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Standard Operating Procedure

DOCUMENT NAME: SAFETY

DOCUMENT NO. : ILBS#NLDB:F

SAFETY**Handling Hazardous Chemical Waste**

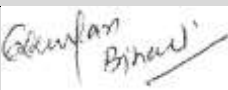
Document Name : Handling Hazardous Chemical Waste
Document No. : ILBS#NLDB:F.1
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Document No ILBS#NLDB:F.1	Approved & Issued by:		Dr. Chhagan Bihari HOD, Biobank	Issue Date: 01/01/2025
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Number	Effective date	Pages	Author	Authorized by
SOP: NLDB:F.1	01/01/2025	7	Mr. Satish Kumar	Dr. Chhagan Bihari
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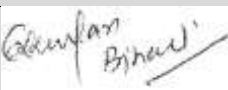
Location	Subject
Biobank reception area Almira	Handling Hazardous Chemical Waste
Function	Distribution
To give information about: the safety framework for managing potentially infectious human biological materials in the biobank.	<ul style="list-style-type: none"> ➤ HOD ➤ Biobank Reception area ➤ Master files

SCOPE AND APPLICATION:

This SOP applies to all personnel, students, visitors, contractors, and authorized users working within the biobank facility.

RESPONSIBILITY:

All biobank staff and authorized personnel are responsible for implementing and complying with the safety procedures outlined in this SOP.

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SAFETY

Handling Hazardous Chemical Waste

1.0 PURPOSE

Processing and storage of Human Biological Material could involve the use of hazardous chemicals. Measures and precautions should be taken to ensure that personnel handle these chemicals with care to avoid contamination and injury. Disposal of used chemicals should be done safely and with adherence to local regulations.

2.0 SCOPE

The Occupational Health and Safety Procedures at the institution hosting the biobank will have procedures that should form the basis of safety precautions for chemical handling and disposal. However, this procedure covers basic steps that should be followed to ensure that personnel are adequately informed to avoid contamination, damage to the environment and personal injury.

3.0 ROLES AND RESPONSIBILITIES

The SOP applies to all personnel from NLDB biobank that work at the biobank site and are responsible for handling, storing and disposing of hazardous chemicals.

Technician: Handle and dispose of Hazardous Chemicals in biobank and be familiar with chemical safety procedures; To assist with the monitoring of the use of chemical and disposal of waste.

Pathologist: Handle and dispose of Hazardous Chemicals in biobank

4.0 MATERIALS, EQUIPMENT AND FORMS

- Hazardous Chemicals and waste
- Disposal Receptacles
- Identifying Labels
- Appropriate Forms and Manifests

5.0 PROCEDURES

NLDB must follow Occupational Health and Safety Procedures at the institution at which they work. The procedure below is a guide for minimum precautions that should be taken to safeguard personnel from potential harm they may encounter when using hazardous chemical and disposing of chemical waste.

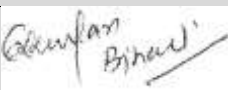
5.1 Restrictions

5.1.1 Chemical wastes should not be mixed with bio hazardous or radioactive wastes.

5.1.2 Hazardous liquids must not be flushed down drains as a method for disposal. This practice is illegal and may lead to dangerous reactions and damage to the draining system as well as create a potential hazard to trades personnel working on the system. Solid or liquid waste chemicals must not be mixed with general garbage.

5.1.3 In order to avoid explosions, fires or spills, incompatible combinations of chemicals must not be mixed in a single container.

5.1.4 If the personnel overseeing the collection of waste have any doubts about proper labelling or packaging techniques, waste should not be removed until it is properly prepared.

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5.1.5 Materials requiring special handling include organic peroxides, PCBs [polychlorinated biphenyls] and explosives.

5.1.6 Most organic wastes are flammable and toxic and require segregation from other waste products. Specifically, halogenated waste products are toxic and may be very reactive when combined with other bi-products or chemicals. Special care when handling is required.

5.1.7 Local, municipal and city environmental legislation dictates how to dispose of organic solvent and solid waste. In accordance with local Bylaws and Regulations, follow specific procedures for the safe disposal of hazardous waste materials.

5.2 Containers

5.2.1 All containers used for storing chemical waste must be sealed and undamaged. Any container not properly sealed will not be removed. (Corks or rubber stoppers are not recommended).

5.2.2 Liquid waste containers should only be filled to 70-80% capacity to allow for vapour expansion and to minimize the potential for spills occurring from overfilled containers.

5.2.3 Container material must be compatible with the stored chemical waste [e.g. hydrofluoric acid cannot be stored in glass containers].

5.2.4 Containers should be appropriate for the type of waste stored. E.g. special spout caps for organic wastes.

5.3 Labels

5.3.1 To prevent the mixing of waste, which could create an incompatible reaction, all materials must be clearly identified by means of standard Chemical Waste labels.

5.3.2 The following information must be provided: Specific generic names of the components in the container along with approximate percentages of each component present must be listed. No abbreviations or trademark names are to be used. Vague categories [e.g. solvent waste] are not acceptable.

5.4 Storage

5.4.1 Waste chemicals should, if possible, be stored in a central waste-holding facility of the building.

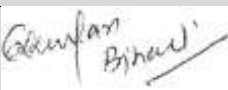
5.4.2 Should such a facility be non-existent, the chemical waste should be stored in the temporary storage space until final disposal.

5.4.3 All safety precautions required for handling and storage of chemicals will also be observed with generated wastes.

5.4.4 It is recommended that waste be segregated according to compatibility groups

5.5 Disposal

5.5.1 Do not treat waste prior to disposal.

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- 5.5.2 Periodically, waste should be picked up by a licensed waste disposal company for recycling or safe disposal.
- 5.5.3 If not covered under an institutional permit, a special environmental permit may have to be obtained from the provincial or local government to generate and dispose of chemical waste.

Segregation of incompatible chemical waste

Waste chemicals should be stored according to the following groupings based on chemical reactivities. Materials requiring special handling include organic peroxides, PCBs [polychlorinated biphenyls] and explosives.

Group A - Inorganic Acids and Acid Salts

- All inorganic acids (E.g. sulphuric, hydrochloric)
- All compounds which do not liberate a gas when acidified (E.g. ferric chloride, sodium sulphate).
- Inorganic solids, which are inert (E.g. silica).

Note: Perchloric acid, although an inorganic acid, is a powerful oxidizing agent and should be included in Group E.

Group B - Nitrogenated Bases, Caustics and Acid-Reactive Compounds

- Organic and inorganic bases (e.g. pyridine, amines, sodium hydroxide).
- Elements and inorganic salts that may react with acids to liberate gaseous products (eg. potassium cyanide, ferric sulphide).

Group C - Neutral Organic Solids

- All solid organic compounds, which are neutral - no acids or bases (eg. carbon black, styrene).

Group D - Flammable Liquids, Halogenated Solvents and Organic Acids

- All organic liquids excluding organic bases (eg. toluene, chloroform).
- Organic acids (eg. formic acid, acetic acid).

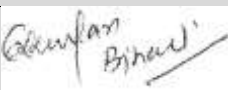
Group E - Oxidizers

- Any inorganic compound that assists fire (eg. hydrogen peroxide, lead nitrate).

Group F - Pesticides

- Any compounds used to destroy or inhibit plant or animal pest such as pesticides, fungicides, insecticides etc.

Group Specials - Water and Air Reactive Materials

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- All chemicals that react to air and/or water, including fuming substances (eg. Sodium - a water reactive, phosphorus - an air reactive, lithium aluminium hydride - both air and water reactive, thionyl chloride and phosphorus tribromide - fuming substances).

Chemical incompatibilities

When preparing chemical waste for disposal, it is the generator's responsibility to ensure that incompatible chemicals are not stored in the same container. A few general examples are:

- Oxidizers [Group E] should never be mixed with reducing agents [e.g. water-reactive chemicals such as sodium] or organic materials [Groups B, C and D]

Group E must be kept away from groups B,C&D

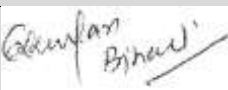
- Acid-reactive compounds [Group B] which liberate gaseous products when acidifies should not be mixed with any acid [Group A and E].

Group B must be kept away from group A & E

- Organic acids [Group D] should be segregated from inorganic acids [Group A]. Generally inorganic acids are oxidizing agents while some organic acids may be either reducing agents or combustible.

Group D must be kept away from group A & E

Once the waste has been classified according to the chemical groups, it must be segregated to minimize the risk of mixing incompatible groups.

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SAFETY**Immunization and Personnel Accident Reports**

Document Name : Immunization & Personnel Accident Reports

Document No. : ILBS#NLDB:F.2

Version No. : 1.0

Effective Date : 01/01/2025

Address

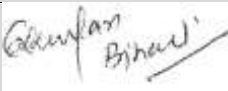
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SOP: NLDB:F.2	01/01/2025	6	Mr. Satish Kumar	Dr. Chhagan Bihari
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1.0	2yrs	3	Dr. Chhagan Bihari	30/12/2024

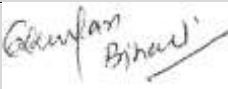
Location	Subject
Biobank Reception area Almira	Immunization & Personnel Accident Reports
Function	Distribution
To ensure personnel immunization compliance and timely reporting of accidents, injuries, and exposure incidents within the biobank.	<ul style="list-style-type: none"> ➤ HOD ➤ Biobank Reception area ➤ Master files

SCOPE AND APPLICATION:

This section applies to all biobank personnel, including permanent staff, trainees, students, and contract workers who may be exposed to biological, chemical, or physical hazards.

RESPONSIBILITY:

The Biobank Head shall ensure implementation of immunization and incident reporting procedures, and all personnel shall promptly report any accident, injury, or exposure related to biobank activities.

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Immunization and Personnel Accident Reports

1.0 PURPOSE

All human specimens, independent of their state, should be handled as if infected with agents that may be pathogenic to humans. Precautions should be taken to safeguard personnel from potential infectious hazards. Personnel should have up-to-date immunizations and report and document all accidents that they may be involved with at the biobank.

2.0 SCOPE

The Occupational Health and Safety Procedures at the institution hosting the biobank will have procedures that should form the basis of safety precautions and actions personnel should follow. However, this SOP covers basic steps that should be followed to ensure that personnel are adequately immunized and accidents are appropriately reported and documented.

3.0 ROLES AND RESPONSIBILITIES

The SOP applies to all personnel from NLDB that work at the biobank site and are responsible for collecting, processing and storing of biobank samples.

Phlebotomist/ Venipuncture nurse: Handle Human Biological Material

Technician: Collect and process biological material

Pathologist: Collect, Process and assess biological material

4.0 MATERIALS, EQUIPMENT AND FORMS

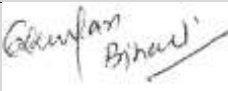
- Accident Reporting forms
- Occupational Health Records

5.0 PROCEDURES

NLDB must follow Occupational Health and Safety Procedures at the institution at which they work. The procedure below is a guide for minimum precautions that should be taken to safeguard personnel from potential biohazardous/infectious agents they may encounter.

5.1 Immunization

5.1.1 Personnel that handle human biological materials should receive appropriate immunizations or tests for the agents that may potentially be present in the laboratory or in the material handled.

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Immunization and Personnel Accident Reports

5.1.2 Only personnel who have been advised of the potential hazards and appropriately immunized may access biological material or enter certain portions of the laboratory.

5.1.3 Provide personnel with access to the vaccine through the institutional occupational health department or compensate them for immunization they may have to obtain at external clinics.

5.1.4 Provide personnel with information about the pathogen and the vaccine (see below).

- a. Hepatitis B Virus (HBV): Vaccination is highly recommended for employees whose work activities potentially place them in contact with human blood or blood-contaminated body fluids.
- b. Tetanus vaccination: Tetanus (lockjaw, painful spasms of all muscles) is a serious disease caused by a germ that enters the body through a cut or wound. Employees working in health care or animal research environments should be knowledgeable of the date of their tetanus immunization - usually received in 3 doses during childhood. If one is unsure of the date, a booster dose is recommended. As well, a booster dose every 10 years following initial immunization is required to maintain protective antibodies against tetanus. Tetanus toxoid injection is often combined with Diphtheria vaccine (Td). Always seek prompt medical attention for any wounds, as a booster may be recommended sooner than 10 years.

5.1.5 Individuals declining vaccination must provide their reason(s) on a signed form of declination. Until the individual has been immunized, or has signed a form declining immunization, he/she must not work with human biological materials.

5.1.6 Individuals should keep their general immunizations up to date according to current recommendations.

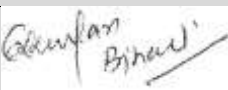
5.1.7 If there are new licensed vaccines or medical prophylaxes available for the type of biological commodities potentially or actively being manipulated, personnel should have access to these immunization agents.

5.1.8 Maintain an active record (with updates) of personnel immunizations and vaccine booster treatments.

5.2 Personnel Accident Reports

Laboratory events that might create hazards, exposures, or accidents requiring reporting could be classified in two categories:

- Laboratory accidents occurring during work with chemical hazards, biohazardous materials or in a biohazardous area that could result in physical injury, cuts, burns, abrasions, or fractures.
- Other events occurring during the handling of biohazardous agents or infected specimens that could allow release of the agent to the environment or its undesired transfer to employees or cultures.

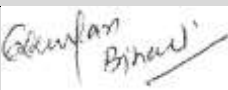
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Immunization and Personnel Accident Reports

In the first category, the injury site could be contaminated with the biohazardous agent in use. In the second category, illness or unwanted cross contamination could occur without physical injury. Mechanisms of infection typical of the second category are ingestion of contaminated fluids, exposure to aerosols, and penetration of agents through the unbroken skin. Therefore, for the purpose of controlling biohazards, all accidents, known exposures, and potential hazards should be identified and reported.

- 5.2.1** Familiarize all personnel with the location and use of safety showers, eye wash equipment and personal protective equipment.
- 5.2.2** If needed, seek medical help immediately.
- 5.2.3** Prominently post institutional emergency telephone numbers to be called in the event of fire, accident, flood, or hazardous or chemical spill in the biobank.
- 5.2.4** Immediately inform the supervisor of the individual involved in the accident.
- 5.2.5** Have an internal accident-reporting system to help discover and correct unexpected hazards.
- 5.2.6** The internal reporting system should include provisions for investigating the causes of injury and any potentially serious incident that does not result in injury.
- 5.2.7** The goal of such investigations should be to make recommendations to improve safety, not to assign blame for an incident.
- 5.2.8** Beyond this follow institutional Occupational Health and Safety, federal, provincial or local reporting regulations and procedures as relevant.
- 5.2.9** In the event the worker is seriously injured and cannot report the accident, the supervisor with knowledge of the accident is still responsible for completion of the reports.
- 5.2.10** Document all accidents, investigations and outcomes.

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