working at RCDC.

4. RESPONSIBILITIES

It is the responsibility of each laboratory personnel at RCDC to manage spill in their respective laboratories.

5. PRINCIPLE

All spills should be managed appropriately to avoid any hazardous effects to the personnel working at RCDC.

6. ASSOCIATED DOCUMENTS

- Incident reporting form

7. PRECAUTIONS

Follow Good Laboratory Practices.

8. MATERIALS AND REAGENTS

- Absorbent tissue
- Thick rubber gloves
- Forceps
- Waste containers (bucket, plastic bags)
- 70% alcohol or 5% phenol

9. PROCEDURE

9.1. For Chemical Spillage

- Assess the spill, its hazards, and the danger to people in the vicinity quickly before taking action.
- In the event the spilled chemical is unknown, assume the worst and evacuate.
- Immediately alert area occupants. Evacuate the area if spill control resources are insufficient to effectively contain the spill. Inform Bio-security officer and Section Head for necessary action.
- Spill Kit should effectively clean up any chemical/infectious spills. The contents of the spill kit should contain, at minimal, the following:
  - Personal Protective Equipment
  - Absorption Materials
  - Neutralizing Materials
  - Clean-up Tools
  - Response for Minor Chemical Spill
- Identify and assess the spilled chemical. *Refer to the safety data sheet.*
- If hazardous, immediately inform Section Head and all thepersonnel in the same working area and evacuate if necessary.
- Turn off open flames and heat sources if the spilled chemical is flammable.
- Attend to personnel who may have been exposed.
- Follow the procedure given in the Spill Kit Treatment Guide.

- Avoid inhaling of any vapors emitted from the spill.
- Confine and contain spill with appropriate absorbent material.
- In case of acid or base spillages, neutralize by pouring appropriate reagent around spill to encircle and avoid over splashing and continue to apply agent evenly onto the spill.
- Carefully mix the reagent into spill for complete reaction.
- After treatment, use scraper and pan to pick up residue and place into labelled bag. Seal and label. Dispose plastic bag as chemical waste.
- Use the scoop tocollect the broken glasses and place it in a leak-proof container and label.
- Clean and mop spill area with soap and water.
- Label and seal the hazardous waste bag. Hold bag in secondary containment until date of disposal through licensed waste collector.
- Replace the new chemical spill kit contents.
- Response to Major Chemical Spill
- Immediately informBio-safety Officer and Section Head.
- Turn off open flames and heat sources if the spilled chemical is flammable.
- Cordon off affected area and post a warning sign at the entrance of the site to warn others while trained personnel arrive to clean up the spill.

Note: Neutralizing and Treatment Materials

- Acids Spills: Sodium bicarbonate, sodium carbonate, and commercial kits designed for acid spills are sufficient for neutralizing many acids.
- Alkali Spills: Citric acid, sodium bisulfate, and commercial kits designed for alkali or caustic spills are sufficient for neutralizing many bases.
- Solvent Spills: Commercial solvent treatment materials may be used to reduce vaporization and raise the flash points of some solvents.
- Other considerations: There are other chemical specific materials that may be necessary to safely and effectively neutralize or treat some chemical spills.

- Chemical resistant bags: All spill residue and spill clean-up material needs to be placed in a high density polyethylene or polypropylene bag with attached hazardous waste tag.

9.2. For Biological Spillage

A spill kit should be kept in each laboratory where work with microorganisms is conducted. As a minimum, the spill kit should contain:

- Diluted disinfectant (such as 10% chlorine bleach or 1% SDS solution)
- Paper towels or other sorbent material to cover and absorb spilled material
- Disposable gloves
- Autoclave bags
- Biohazard bags
- SHARPS container
- Tongs/forceps to pick up broken glass

9.2.1. General Spill Cleanup Procedure

- Wear disposable gloves and lab coat.
- Use tongs/forceps to pick up broken glass and discard into SHARPS container.
- Cover spilled material with paper towels or other sorbent material.
- Add diluted disinfectant in sufficient quantity to ensure effective microbial inactivation.
- Dispose of spill cleanup and sorbent materials in autoclave bag.
- Wipe spill area with diluted disinfectant.
- Autoclave contaminated spill cleanup materials and place autoclaved bag into opaque trash bag, tape closed and dispose of as non-hazardous domestic waste.
- Wash hands with soap and water when finished.

9.2.2. Spill of Bio-Safety Level 1

- Wearing disposable gloves and a lab coat, pick up broken glass with forceps/tongs and place in SHARPS container.
- Absorb the spill with paper towels or other absorbent material.
- Discard these contaminated materials into autoclave bag.
- Wipe the spill area with the appropriate dilution of a disinfectant effective against the organism.
- Collect all contaminated spill cleanup materials such as towels, gloves, etc., place into autoclave bag and autoclave.
- Wash hands with soap and water. Place autoclaved spill cleanup materials into an opaque trash bag, tape closed and dispose of as non-hazardous domestic waste

9.2.3. Spill of Bio-Safety Level 2

- Keep other workers out of the area to prevent spreading spilled material. Post warning sign, if needed.
- Remove contaminated clothing and put into a biohazard bag for decontamination later. c. Wash hands and exposed skin and inform the Principle Investigator (PI) of the spill. Contact EHS at (410) 704-2949 for assistance, if necessary.
- Put on protective clothing (lab coat, disposable gloves and if needed, eye/face protection and shoe covers) and assemble clean-up materials (disinfectant, autoclave bags, tongs/forceps, SHARPS container, and paper towel/sorbent materials).
- Pick up any broken glass with tongs/forceps and dispose into SHARPS container.
- Cover the spill with paper towels/sorbent materials and add appropriately diluted disinfectant working from the outside of the spill inward towards the center. Avoid splashing.
- After at least 20 minutes contact time, pick up the paper towels and re-wipe the spill area with diluted disinfectant.

- Collect all contaminated materials into autoclave bag and autoclave.
- Wash hands with soap and water.
- Place autoclaved spill cleanup materials into a red biohazard bag and tape closed.
- If necessary, decontaminate tongs/forceps with disinfectant.

9.2.4. Spill ofBio-Safety Level 3

- Stop work immediately.
- Avoid inhaling airborne material while quickly leaving the room. Notify others to leave. Close door, and post with warning sign.
- Remove contaminated clothing, turn exposed area inward, and place in an autoclave bag. Wash hands with soap and water.
- Notify the Principal Investigator. Contact EHS at (410) 704-2949 during normal hours and through the TUPD (after hours and weekends) for assistance if necessary.
- Allow 30 minutes for aerosols to disperse before re-entering the laboratory to begin clean up.
- Put on personal protective equipment (HEPA filtered respirator, gown, gloves, and shoe covers) and assemble clean-up materials (disinfectant, autoclave bags, tongs/forceps, SHARPS container, and paper towels).
- Contain the spill with absorbent paper towels or disposable pads. Carefully add 10% chlorine bleach to the spill; avoid creating aerosols when pouring the disinfectant. Leave the room and allow 30 minutes for the bleach to inactivate the material.
- Pick up broken glass with tongs/forceps and discard in SHARPS container.
- Clean up liquid with paper towels and collect all contaminated materials into autoclave bag. Remove all spilled materials and decontaminate the area again with an appropriate disinfectant. Autoclave all contaminated spill cleanup materials.

- Autoclave (or soak in 10% bleach solution) lab coat, gloves, and other protective equipment that was worn for clean-up.
- Place autoclaved spill cleanup materials into a red biohazard bag and tape closed.
- Wash hands thoroughly with soap and water.
- If necessary, decontaminate tongs/forceps with disinfectant

9.2.5. Spill in a Biological Safety Cabinet

- Leave the cabinet turned on.
- Wearing gloves and lab coat spray or wipe cabinet walls, work surfaces, and equipment with disinfectant such as 70% ethanol. If necessary, flood work surface, as well as drain pans and catch basins below the work surface, with disinfectant. Allow at least 20 minutes contact time.
- Soak up the disinfectant and spill with paper towels, and drain catch basin into a container. Lift front exhaust grille and tray, and wipe all surfaces. Ensure that no paper towels or solid debris are blown into area below the grille.
- Surface disinfect all items that may have been spattered before removing them from the cabinet.
- Discard all clean-up materials into autoclave bag and autoclave.
- Place autoclaved spill cleanup materials into a red biohazard bag and tape shut.
- Wash hands and exposed skin areas with soap and water.
- EHS should be notified if the spill overflows into the interior of the cabinet. It may be necessary to do a more extensive decontamination of the cabinet.

10. ANNEXURE

- Annexure 1: Incident Report Form**QSE/Form-2.1**

Incident Report Form		
Particulars of Incident:		
Date:	**Time:**	**Location:**
Type of Incident (Please tick below)		
[ ] Biological [ ] Chemical [ ] Physical/Injury [ ]Radiation **[ ] Others (Specify):…….**		
Reported by:	**Phone:**	
Role in the event:	**Email:**	
The Injured Person		
Name:	**Address:**	
Age:	**Phone**	
Witness(s):		
Name	**Phone**	
Name	**Phone**	
Name	**Phone**	
Describe the incident: (Space overleaf for diagram if needed**)**		
Describe any illness or injury: What part of the body is affected and how?		
Describe any property damaged: What damage was caused and how?		
Analysis: What do you think caused or contributed to the incident?		
Prevention: what action has been taken to prevent reoccurrence?		
Have all preventative actions been reviewed and implemented? YES NO		
Comment by immediate supervisor:		

11.REFERENCE

- WHO. Laboratory Biosafety Manual. Third edition. Geneva, World Health Organization, 2004(http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/, accessed 28 August 2013).
- OSHA. Occupational Safety and Health Administration (OSHA) standards for bloodborne pathogens. Washington, Occupational Safety and Health Administration, 2001 (https://www.osha.gov/SLTC/bloodbornepathogens/standards.html, accessed 28 August 2013).
- Quality manual template
  WHO: https://www.who.int/ihr/training/laboratory_quality/quality_manual/en/