ROYAL CENTRE FOR DISEASE CONTROL

SOP No. RCDC/QMS/QSE/SOP/2.12

STANDARD OPERATING PROCEDURE FOR BIO-SAFETY AND CHEMICAL MANAGEMENT

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1. ACRONYMS AND DEFINITION

RCDC – Royal Center for Disease control
SOP – Standard Operating Procedure
PPE-Personal Protective Equipment

2. PURPOSE

The purpose of thisSOP is to ensure laboratory personnel are informed of biological and chemical hazards in their workplace and are protected from the hazards.This describes the procedure to provide minimum requirements for safe handling and storage of biological and chemical hazards at RCDC.

3. APPLICATION

This procedure is applicable to all the staff working in RCDC.

4. RESPONSIBILITIES

It is the responsibility of the personnel handling biological and chemical hazards to ensure that the procedure is carried out according to this SOP.

5. PRINCIPLE

It is mandatory tounderstandthe nature of chemicals, biological hazard and toxicity of the chemicals. Users must be familiar with the chemicals and their associatedhazards, the various risks they pose and to respond to chemical/biologicalhazards.

6. PRECAUTIONS

6.1 Always use PPE while handling chemicals/biologicals.

6.2 Do not store chemicals in fume hood.

6.3 Always keep the chemicals away from sun and heat.

6.4 Do not store any chemicals except compatible general cleaning agents under the sink

6.5 Label Chemicals and biological Waste Properly.

7. SAMPLE REQUIREMENTS

Not Applicable

8. Associated documents

National guidelines for biosafety in health laboratories, 2019.

9. PROCEDURE

9.1 Handling

- Appropriate PPE (e.g., gloves, fire-resistant or all cotton lab coat, and safety goggles) must be worn when working with corrosive chemicals. A face shield, rubber apron, and rubber booties may also be appropriate depending on the work performed.
- Appropriate protective gloves that are resistant to permeation or penetration from corrosive chemicals must be selected and tested for the absence of pin holes prior to use.
- Eyewashes and safety showers must be readily available in areas where corrosive chemicals are used and stored. In the event of skin or eye contact with a corrosive chemical, the affected area should be immediately flushed with water for 15 minutes. Contaminated clothing should be removed and medical attention sought.
- Corrosive chemicals should be handled in a fume hood to ensure that any possible hazardous or noxious fumes generated are adequately vented.
- When mixing concentrated acids with water, add the acid slowly to the water. Allow the acid to run down the side of a container and mix slowly to avoid violent reactions and splattering. Never add water to acid.
- Appropriate spill clean-up material should be available in areas where corrosive chemicals are used and stored.
- Protective carriers shall be used when transporting corrosive chemicals.
- Wear safety shoes,Nose masks and apron when handling the chemicals to preventaccidents,spilling and splattering.
- Use protective gloves and goggles when needed.
- Open the hazardous and poisonous chemicals with complete safety in fume-hood.

- Do not taste chemicals for identification. Smell chemicals only when necessary and onlyby wafting a small amount of vapor towards the nose.
- Avoid pipetting by mouth. Use rubber bulb or automatic dispenser.
- Check the labels and confirm that the correct chemicals are being used.
- Label all the chemicals and reagents with date of preparation and expiry clearlymentioned. Discard unlabelled chemicals or reagents.
- When working with Chlorine, Hydrogen Sulphide, Carbon Monoxide, Hydrogen cyanide and other toxic chemicals always use a protective masks and perform those experimentsunder a fumehood in a well-ventilated room.
- Take care when working with volatile materials which may lead to explosion.
- Always read the safety data sheet before using any chemicals.
- Maintain the record of standardization of standard solutions and references.
- Discard physically deteriorated chemicals and give 5 years of date of expiry from the dateof opening for those chemicals which are stable.
- Do not Eat, drink, chew gum, or apply cosmetics in rooms or laboratories where chemicals are used or stored.

Storage

- Containers and equipment used for storage and processing of corrosive material must be corrosion resistant.
- Corrosive chemicals must be stored below eye level, preferably near the floor to minimize the danger of their falling from cabinets or shelves.
- Acids and caustics (i.e. bases) must be stored separately from each other. Secondary containers or trays must be used to separate acids and bases or other incompatible corrosives within a corrosive cabinet.
- Oxidizing acids must be separated from organic acids and flammable/combustible materials (oxidizing acids are particularly reactive with organics and flammable/combustible materials).

- Acids must be segregated from active metals (e.g., sodium, potassium, and magnesium) and from chemicals that can generate toxic gases (e.g., sodium cyanide and iron sulfide).
- Corrosive gas cylinders must be returned for disposal every two years.
- Do not Store food in laboratory refrigerators, ice chests, cold rooms, or ovens.

10. ANNEXURE

Annexure 1. GHS labels (level)

14. REFERENCE

- 29 CFR 1910.1450 - Occupational exposure to hazardous chemicals in laboratories (commonly known as the Lab Standard)
- 29 CFR 1910.1200 – Hazard Communication Standard
- *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards*, National Academies Press, 2011