



## Chemical Hygiene Plan

Chemical Hygiene Plan			
Category:	QUALITY MANAGEMENT		
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### 1.0 PURPOSE

The proper segregation and storage of chemicals is an important safety measure because the accidental mixing of incompatible chemicals may cause fires, explosions, or the production of toxic gases. To avoid or minimize the exposure to the potential hazards associated with chemicals in the laboratory. To maintain a safe work environment free from any near miss accidents that could involve hazardous chemicals.

### 2.0 SCOPE

The Occupational Health and Safety Procedures at the natural health research center hosting Nourah's Tissue Biobank have procedures that should form the basis of safety precautions for chemical handling and disposal. However, this procedure covers basic steps of Chemical Hygiene Plan that should be followed to ensure that personnel are adequately informed to avoid contamination, damage to the environment and personal injury. These procedures in this standard operating procedure (SOP) apply to all chemical at the biobank.

### 3.0 ROLES AND RESPONSIBILITIES

The SOP applies to all personnel from Nourah's tissue biobank member that work at the biobank site and are responsible for handling, storing of hazardous chemicals.

Biobank Personnel	Responsibility
Laboratory Technician/Technologist	Handle and dispose of Hazardous Chemicals in biobank and be familiar with chemical safety procedures
Pathologist/Pathologist assistant	Handle and dispose of Hazardous Chemicals in biobank
Designated safety committee member	To assist with the monitoring of the use of chemical and disposal of waste.

### 4.0 MATERIALS, EQUIPMENT, AND FORMS

Listing of the materials, equipment, and forms being used to achieve the goals of the SOP, this list will mainly contain necessary materials and, or recommendations that may be substituted by alternative or equivalent materials more suitable at the time of testing.

Material to be used	Site
Formalin Neutral Buffered 10%	
Ethanol Absolute	



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Acetone 99%	
Chloroform 99%	
Formaldehyde Solution 4% Buffered ,Ph 6.9	
Ethanol(Ethyl Alcohol)	
Xylene Low In Sulphur 98.5%	
Eosin,1% In Aqueous Solution	
Harris Hematoxylin	

### 5.0 POTENTIAL HAZARDS

In this part of the SOP, we explain the potential hazards from chemicals and methodologies used in this procedure. It will also contain information on how to handle these chemicals and the level of biosafety.

Material	Safety and handling

### 6.0 PROCEDURES

#### 6.1 CHEMICAL HYGENE PLAN

6.1.1. The Biobank should follow the acceptable **Chemical Hygiene Plan CHP** that contains the following elements:

- 6.1.1.1 Responsibilities of the laboratory director and supervisors
- 6.1.1.2 Designation of a chemical hygiene officer
- 6.1.1.3 Policies for all operations that involve chemicals
- 6.1.1.4 Criteria for the use of personal protective equipment and control devices
- 6.1.1.5 Criteria for exposure monitoring when permissible levels are exceeded
- 6.1.1.6 Provisions for medical consultations and examinations
- 6.1.1.7 Provision for training personnel on the elements of the CHP
- 6.1.1.8 Evaluation of the carcinogenic potential, reproductive toxicity and acute toxicity for all chemicals used in the laboratory.
- 6.1.1.9 Specific handling requirements for all hazardous chemicals used in the laboratory

#### 6.2 SAFE CHEMICAL HANLING

6.2.1. Always maintain **personal protective equipment**, as appropriate.

6.2.2. **Precautionary labels such as (manufacturer label, Global Harmonized System-GHS and**

**National fire Protection Association-NFPA)** must present on the containers of all hazardous chemicals, indicating type of hazard and what to do if accidental contact occurs. **AppendixA and AppendixB.**

6.2.3. **Safety Data Sheet** must be completed and reviewed annually for all chemicals present in the section, accessible electronically and / or printed and filed in the section. Consult the appropriate SDS/s before beginning work with any chemicals. **AppendixC.**

6.2.4. An updated **monthly Chemical Inventory Report** must be submitted to laboratory safety officer.**Appendix D.**

6.2.5. Bottle **carriers** are used to transport all glass containers larger than 500 mL that contain hazardous chemicals.



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6.2.6. Any procedure involving hazardous chemicals must be conducted under the **chemical fume hood**.

6.2.7. To dilute **acids**, add the acid to the water, not the water to the acid.

6.2.8 Ensure that sources of ignition are not close or nearby when working with **flammable materials**, this will prevent a fire or explosion if a vapor release or liquid spill occurs.

6.2.9 Areas where **flammable liquids** are used must be ventilated for protection of personnel, as well as fire prevention.

6.2.10. Do not work alone when handling **acute toxin**. Ensure that at least two people are present at all times if a substance in use is highly toxic or its toxicity is unknown

6.2.11. **Access** to chemical carcinogens should to be limited to knowledgeable lab personnel.

6.2.12. The **disposal of chemical wastes** and effluents should be strictly regulated by federal, regional, and local authorities to protect the environment and the safety and health of all people.

### 6.3 STORAGE GROUPS, LIMITS AND CHEMICAL SEGREGATION

6.3.1 Determine the storage group of a chemical by referring to the chemical safety information available in Salute or to the "Hazards Identification" and "Toxicological Information" sections of the Safety Data Sheet (SDS).

6.3.2 Chemicals with multiple hazards are stored according to their primary hazard.

6.3.3 Examples of Chemicals in the Compatible Storage Group.

6.3.4 Storage groups must be stored separately from each other according to Compatible Storage Groups Classification System.

6.3.5 Chemical list log sheet will be posted on chemical storage cabinets. Any added or removed chemical must be recorded on the sheet (**Appendix E**).

6.3.6 Restrict to the quantity of stored flammables and minimize the quantity of flammables present in the work area. **Appendix F**.

6.3.7 Flammable storage limits if there is an automatic fire suppression system (eg, sprinklers) For example, a 1000 ft<sup>2</sup> (92.9 m<sup>2</sup>) laboratory defined by fire resistant walls/doors can store:

- 10 gallons (37.8 L) outside a safety cabinet
- 20 gallons (75.7 L) inside a safety cabinet and cannot exceed 120 gallons (460 L).
- Maintain storage below the limits

### 6.4 STORAGE GROUP-SPECIFIC REQUIREMENTS

6.4.1 Follow the chemical storage group, **Appendix G**

#### 6.4.2 Flammables, Combustibles, and Organic Solvents (Group L)

6.4.2.1 The capacity of glass containers must not exceed one gallon. Metal containers are required for storage of flammable liquids exceeding one gallon.

6.4.2.2 Strong acids and bases shall not be stored under sinks, where contamination by moisture may occur.

6.4.2.3 Refrigerators used to store flammable liquids must be explosion-proof or flammable-proof.

6.4.2.4 Keep flammables away from all ignition sources such as open flames, hot surfaces, direct sunlight and spark.

6.4.2.5 Flammable gases are prohibited from use or storage below grade (i.e., below street level).

6.4.2.6 Peroxide-forming chemicals are typically classified as Flammables (Group L). Peroxide-forming chemicals must be labeled with date received, date opened and expiration date.

6.4.2.7 Flammables to be stored in a safety flammables cabinet that conforms to NFPA standards and SDS (Safety Data Sheets) if possible.

6.4.3 **Store corrosive chemicals (Group A, C, D and F)** in dedicated corrosion- resistant and ventilated cabinets.



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- 6.4.4 Place in secondary non-metallic containment when storing acids on bare metal shelves.
- 6.4.5 **Organic acids (Group D)**, such as acetic acid, lactic acid, and formic acid are considered combustible and corrosive and can be stored in flammable storage cabinets.
- 6.4.6 Do not store acids near any cyanide- or sulfide-containing chemicals to prevent the generation of highly toxic hydrogen cyanide or hydrogen sulfide gases.
- 6.4.7 Do not store concentrated acids next to household bleach as mixing will generate highly toxic chlorine gas.
- 6.4.8 Do not store concentrated acids next to window cleaner (e.g., Windex) or ammonium hydroxide (e.g., Lysol) as mixing will generate highly toxic chlorinated amine gases.

### 6.5 EMERGENCY EVENTS

- 6.5.1. Chemical spill kits must be handled in accordance with manufacturer's instructions.
- 6.5.2. A continuous eye wash/safety shower stations should be available in every work and a quick access to the emergency shower within a 10-second walk where there is a bulk storage of corrosive and hazardous chemicals.

#### Appendix H

- 6.5.3. The eye wash and safety shower stations must be monitored weekly. **Appendix I.**

### 7.0 REFERENCES

- 7.1 OSHA "Occupational Exposure to Hazardous Chemicals in the Laboratory"
- 7.2 OSHA (Code of Federal Regulations. Title 29, Part 1910.1200 and 1450), hazard communication page.
- 7.3 29 CFR 1910, 1450 OSHA, "Toxic & Hazardous Substances, standards" 29 CFR
- 7.4 part Z.
- 7.5 CLSI, Clinical and Laboratory Standards Institute, safety approved guideline. GP17- 2A.
- 7.6 CAP, Collage of American Pathologist, Chemical Safety.
- 7.7 Chemical storage and segregation, environment health & safety (EHS)

### 8.0 REVISION HISTORY

SOP No.	Date Revised	Author	Summary

### 9.0 APPENDICES

- Appendix A The Globally Harmonized System (GHS)
- Appendix B National Fire Protection Association
- Appendix C Annual SDS Revision
- Appendix D Monthly Hazardous Material Inventory
- Appendix E Chemical List Log Sheet
- Appendix F Chemical Storage Limits



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- Appendix G Chemical Storage Groups
- Appendix H How to use Eyewash Station
- Appendix I Eyewash-Safety Shower Maintenance Log Sheet