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INTRODUCTION

The Microbiology Department of UNIVERSITY HEALTH NETWORK / MOUNT SINAI HOSPITAL is committed to the safety of its employees and to the safety of the working environment. Safe practices and working conditions are the responsibility of both the employer and the employee.

Policies in this manual are in accordance with:

- Occupational Health and Safety Act
- Hospital Corporate Policy
- Infection Control Policies
- University Health Network Laboratory Safety Manual
- Mount Sinai Hospital General Laboratory Safety Manual
- Current Canadian Biosafety Guidelines
- Laboratory Centre for Disease Control
- Centers for Disease Control and National Institutes of Health
- Laboratory Safety CSMLS Guidelines
- Clinical Microbiology Procedures Handbook 2nd Edition

The Laboratory Safety Manual is intended to address universal safety measures for achieving a safe and healthy working environment and standard requirements of a clinical level 2 biohazardous laboratory. It describes good laboratory practices and guidelines that must be understood and observed by all individuals involved in the laboratory. It describes control measures essential for protecting all laboratory occupants from potential biological, chemical and physical hazards. These controls consist of, but are not limited to, policies, guidelines, training requirements, standard operating procedures, personal protective equipment, laboratory inspections, hazard evaluations, and engineering controls.

For hazards beyond the scope of this manual, specific standard operating procedures must be developed by the Laboratory Supervisor or Principle Investigator.

Additional Resources for Safety

www.ccohs.ca
www.apps.saftpak.com
www.canada.ca/en/services/health/biosafety-biosecurity.html
https://srs.ubc.ca/
www.whsc.on.ca
www.fishersci.ca
www.cdc.gov/niosh/
https://www.cdc.gov/niosh/
www.sustainablehospital.org
www.iata.org
www.tc.gc.ca/tdg

- Dangerous Goods Regulations
- Occupational Health and Safety Act
- Pathology Laboratory Medicine Safety Manual
- Mount Sinai Hospital Safety Policy
- Laboratory Biosafety Guidelines 1996

QUALITY PROCESS:

Laboratory Safety Policy

Policy:
The Quality Process outlines the responsibilities for safety

Purpose:
The policy provides direction for all staff to do their part to ensure a safe and healthy work environment.

Responsibility:
Management and employees

Key Elements:
- Establish and maintain adequate standards, policies, procedures, work practices and maintenance of buildings and equipment to ensure a safe working environment
- Orient and train all staff in safe work practices and procedures in compliance with established hospital policies and procedures
- Participate in internal responsibility system by supporting activities of JHSC

Related Documents:

Joint Health & Safety Committee and Internal Responsibility System	MI\LS\03
Employee Safety Orientation and Training	MI\LS\04

Procedure:

Department / Area	Responsibilities	Frequency	Supporting Documents
UHN / MSH	• Ensure a safe and healthy work environment		
General Manager, UHN / MSH	• Establish and maintain adequate standards, policies, procedures, work practices and maintenance of buildings and equipment to ensure a safe working environment • Ensure that a review of all safety policies, procedures and programs, and the Laboratory Safety Manual, is undertaken • Provide to the JHSCs the results of any written reports respecting Occupational Health and Safety and advise employees of the results of any such reports	Annually	Laboratory Safety Manual
Department Heads, Managers, Supervisors	• Establish a safety committee • Take every reasonable precaution to maintain a healthy and safe environment • Orient new staff to safety in the laboratory • Train staff in safe work practices and procedures in compliance with established hospital policies and procedures, including fire safety and WHMIS • Take appropriate action to correct any actual or potential health or safety hazard	Fire safety Semi-annually Training - On going	Safety committee minutes are posted under Health & Safety on the bulletin board

Department / Area	Responsibilities	Frequency	Supporting Documents
Department Heads, Managers, Supervisors	• Update SDS sheets • Have a designated Safety Officer • Participate in internal responsibility system by supporting activities of JHSC • Address recommendations of JHSC	Annually	
All employees, Students, Visitors	• Observe established hospital policies and procedures • Participate in safety training, including fire safety and WHMIS • Work in a safe and prudent manner • Report any actual or potential safety hazards to his/her Supervisor/Manager • Prevent loss of, or damage to, hospital property due to unsafe work practices • Use personal protective equipment provided		
Joint Health and Safety Committees	• Promote safe work practices and conditions • Conduct regular workplace inspections • Promote educational programs to increase health and safety awareness at work • Recommend appropriate action on discovered or reported unsafe equipment, working conditions or practices and on actual or potential health or safety hazards		

Department / Area	Responsibilities	Frequency	Supporting Documents
Infection Prevention and Control Committee	• Orient new staff to body substance precautions • Review new protocols for treatment of needle stick injuries • Act as resource on infection prevention and control	Orientation as required	
Human Resources	• Address recommendations of JHSC	On-going	

Occupational Health and Safety Department	• Provide professional assistance and guidance in achieving a safe and healthful work environment
	• Orient new staff to safety in the hospital
	• Resource for:
	  ○ WHMIS
	  ○ Transportation of dangerous goods
	  ○ Spills
	  ○ Designated substances
	  ○ SDS sheets
	  ○ Accident investigation
	  ○ Hazard assessment
	  ○ Air quality
	  ○ Ergonomic assessments
	  ○ Physical demands studies
	  ○ Special investigations
	• Occupational Health & Safety Clinic
	  ○ Assess/treat workplace injuries/illness
	  ○ Establish return-to-work procedures
	  ○ Facilitate return-to-work
		Orientation
		As required
			Occupational Health & Safety Act of Ontario and pursuant Regulations

Department / Area	**Responsibilities**	**Frequency**	**Supporting Documents**
Emergency Department	• Assess/treat workplace injuries/illness		
Fire Marshal	• Fire safety in hospital • Conducts fire drills • Conducts monthly fire safety seminars • Trains Departmental Fire Wardens	Fire Drill Semi-annually	Ontario Fire Code
Plant Operations and Maintenance	• Address requests for necessary repairs in a timely manner • Ensure adequate operation of engineering controls		

OPERATING PROCEDURES - GENERAL SAFETY:

Visitor and Contractor Safety

Visitors and Contractors to the Hospital

Policy:
When entering MSH, Visitors and Contractors may be exposed to hazards that employees have been trained to avoid. Everyone must work together to ensure safety protocols are adhered to.

Purpose:
This policy offers guidelines to reduce risks to Visitors and Contractors while they are in MSH.

Responsibility:
- All management and employees have the responsibility to ensure that this policy is enforced.
- All Visitors and Contractors must comply with this policy or they should not stay on the MSH premises.
- The local MSH Management Team must know and understand this policy and ensure its enforcement.

Key Elements:
- When this policy is to be applied.
- Definitions of Visitor and Contractor
- Specific responsibilities for Visitors, Contractors, Management and Employees

Related Documents:

Microbiology Laboratory Safety Awareness for Non-Laboratory Personnel with No Laboratory Electronic Access	QFSMI02002
JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
EMPLOYEE SAFETY ORIENTATION AND TRAINING	MI\LS\04
FIRE SAFETY	

Laboratory Procedure for Visitors and Contractors

This policy applies to:
- Visitors entering a hazardous Laboratory area.
- Contractors working in the MSH facility.

Definitions:
- Visitor: Anyone inspecting or being shown a hazardous Laboratory area, including; Sales Persons, Media Personnel
- Contractors: Anyone who performs work or provides a service including; Cleaners, Service/Maintenance Technicians, Security Guards, External Couriers

Purpose
To describe to visitors any potential hazards and the precautions to take when visiting any laboratory area.

Procedure

As a visitor to the laboratory, you should understand the hazards that may be present and the precautions that you need to take:

A procedure for visitors can be accessed through: Facilities Access Procedure QFSMI02000 https://eportal.mountsinai.ca/MSHPresentations/public/paradigm/D0024525.pdf

Related Documents

Document Title	Document Number
FIRE SAFETY	QFS01702
Microbiology Laboratory Safety Awareness for Non-LaboratoryPersonnel with No Laboratory Electronic Access	QFSMI02002

Joint Health & Safety Committee and Internal Responsibility System

Policy:
Under the Ontario Occupational Health and Safety Act, MSH has established a Joint Occupational Health and Safety Committee (JHSC).

Purpose:
The primary purpose of the Joint Health and Safety Committee is to identify and evaluate health and safety hazards and recommend action to the employer in order to ensure that the hospital meets legislative health and safety requirements as well as supporting a comfortable work environment

Responsibility:
The **internal responsibility system** is based on workers and management resolving problems internally. The JHSC is the mechanism.

Key Elements:
According to the Occupational Health and Safety Act

- Identify sources of danger or hazards
- Make written recommendations
- Obtain information on hazards and on testing
- Inspect the workplace at least once a month (or a section of the workplace once a month)
- Promote awareness and education on health and safety issues
- Hold meetings at least quarterly and keep minutes of meeting.

Procedure:

1. **Membership on JHSC**

- The membership of the Committee includes representatives of management and workers, with workers constituting 50% or more of the members.
- One management member and one worker member jointly co-chair the committees.
- The JHSC has its own Terms of Reference, which are available from the appropriate Co-chair.
- The names of the members of the JHSC are posted in designated locations.
- On the Committee, one worker member and one management member must be Certified under the WSIB (Workplace Safety and Insurance Board).

2. **Reporting**
   The JHSC reports to the Vice-President, Human Resources

3. Responsibilities of Management

The responsibilities of management are outlined in the Occupational Health and Safety Act and include the following:

- Provides and maintains a safe working environment
- Complies with relevant occupational health and safety legislation
- Develops safety policy for the laboratory
- Provides and updates safety manuals
- Provides and maintains the WHMIS program
- Provides material safety data sheets
- Provides appropriate personal protective equipment (PPE)
- Support the JHSC
- Provides safe storage for chemical and reagents
- Ensures safe disposal of laboratory waste
- Provides orientation and training with respect to safety
- Provides on-going safety training
- Disseminate new information on safety, safety policies, safety programs, and changes to OHSA or its regulations

4. Responsibilities of Workers

The responsibilities of workers are also outlined in the Occupational Health and Safety Act and include the following:

- Follow the safety rules outlined in the safety manuals
- Work at all times in a safe manner
- Be knowledgeable about healthy and safe work procedures in the laboratory
- Participate in orientation and training sessions and on-going safety training
- Report unsafe conditions to supervisor
- Wears personal protective equipment which is required and provided

5. UHN/MSH Microbiology Safety Committee– Liaison with the MSH JHSC

The UHN/MSH Microbiology Safety Committee will maintain liaison with the MSH JHSC and the Clinical Laboratories Health and Safety Committee

Employee Safety Orientation and Training

Policy:
The UHN/MSH Department of Microbiology has established and maintains employee safety orientation and training.

Purpose:
Introduces new staff to the laboratory and familiarizes them with a variety of topics including; emergency and other safety related procedures, Personal Protective Equipment, and our physical layout and facilities.

Responsibility:
Management or designate

Key Elements:
All employees are required to:

- Attend all required safety orientation and training sessions and to be familiar with the location and use of all safety devices and equipment and the content of all manuals and procedures.
- Read safety manuals during their departmental orientation and whenever manuals are updated. A signature list is provided to document compliance.
- Attend yearly fire safety and WHMIS training. A signature list is provided to document compliance.

Related Documents:

Laboratory Safety Manual- Table of Contents	MI\LS\v0
FIRE SAFETY	MI\LS\25\v01
GENERAL CHEMICAL SAFETY	MI\LS\11\v01
ORIENTATION	IV-p-5-13

Procedure:
The employee and trainer will document completion of the safety orientation on the Departmental Safety Orientation Checklist and submit it to the Laboratory Manager or designate.

ORIENTATION OF NEW STAFF TO THE ORGANIZATION

Components include	
Fire safety	All new staff attend a presentation on fire safety at orientation.
WHMIS	All new staff attend a presentation on WHMIS at orientation.

ORIENTATION OF NEW STAFF TO THE DEPARTMENT

Components include	
Hospital and Institution Fire Safety	Evacuation Plans Manuals
MSH Codes	Codes Response Policy Manual
Safety Manuals	Laboratory Safety Manual WHMIS manual SDS (Chemical & Infectious) Guidelines for technologists for avoiding laboratory accidents are provided in the above manuals. All employees must be familiar with the material in the manuals and know their location within their department.
Completion of Departmental Safety Orientation Checklist	Safety orientation requires that the individual be given a safety orientation to the department / area, and that the departmental safety orientation checklist be completed.

ON-GOING SAFETY TRAINING IN THE DEPARTMENT

Components include	**Responsibility**	**Frequency**	**Supporting Documents**
Fire safety	Each employee must attend fire safety training and must document compliance. Such training should include fire prevention and what to do in an evacuation situation	Semi-annual	Fire Safety Training Sheet
WHMIS	The Laboratory Manager or designate will: • Provide required safety training, e.g., proper handling and storage of flammable liquids and gases, proper disposal of hazardous materials • Review changes to WHMIS with staff	As required	
Infection Control	Anyone who is at risk should be aware of the hazards	Annual	
Safety policies and procedures **Safety manuals**	The Laboratory Manager or designate will review new policies and procedures, and changes with staff.	As required /When revised	

SAFETY CHECKLIST - ORIENTATION OF NEW STAFF TO THE DEPARTMENT

Employee Name: _____ **Safety Officer Name:** _____

Print Name *Print Name*

	Area/Competency	Employee Signature	Date (yyyy-mm-dd)	Safety Officer/ICP Signature	Date (yyyy-mm-dd)
1.1	Employee has located and read the Safety Manual and reviewed it with the Safety Officer				
1.2	Employee is aware of policies regarding Body Substance Precautions and Needle Stick Injuries				
1.3	Employee has reviewed the departmental fire and safety and evacuation plan: - Nature of fire alarm - Location of pull stations - Location and types of extinguishers - Fire exits, evacuation routes & procedures - REACT - Phone 5555				
1.4	Employee has reviewed emergency codes				
1.5	Employee has reviewed WHMIS and location of SDS				
1.6	Employee has reviewed appropriate Personal Protective Equipment				
1.7	Employee has reviewed Spill Policy to include chemical and biological spills and spill kits				
1.8	Employee has reviewed appropriate disinfection and disposal practices				

	Area/Competency	Employee Signature	Date (yyyy-mm-dd)	Safety Officer/ICP Signature	Date (yyyy-mm-dd)
1.9	Employee has reviewed proper use and operation of laboratory containment systems, devices, and other equipment. (1) Primary containment devices: - biological safety cabinets (BSC) - Sealed centrifuge cups (2) Other containment systems: - Decontamination equipment (e.g., autoclave); - heating, ventilation, and air conditioning (HVAC) and control systems; - Centrifuges; - Other laboratory equipment and apparatus used for activities with pathogens and toxins;				
1.10	Employee has reviewed safe laboratory practices to include - Reduction of aerosols and body substance precautions - Be knowledgeable of the safe use of all general laboratory equipment - Safe handling, use and disposal of sharp instruments and devices.				
1.11	Employee is aware of the general signs and symptoms of disease caused by exposure to the pathogens that will be handled.				
1.12	Employee has reviewed the location and proper use of Emergency Wash Facilities: - Eyewash Facilities - Emergency Showers				

	Area/Competency	Employee Signature	Date (yyyy-mm-dd)	Safety Officer/ICP Signature	Date (yyyy-mm-dd)
1.13	Employee is familiar with physical design of microbiology lab/containment zone.				
1.14	The employee is aware of the biosecurity policies and follow procedures, including: - insider threats and outsider threats and behaviours of concern; - entry and access procedures and prevention of "tailgating"; - visitor and contractor safety procedure (escort procedure). - identifying and reporting suspicious persons or activities; - identifying and removing a suspicious person; - preventing the sharing of unique means of access; - reporting the loss or compromise of passwords				
1.15	Employee has reviewed workplace ergonomic issues to include: - Workstation design - Lifting to avoid back injury - Be aware that all laboratory equipment should be moved and or serviced by trained personnel upon the approval of the Supervisor				
1.16	Employee has reviewed location and hours of Occupational Health				
1.17	Employee has reviewed location of MSH Emergency Department for first aid				
1.18	Employee is aware of where to find and how to complete an Employee Incident Report				

Employee

I, _____ , on _____ have read and understood all relevant
Signature *Date (yyyy-mm-dd)*
materials and SOPs as pertaining to the above training and have been trained as per checklist and able to assume the bench duties as required.

Trainer

I, _____ , on _____ have reviewed and confirmed
Signature *Date (yyyy-mm-dd)*
that the above signed staff has completed the above training as indicated and competent to perform the bench duties as required.

Good Laboratory Practice - Summary

Policy:
Ensure all employees understand and recognize, report &/or respond to potential hazards while in the workplace.

Purpose:
Through the use of good laboratory practices hazards are minimized or eliminated completely

Responsibility:
Management and employees

Related Documents

EMPLOYEE SAFETY ORIENTATION AND TRAINING	MI\LS\04
BODY SUBSTANCE PRECAUTIONS	MI\LS\06
GENERAL CHEMICAL SAFETY	MI\LS\11
GENERAL CONTROL MEASURES	MI\LS\24
FIRE SAFETY	MI\LS\25
PERSONAL PROTECTIVE EQUIPMENT	MI\LS\33

Procedure:
Good Laboratory Practice includes the following:

Be aware / Take care	• Be familiar with all lab operations, procedures and equipment. • Injuries may arise from careless treatment of simple, common operations. Always endeavor to be aware of the possible implications of every action / inaction. • Work with another person present (if possible). • Caution when handling needles and syringes. Discard into puncture resistant containers.
Hazardous materials	• Learn about the hazardous properties of all materials used in the workplace. Observe safe handling, storage, disposal and emergency procedures. Treat unknown materials as potentially hazardous.

Knowledge of emergency procedures / Location of emergency equipment	Be knowledgeable about: • Emergency reporting procedures, telephone numbers, location of telephones. • Floor lay-out, location of exits and designated evacuation routes, exit procedures, sound of fire alarm, location of fire alarm pull stations and fire extinguishers. • Location of eyewash stations, overhead and hand-held showers, spill clean-up kits. • Operating procedures for all safety and emergency equipment.
Personal protective equipment (PPE)	• Wear appropriate PPE (e.g., laboratory coats or gowns, gloves, safety goggles or face shields, aprons) for the work being conducted. Bandage minor open cuts and scratches on hands with waterproof dressing and gloves. • Wear waterproof, closed shoes, with heels not more than 1 ¼ " in height. See shoe requirements • Secure hair/beard if its length may interfere with laboratory work. • Restrain loose clothing. Remove jewelry when working with chemicals, biohazards, radioactive material, flames or moving machinery. • Leave laboratory coats in the lab.
Ingestion of hazardous materials	• Do not eat, drink or smoke in the laboratory; apply lip salve, cosmetics or contact lenses; insert fingers, pencils, etc., in the mouth; lick envelopes or labels. • Do not touch potentially contaminated items (including hands) with your face or mucous membranes • Do not sniff plates (CAP) • Avoid splashing contaminated material in to the mouth • Do not store food or beverages in any refrigerator that contains body substances or chemicals. Label all refrigerators and freezers that contain body substances as biohazardous. Store food and beverages only in designated areas of the lab.
Work area	• Keep work area neat, organized and free of clutter. • Clean and decontaminate work surfaces before and at the end of each work shift. • Keep lab corridors free of obstructions and tripping hazards. • Do not use decorations that can be contaminated or present a fire hazard • Keep personal property out of the laboratory area
Chemicals	• Conduct procedures using volatile, toxic or flammable chemicals in a chemical fume hood.
Biohazardous/ aerosols	• Personal clothing and belongings to be kept separate form areas where infectious materials, toxins or potentially contaminated items are located. • Conduct procedures potentially generating aerosols in a biological safety cabinet.
Pipetting	• Use only mechanical pipetting devices for pipetting. **Do not mouth pipette.**

Access	• Do not allow unauthorized personnel access to the laboratory. Laboratories should be locked when unattended. • Post hazard warning signs indicating risk level of agents being used in each lab.
Equipment	• Check the safe working condition of all equipment before operating it.
Accidents	• Report all accidents, incidents and adverse health effects related to working in the laboratory within 24 h.
Immunization	• Workers should be protected by appropriate immunization and antibody levels documented.

INFECTIOUS SAFETY:

Body Substance Precautions

Policy:
All body substances from all patients must be considered potentially infectious. Use appropriate personal protective equipment when contact with body substances is deemed likely.

Purpose:
Body Substance Precautions is a system that decreases the risk of transmission of organisms by the use of barrier techniques.

Responsibility:
Management and employees

Key Elements:
- Hand washing
- Use personal protective equipment
- Use good laboratory practices

Related Documents:

GOOD LABORATORY PRACTICE - SUMMARY	MI\LS\05
PERSONAL PROTECTIVE EQUIPMENT	MI\LS\33

Procedure:

1. Handle all specimens as if they are potentially infectious. Biological safety cabinets (Class II) are used to process all specimens.

2. Wash your hands thoroughly:

Before:	After:
• Beginning work • Direct patient contact • Leaving the laboratory • Going to the washroom	• Contact with biological material • Removal of gloves • Direct patient contact • Going to the washroom • Covering your mouth or nose due to cough or sneeze

Hand wash sinks	• Designate hand wash sinks in areas close to exits • If the designated sink is a general laboratory sink, label as "Hand wash only" and enforce • Equip hand wash sinks with soap/appropriate disinfectant and disposable towels • Appropriate hand washing material provided for staff with allergies/reactions to specific compounds • Do not use hand wash sinks to dispose of any hazardous waste • It is the responsibility of the Department Head, Principal Investigator or Laboratory Supervisor to ensure that hand wash sinks are available, accessible and properly equipped at all times
Hand sanitizer	• In patient care areas where there is no hand-washing sink, use hospital provided hand sanitizer (an alcohol-based rinse) to wash hands

3. Do not touch face or mucous membranes with your hands unless you have clean hands and have no touched anything potentially contaminated. Do not touch face or mucous membranes with any item that is potentially contaminated with pathogens or sample. Assume all items in the dirty lab areas are potentially contaminated.

4. Long hair shall be tied back, restrained or covered to prevent touching potentially contaminated items.

5. Wear disposable gloves when handling specimens including wet preps. Remove them and wash hands before leaving the laboratory. All used gloves are disposed of in yellow biohazard bags. Do not touch your face/hair or clean areas with gloves on. Replace gloves if torn or contaminated.

6. Wear an appropriate long sleeved cuffed laboratory coat with a closed front at all times when working in the laboratory. Remove the lab coat prior to exiting the work area or entering office areas. When not in use, hang laboratory coats on hooks provided near exits, away from fire hazards. Laboratory coats may not be worn outside the laboratory. Staff whose duties take them out of lab shall wear clean coats/gowns while with patients (eg. phlebotomists)

7. If there is potential for splashing/aerosolization with body fluids, use additional personal protective equipment such as aprons, goggles and face shields, or perform procedures in a

biological safety cabinet or behind a protective shield. Keep biological safety cabinets clear of clutter.

8. To remove caps on blood specimens, gently loosen the cap and release tube from behind a shield or in a direction away from the technologist. Face shields and/or goggles must be disinfected in virox after use.

9. Change protective clothing when necessary to ensure cleanliness or when contaminated with hazardous material. Place soiled linen in the clear plastic soiled linen bag. If a laboratory coat becomes grossly soiled with biological material, remove it immediately and place it in a separate clear plastic bag before placing in the soiled linen bag.

10. Whenever airborne infectious agents, e.g. *M. tuberculosis*, are being handled, a PCM2000 NAS respirator must be worn in addition to other barrier protection.

11. Specimen handling:
    - Each health care facility must ensure a transport system which prevents specimen leakage and breakage, e.g., hazardous ziplock plastic bag.
    - Train personnel who transport specimens in safe handling practices and in decontamination procedures in case of a spill.
    - Place all specimens into a leak-proof primary container with a secure closure.
    - Place specimens contaminated on the outside into a secondary container.
    - Protect laboratory requisitions from contamination by separating them from the primary labeled container. If using a hazardous ziplock bag any paperwork should be placed in the outside pocket away from the specimen.
    - Personnel receiving specimens must examine them for visible contamination or breakage before opening.
    - If contaminated containers or broken specimens are received, consult the Specimen Rejection Criteria to determine how to handle these specimens.
      Discard and replace (by rewriting) visibly contaminated laboratory requisitions.

12. Personal working in the Mycology lab should be aware of the potential dangers of working with fungal organisms.
    - All processing is performed in a BSC
    - Change gloves between specimens
    - Confirmed or suspected Coccidioides immitis, Blastomyces, and Histoplasma isolates should be handled according to the Risk Group 3 guidelines

Donning and Doffing of Routine PPE:

For donning and doffing procedure for a 2.5 level laboratory area see:
Processing Viral Hemorrhagic Fever Specimens.

Donning of PPE:

Donning of PPE should always be done in a manner that facilitates safe work within the Microbiology laboratory, and safe removal of the PPE.
For part of the microbiology laboratory where only a lab coat and gloves are worn, donning procedures are as follows:

- Start by putting on your lab coat, ensuring it is properly fastened
- Followed by your gloves, which should be fitted over the cuffs of the lab coat
- If you are wearing double gloves, put on your inner gloves, followed by our lab coat and then your outer gloves which are fitted over the cuffs of the lab coat.

Considerations when **donning lab coat** are as follows:

- Lab coat help protect you from the contamination of clothing with potentially infectious material which should fully cover the torso, fit close to the body and cover the arms to the wrist
- Remove the lab coat from its location
- Insert one arm into the sleeve and insert the other arm into the other sleeve
- Adjust the shoulders and sleeves until comfortable
- Close the front of the coat completely. Button all buttons
- Use caution when donning potentially contaminated items, such as dedicated lab coats. Don clean gloves before touching it and remember that the outside of all used PPE should be considered contaminated, including your used lab coats.

Considerations when **donning gloves** are as follows:

- Insert hands into gloves
- Extend gloves over the lab coat cuffs

Doffing of PPE:

Doffing, or removal, of PPE must be performed carefully to minimize contamination of the skin and hair. Doffing of gloves and lab coat is done in the reverse order to the donning procedure. For part of the microbiology laboratory where only a lab coat and gloves are worn, doffing procedures are as follows:

- Remove PPE starting with those items most likely contaminated
- First remove your gloves (or the outer gloves if two pairs were worn)
- Remove your lab coat. If you had an inner pair of gloves those should be removed last
- Always perform hand hygiene immediately after removing PPE

Considerations when **doffing gloves** are as follows:

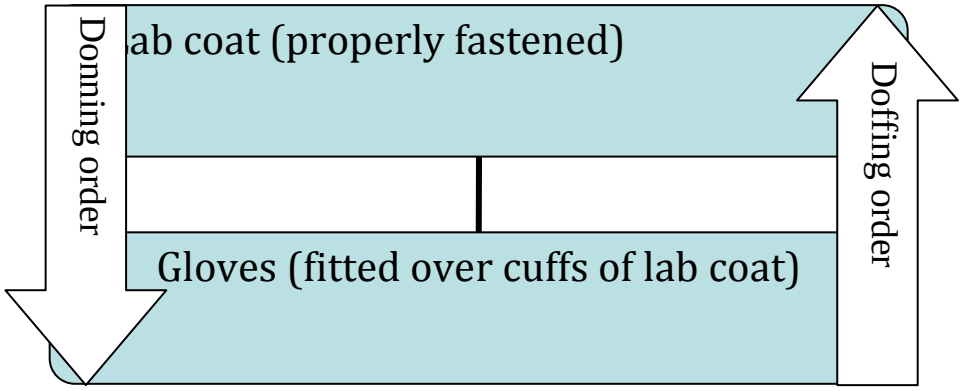
- Carefully remove gloves by grasping the outside of the glove near the wrist with the opposite gloved hand and carefully peeling the glove off, turning it inside out
- The removed glove should be held in the opposite gloved hand. A finger from the ungloved hand should slide under the wrist of the glove to peel it off from the inside, creating a bag for both gloves that is carefully discarded in a designated biohazardous waste container

Considerations when **doffing lab coats** are as follows:

- When removing lab coats, remember that the front and sleeves may be contaminated
- Unfasten the snapped closures of the lab coat and open the front
- Slide the fingers of one hand under the cuff of the opposite sleeve and pull the arm completely from the sleeve.
- Slide the fingers of the free hand under the cuff of the remaining sleeve and pull the arm from the sleeve
- Pull away from the neck and shoulders, keeping the contaminated side away from the body
- If the coat is not soiled/dirty, hang the coat for future use.
- If the coat is soiled/dirty, turn inside out and discard into the designated container for Laundering
- Hands are then to be washed before touching any item, donning new gloves, and/or leaving the containment zone.

Important notes to remember:

- Always carefully inspect the integrity of each PPE item to be used to ensure that there are no damages or breaches, prior to donning PPE
- When you wearing gloves keep hands away from face and limit surfaces and items touched
- Change gloves when torn or heavily contaminated
- Do not reuse any item meant for single use such as disposable gloves


Donning order
ab coat (properly fastened)
Gloves (fitted over cuffs of lab coat)
Doffing order

Biological Safety

Policy:
Microbiology has specific safety issues relating to risks involved from working with infectious agents. Proper laboratory procedures, equipment and facilities need to be in place.

Purpose:
Having the proper procedures, equipment and facilities in place will eliminate or at least reduce the risk involved with working with infectious agents.

Responsibility:
Management and personnel

Key Elements:
- There are 4 Biosafety levels (See Table 1) which Correspond to the 4 risk groups of infectious agents. (See list on Page 21). Biosafety level 2 is the practice level at which the Microbiology lab must operate. Most pathogens that the lab isolates are from Risk Group 2. *Mycobacterium tuberculosis* is a Risk Group 3 pathogen.
- Biological safety cabinets are the most accepted primary containment devices. The appropriate cabinet for Biosafety level 2 is a Class II cabinet.

Table 1. Summary of recommended biosafety levels for infectious agents.

Biosafety Level	Practices and Techniques	Safety Equipment	Facilities
1	Standard microbiological practices	None: primary containment provided by adherence to standard laboratory practices during open bench operations.	Basic
2	Level 1 practices plus: Laboratory coats; decontamination of all infectious wastes; limited access; protective gloves and biohazard warning signs as indicated.	Partial containment equipment (i.e., Class I or II Biological Safety Cabinets) used to conduct mechanical manipulative procedures that have high aerosol potential that may increase the risk of exposure to personnel.	Basic
3	Level 2 practices plus: Special laboratory clothing; controlled access.	Partial containment equipment used for all manipulations of infectious material.	Containment

Biosafety Level	Practices and Techniques	Safety Equipment	Facilities
4	Level 3 practices plus: Entrance through change room where street clothing is removed and laboratory clothing is put on; shower on exit; all wastes are decontaminated on exit from the facility.	Maximum containment equipment (i.e. Class III biological safety cabinet or partial containment equipment in combination with full-body, air-supplied, positive-pressure personnel suit) used for all procedures and activities	Maximum Containment

Related Documents:

GOOD LABORATORY PRACTICE - SUMMARY	MI\LS\05
PERSONAL PROTECTIVE EQUIPMENT	MI\LS\33
BODY SUBSTANCE PRECAUTIONS	MI\LS\06

Recommendations from CDC:

- Be aware that bacteria used in microbiology laboratories can make you or others who live in your household sick, especially young children, even if they have never visited the laboratory. It is possible for bacteria to be brought into the home through contaminated lab coats, pens, notebooks and other items that are used in the microbiology laboratory.
- Persons working with infectious agents, including *Salmonella* bacteria, must be aware of potential hazards, and must be trained and proficient in biosafety practices and techniques required for handling such agents safely, including:
    - Wash hands frequently while working in and immediately after leaving the microbiology laboratory and follow proper hand washing practices. This is especially important to do before preparing food or baby bottles, before eating and before contact with young children.
    - Do not bring food, drinks or personal items like car keys, cell phones and other personal electronic devices. These items may become contaminated if you touch them while working or if you place them on work surfaces.
- Do not bring pens, notebooks, and other items used inside of the microbiology laboratory into your home.
    - Wear a lab coat or other protective uniform over personal clothing when working in a microbiology laboratory; leave it in the laboratory when you are finished. Remove protective clothing before leaving for non-laboratory areas (e.g., cafeteria, library, or administrative offices). Dispose of protective clothing appropriately or deposit it for laundering by the institution. Take it out of the laboratory only to clean it.

- If you work with *Salmonella* bacteria in a microbiology laboratory, watch for symptoms of *Salmonella* infection, such as diarrhea, fever and abdominal cramps. Call your health care provider if you or a family member has any of these symptoms.

Procedure:

1. All specimens are to be in solid, leak resistant containers contained in a secondary container (plastic bag) that is securely closed. The plastic bag should have a pouch for the requisition.

2. Do not use dry ice, freezer pads etc. used for transportation of specimens for any other purpose as they are potentially contaminated.

3. Perform procedures that have the potential to generate aerosols or droplets in a biological safety cabinet or behind a protective shield. Keep biological safety cabinets clear of clutter.

4. Consider all quality control materials as potentially infectious.

5. **Keyboards and telephones in non-laboratory areas are designated as clean** and should not generally be accessible to individuals handling specimens or engaged in laboratory work. In the event that such a worker needs to use these keyboards or telephone, they must remove their gloves and wash their hands before entering the designated clean areas. .

   Keyboards and telephones in the laboratory should be designated as clean or contaminated.

   For keyboards and telephones designated as clean, individuals handling specimens or engaged in laboratory work must remove their gloves before using these keyboards or telephones.

   For keyboards and telephones designated as contaminated (all in-lab keyboards and telephones used by staff handling biohazardous material with gloves) are to be used only with gloves.
   - Cover keyboards with appropriate protective covers (skins).
   - Decontaminate protective covers after gross contamination (visible or known contamination) or at least weekly with an appropriate disinfectant.
   - Change gloves that have been grossly contaminated with body products.
   - Service personnel must use gloves prior to use of such keyboards

6. Wash your hands thoroughly upon leaving the laboratory.

7. Always change gloves if they have become grossly contaminated with blood or body fluids.

8. Do not operate centrifuges in a biological safety cabinet since the motor may produce strong air currents and turbulence which may disrupt the laminar air flow.

9. Use only centrifuges with safety buckets. Use the safety buckets in the correct manner.

10. Perform vortexing using sealed tubes or secondary containers in an open laboratory. Do not use Parafilm as a primary closure.

11. Procedures for cleaning, disinfection and sterilization of laboratory equipment, supplies, and environmental surfaces are available.

12. Clean and disinfect equipment (water baths, test tube racks, etc.) at least once a month or after contamination with any biological material.

13. Clean and disinfect the exterior of the pipetting devices with an appropriate disinfectant if it becomes contaminated with specimen. If the pipettor is contaminated internally, the entire unit must be disassembled and decontaminated.

14. Clean and disinfect any equipment to be repaired **prior to** repair.

15. When using a syringe for inoculating bottles, do not hold the bottle by hand when puncturing the top and do not force blood or any body substance into the bottle.

16. Secure blood culture bottles by use of a support rack before inserting needles into the bottles.

Specimens with potential / confirmed Risk group 3 microorganisms must be communicated by Infection Control to the Microbiologist/Supervisor as a Precaution Alert and documented in HIS if applicable. Microbiologist / Supervisor will communicate to laboratory personnel via email ALERT in LIS.

All specimens with request for Risk Group 3 microorganisms are referred to PHL. Transport Dangerous Goods protocol must be followed (refer to “Transportation of Dangerous Goods” Procedure).

If specimen is to be processed in-house, Level 2 containment processing procedures must be strictly adhered. Gown, gloves, an N95 mask, and eye protection must be worn. All work must be performed in the Level 2.5 Biosafety cabinet located in the 2.5 room. All plates must be sealed. Use single usage instruments when possible.

Quality Manual\Facilities and Safety\Containment Standards for Veterinary Facilities

Classification of Biological Agents According to Risk

Policy:
Provide staff with a reference for the classification of biological agents according to risk

Purpose:
The classification of biological agents according to risk allows staff to handle all specimens and organisms in a safe and responsible manner. Biological agents must only be handled according to their containment level designation and requirements.

Responsibility:
Management

Key Elements:
- Explanation of risk groups
- Listings of organisms in each risk group

Official designation of Risk groups is maintained in the Human Pathogen and Toxins Act Schedules 1 to 4.

For a complete description of Risk group and Security Sanative Biological Agent organisms see PHAC ePATHogen – Risk group Database.

RISK GROUP 1 AGENTS: REQUIRING CONTAINMENT LEVEL 1

Risk Group 1 (low individual and community risk)

This group includes those microorganisms, bacteria, fungi, viruses and parasites, which are unlikely to cause disease in healthy workers or animals.

RISK GROUP 2 AGENTS: REQUIRING CONTAINMENT LEVEL 2

Risk Group 2 (moderate individual risk, limited community risk)

A pathogen that can cause human or animal disease but under normal circumstances, is unlikely to be a serious hazard to healthy laboratory workers, the community, livestock, or the environment. Laboratory exposures rarely cause infection leading to serious disease; effective treatment and preventive measures are available and the risk of spread is limited.

Risk Group 2 Bacteria

Actinobacillus ureae
Actinomyces israelii
Aerococcus urinae
Aeromonas hydrophila
Aggregatibacter actinomycetemcomitans
Bacteroides fragilis
Bordetella bronchiseptica
Bordetella parapertussis
Bordetella pertussis
Borrelia burgdorferi
Campylobacter jejuni
Chlamydia trachomatis
Chlamydophila pneumonia
Citrobacter freundii
Clostridium botulinum
Clostridium perfringens
Clostridium tetani
Corynebacterium diphtheriae
Enterococcus faecium
Escherichia coli
Fusobacterium necrophorum
Haemophilus influenzae
Haemophilus parainfluenzae
Helicobacter pylori
Klebsiella pneumonia
Legionella pneumophila
Leptospira interrogans
Listeria monocytogenes
Moraxella catarrhalis
Mycobacterium avium
Mycobacterium leprae
Mycobacterium smegmatis
Mycoplasma genitalium
Mycoplasma pneumonia
Neisseria gonorrhoeae
Neisseria meningitides
Pasteurella multocida
Porphyromonas gingivalis
Proteus mirabilis
Proteus vulgaris
Pseudomonas aeruginosa
Rickettsia akari
Rickettsia conorii
Salmonella enterica
Serratia marcescens
Shigella dysenteriae
Shigella flexneri
Shigella sonnei
Sphingobacterium faecium
Staphylococcus aureus
Staphylococcus saprophyticus
Streptococcus agalactiae
Streptococcus pyogenes
Treponema pallidum
Ureaplasma urealyticum
Vibrio cholera
Yersinia pseudotuberculosis

Risk Group 2 Fungi

Aspergillus fumigatus
Candida albicans
Cryptococcus neoformans
Epidermophyton floccosum
Microsporum audouinii
Microsprum canis
Microsporum ferrugineum
Sporothrix schenckii
Talaromyces (Penicillium) marneffei
Trichophyton concentricum
Trichophyton rubrum
Trichophyton schoenleinii
Trichophyton tonsurans

Risk Group 2 Viruses

***Arthropod-borne viruses are identified with an asterisk. Only those viruses which may be associated with human or animal disease have been included in this list. Agents listed in this group may be present in blood, CSF, central nervous system and other tissues, and infected arthropods, depending on the agent and the stage of infection.**

Alphapapillomavirus
Colorado tick fever virus
Cowpox virus
Hepatitis B virus
Hepatitis C virus
Hepatitis delta virus
Hepatitis E virus
Hepatovirus A
Human alphaherpesvirus 1 and 2 (Simplexvirus)
Human betaherpesvirus 5 (Cytomegalovirus)
Human betaherpesvirus 6A, 6B, and 7 (Roseolovirus)
Human gammaherpesvirus 4 (Epstein-Barr virus)
Human gammaherpesvirus 8 (Kaposi's sarcoma-associated herpesvirus)
Human parainfluenza virus 1 to 4
Human respiratory syncytial virus
Measles virus
Molluscum contagiosum virus
Mumps virus
Newcastle disease virus
Norwalk virus
Rhinovirus A to C
Rotavirus A
Semliki Forest virus
Sendai virus
Vaccinia virus
Zika virus

Risk Group 2 Parasites

Infective stages of the following parasites have caused laboratory infections by ingestion, skin or mucosal penetration or accidental injection. Preparations of these parasites known to be free of infective stages do not require this level of containment.

Protozoa

Acanthamoeba castellanii
Giardia intestinalis
Leishmania aethiopica
Leishmania braziliensis
Leishmania chagasi
Leishmania donovani
Leishmania guyanensis
Leishmania infantum
Leishmaniapanamensis
Plasmodium falciparum
Toxoplasma gondii
Trypanosoma brucei gambiense
Trypanosoma brucei rhodiense
Trypanosoma cruzi

RISK GROUP 3 AGENTS: REQUIRING CONTAINMENT LEVEL 3

Risk Group 3 (high individual risk, low community risk)

A pathogen that usually causes serious human or animal disease, or which can result in serious economic consequences but does not ordinarily spread by casual contact from one individual to another, or that can be treated by antimicrobial or antiparasitic agents.

Risk Group 3 Bacteria

Bacillus anthracis
Brucella abortus
Brucella melitensis
Burkolderia mallei
Burkolderia pseudomallei
Chlamydia psittaci
Coxiella burnetii
Francisella tularensis
Mycobacterium africanum
Mycobacterium bovis
Mycobacterium microti
Mycobacterium tuberculosis
Orientia tsutsugamushi
Rickettsia japonica
Rickettsia prowazekii
Rickettsia rickettsia
Rickettsia typhi
Yersinia pestis

(Note: Preparation of smears and primary culture of *M. tuberculosis* may be performed at Level 2 physical containment using containment Level 3 operational requirements. All other manipulations of *M. tuberculosis* require containment Level 3 physical and operational requirements.)

Risk Group 3 Fungi

Blastomyces (Ajellomyces) dermatitidis
Cladophialophora bantiana
Coccidioides immitis
Coccidioides posadasii
Cryptococcus gattii
Histoplasma capsulatum
Paracoccidioides brasiliensis

Risk Group 3 Viruses

Chikungunya virus
Eastern equine encephalitis virus
Hantaan orthohantavirus
Human immunodeficiency viruses 1 and 2
Japanese encephalitis virus
Louping ill virus
Lymphocytic choriomeningitis mammarenavirus
Monkeypox virus
Mucambo virus
Murray Valley encephalitis virus
Powassan virus
Rabies lyssavirus
Severe acute respiratory syndrome-related coronavirus
St. Louis encephalitis virus
Venezuelan equine encephalitis
Western equine encephalitis virus
West Nile virus
Yellow fever virus

Risk Group 3 Parasites

None

Risk group 3 Prions

Bovine spongiform emcephalopathy agent
Creutzfeldt-Jakob disease agent
Kuru agent
Variant Creutzfeldt-Jakob disease agent

RISK GROUP 4 AGENTS: REQUIRING CONTAINMENT LEVEL 4

Risk Group 4 (high individual risk, high community risk)

A pathogen that usually produces very serious human & animal diseases , often untreatable, and may be readily transmitted from one individual to another, or from animal to human or vice-versa directly or indirectly, or casual contact.

Risk Group 4 Bacteria

None

Risk Group 4 Fungi

None

Risk Group 4 Viruses

Alkhumra virus
Crimean-Congo hemorrhagic fever
Ebolavirus
Guanarito mammarenavirus
Hendra virus
Junin mammarenavirus
Kyasanur Forest disease virus
Lassa mammarenavirus
Macacine alphaherpesvirus 1
Machupo mammarenavirus
Marburgvirus
Nipah virus
Omsk hemorrhagic fever virus
Sabia mammarenavirus
Tick-borne encephalitis virus

Risk Group 4 Parasites

None

Prohibited Human Pathogens

Variola virus

For specimen processing and presumptive identification of suspect biological agents, follow the instructions in **Suspect Risk Group 3_4 Biosafety Manual (Policy # MI_RG34)**

Reference

1. Human Pathogens and Toxins Act (S.C. 2009, c. 24). (2015). https://laws-lois.justice.gc.ca/eng/acts/H-5.67/

Handling Procedure for Creutzfeldt-Jakob Disease (CJD)

See: Suspect Risk Group 3 & 4 Biosafety Manual
Microbiology Procedure for Processing Viral Hemorrhagic Fever Specimens QFSMI03002

Biological Safety Cabinets

Policy:
Biological safety cabinets are provided and are to be used whenever there is risk of infection by splatter or aerosolisation, work involving a high concentration of infectious materials or toxins or large volumes of infectious materials or toxins. All biological safety cabinets are inspected and certified annually or after repair, modifications or relocation.

Purpose:
The policy ensures staff can safely manipulate potentially infectious specimens.

Responsibility:
Management and employees

Key Elements
- Ensure all staff are familiar with safe work practices and procedures in compliance with established hospital policies and procedures
- Establish and maintain a maintenance schedule for the biological safety cabinets

Related Documents:

BODY SUBSTANCE PRECAUTIONS	MI\LS\06
BIOLOGICAL SAFETY	MI\LS\07
WORKPLACE HEALTH AND SAFETY INSPECTION PROCEDURES	MI\LS\35

Procedure:

Class II Biological Safety Cabinet
This is a ventilated cabinet for personnel, product and environmental protection which provides inward airflow and HEPA-filtered supply and exhaust air. Class II cabinets are used for low to moderate risk biological agents and for minute quantities of toxic chemicals.

Operating Procedure for Biological Safety Cabinet

1. Preparation

- Turn off UV lamp, turn on fluorescent
- Check air grilles for obstructions, switch on blower
- Allow air to purge workspace 5 minutes
- Ensure air pressure is within allowable limits and record

2. Disinfection

- Spray or swab all interior surfaces with appropriate disinfectant
- Allow to air dry

3. Assemble Material

- Introduce only material required to perform procedure
- Place material such that clean and contaminated items do not meet
- Place contaminated material container at right rear
- Ensure view screen is properly located and secured

4. Purge (pre-use)

- Allow air purge period with no activity inside (leave blower on!)

5. Personal Procedures

- Don protective clothing, gloves, mask, etc. as appropriate

6. Perform Procedures

- Introduce hands into work space, work carefully and methodically (i.e. from clean to work area to discard). Work at least 6” inside the front grill.
- DO NOT remove hands from work space until procedures are complete and all critical material is secured.
- Remove gloves into contaminated material container

7. Purge (Post-use)

- Allow air purge period with no activity inside (leave blower on!).

8. Personal Procedures

- Remove protective clothing; mask, etc. dispose as appropriate.
- Wash hands.

9. Terminal Disinfection

- Don gloves, remove materials to incubator, etc., to biohazard bag, autoclave as appropriate.
- Spray or swab all interior surfaces with appropriate disinfectant.
- Monthly – clean gutter area with disinfectant and document.

10. Shutdown

- Turn off blower and fluorescent lamp.
- Turn on UV lamp.

FUMEHOODS

Policy:

This policy outlines the requirements for the operation, use, installation and testing of fume hoods.

Purpose:

Fume hoods are designed to provide personnel protection from toxic or volatile chemicals by continuously delivering airflow away from the user to the work area. Air is then vented through the building's exhaust system.

Responsibility:

- **Occupational Health, Wellness and Safety**
- Provide guidance on installation, certification and removal of fume hoods
- Maintain hospital wide fume hood inventory

- **Building Services**
- Maintain and service fans and exhaust ducts
- Conduct initial investigation when fume hood alarms are activated Department
- Managers/Principal Investigator –
- Coordinate the annual calibration and testing of all fume hoods and located within their area.
- Maintain certification records

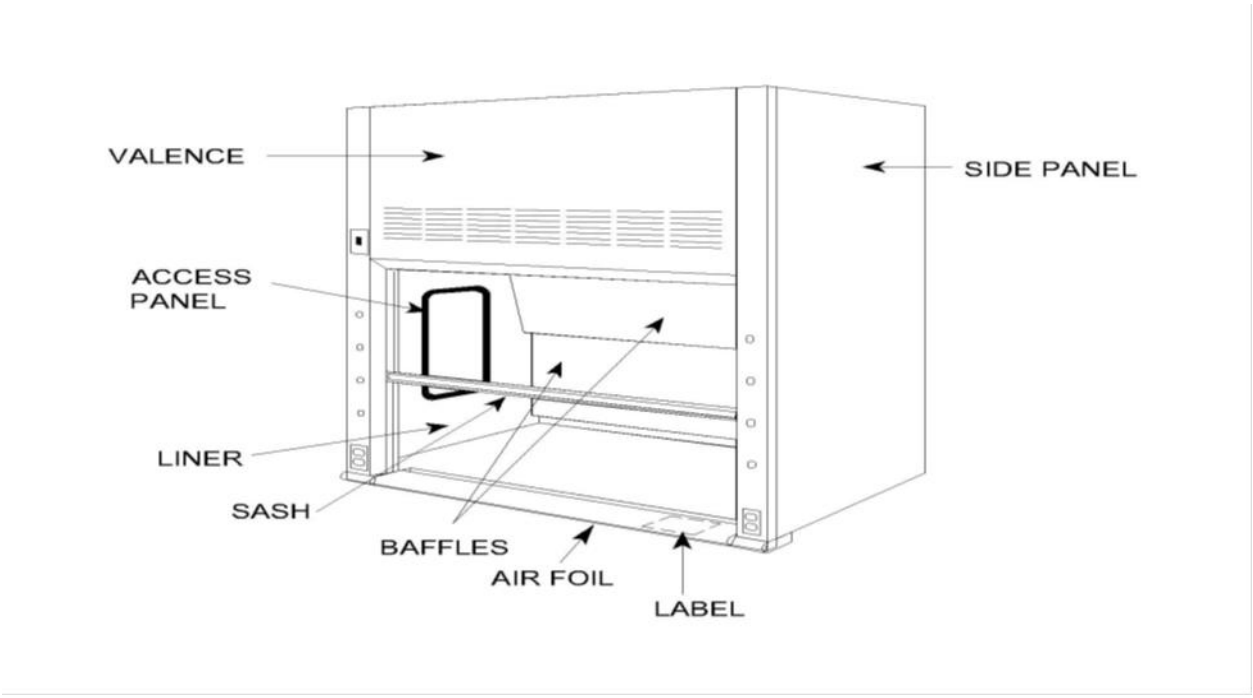
- **Employees**
- Attend require training
- Report deficient fume hoods to manager immediately
- Use Fume hoods as trained

Related Documents:

- OPERATION, USE, INSPECTION AND MAINTENANCE of FUME HOODS issued by MSH Occupational Health, Wellness and Safety
- Norlab OPERATION AND MAINTENANCE MANUAL for FUME HOODS
- Laboratory Safety Manual

Procedure:

The hood functions by maintaining a relatively negative pressure in the interior of the hood. This prevents any contaminant from escaping while drawing air in through the hood opening at a consistent rate.



Picture from: NORLAB Operation and Maintenance Fume Hood Manual

- Do not use the fume hood unless you have received proper training from the safety representatives.
- Verify that the fume hood exhaust system and controls are operating properly and providing the necessary air flow by checking the Air flow light monitor.
- Always check the alarm and/or monitor for any warning lights (Alarm indicator) or sounds
- Wear gloves and other protective clothing if contact with contaminants is a hazard
- Before beginning work in the fume hood consult the Material Safety Datasheets (SDSs) for the chemicals being used
- Keep the sash at the recommended working height of 14 inches to provide protection from spills or small explosions
- Perform all work at least six (6) inches back from the front air foil.
- Locate all laboratory equipment as far back in the hood as practicable and make sure the hood exhaust slots are not blocked (3" from the back baffle).
- Avoid rapid movements when working in the hood to ensure containment
- Minimize chemical storage in the fume hood to avoid impairing its effectiveness
- If a fire occurs inside the fume hood, immediately close the sash, exit the room, activate the fire alarm and call 5555 to notify Locating of the Code Red
- Always clean up the work surface and properly store chemicals no longer in use.
- Fully close the sash when the hood is no longer in use. This will improve safety and may reduce energy consumption

Emergency procedures:

1. **Code Red Incidents**

When a Code Red is announced overhead, the fume hoods will remain operational. All staff are to lower the sash to the closed position until the code is announced as "all clear"

2. **Activated alarm system**

If an alarm is activated notify the Manager to contact Building Service to determine if there is a system wide issue or if an external contractor must be contacted. The fume hood must be tagged out of service and Occupational Health, Wellness and Safety is to be notified immediately

3. **Fumes or Odours**

If fumes or odors are present, stop operating the fume hood, close the sash and contact the safety representative and manager

4. **Spills**

- Refer to Chemical Inventory SDS Documents for instructions on how to handle spills from different chemicals
- Refer to Chemical Spill Control section of laboratory safety manual for cleanup procedures

Fume hood Maintenance:

- Yearly Inspection and Maintenance by Outside Contractors: performed every 12 months by a qualified inspector and then to be labeled

- Monthly and Semiannual Inspections by Building Services: Fume hoods at 600 University are tied in with Building Services Building Automation System and are monitored on a continuous basis.

Record Keeping:

Laboratory Manager/department are expected to keep an inventory of all fume hoods in their department and all associated documentation; inspection and decommissioning reports etc. All reports must be available for audit purposes and kept for 2 years.

Criteria for Exposure Monitoring:

Regular environmental or employee exposure monitoring of airborne concentrations is not usually warranted in laboratories because chemicals are typically used for relatively short periods of time, in small quantities and in conjunction with engineering and work practice controls. Monitoring, appropriate to the type of exposure, will be performed if there is reason to believe that limits have been exceeded, as specified by the Ontario OHS Regulations. At the time of this revision, there are no apparent situations requiring regular exposure monitoring.

Disposal of Biological Waste

Policy:
All biological waste shall be collected, separated, packaged, labeled, recorded and disposed of in strict accordance to federal and provincial legislation and the local municipality by-laws. The disposal methods will not pollute air, water, or land.

Purpose:
This policy will prevent risk of infection or injury.

Responsibility:
Management and employees

Key Elements:
Ensure there is a procedure for MSH

Procedure: MSH
Place all biological waste (discarded biological specimens, culture media etc.) into double yellow plastic biohazard bags.

Place glass tubes, blood culture bottles etc into double yellow biohazard bags into rigid biohazardous waste containers. Do not overfill.

Place all contaminated sharp objects (sharp pipettes, disposable plastic pipette tips, needles, broken glass, etc.) into a designated puncture resistant biohazard sharps container. Do not shear, bend, break, removed from syringe or recap needles.

Liquid biological waste is collected in leak-proof plastic containers with screw tops and placed in plastic biohazardous waste bins lined with double yellow bags.

Biological waste bags and boxes are placed into large plastic collections bins in the wash-up/sterilization room. These bins are regularly picked up by housekeeping for removal from hospital premises by hospital-designated waste disposal company. Designated Elevators for waste only are utilized to transport waste to the shipping area. The biological waste is picked up and autoclaved and managed appropriately for the type of waste prior to being sent to a landfill. Pick up occurs daily on weekdays and weekends.
Refer to internal hospital Disposal of Biomedical Waste Policy VI-f-10-14 for full document.

Waste collection bins are removed or disinfected routinely.

SDS sheets for bacteria are available for reference.

Disposal of specimens and contaminated products used in the processing of Risk group 3/4 identified specimens:

Refer to **APPENDIX III-Disposal of confirmed RG3/4 isolates and samples** in **Suspect Risk Group 3_4 Biosafety Manual**

CHEMICAL SAFETY:

Chemical Hygiene Plan

Policy:
All laboratory personnel must be familiar with the standard precautionary terms for chemicals, practices for safe handling, storage, the resources for hazard containment, disposal and risk management.
All employees who work with hazardous materials must participate in training programs and use the information learned.

Purpose:
This policy will help to maintain a safe and healthy workplace.

Responsibility:
Management and employee

Key Elements:
- WHMIS
- Chemical Inventory and SDS
- Chemical Labelling
- PPE
- Chemical Spill
- Chemical Storage
- Criteria for Exposure Monitoring
- JHSC Workplace Inspections

Related Documents:

GENERAL CHEMICAL SAFETY	MI\LS\11
HANDLING CHEMICALS	MI\LS\12
LABELLING CHEMICALS	MI\LS\13
CHEMICAL INVENTORY PROCEDURE	MI\LS\13B
BULK DISPENSING OF FLAMMABLE LIQUIDS - 45 GALLON DRUM	MI\LS\14
BULK DISPENSING OF FLAMMABLE LIQUIDS - 20 L DRUM	MI\LS\15
DISPOSAL OF CHEMICAL WASTE	MI\LS\16
EMERGENCY WASH FACILITIES	MI\LS\26
CHEMICAL SPILL CONTROL	MI\LS\28
REPORTING WORK RELATED INCIDENTS	MI\LS\31
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32
PERSONAL PROTECTIVE EQUIPMENT	MI\LS\33
WORKPLACE HEALTH AND SAFETY INSPECTION PROCEDURES	MI\LS\35

Procedure:

WHMIS Training

All employees are required to complete annual WHMIS training online through Sinai Health LEARNS (formerly LMS or eLearning) followed by a competency test. WHMIS training is part of the new employee safety training checklist.

Chemical Inventory and SDS Sheets

For each chemical in the laboratory, the inventory identifies the chemical name, manufacturer, part number or CAS#, quantity, location and type of hazard (carcinogenic, acute toxicity and reproductive toxicity). The SOP involving a hazardous chemical will outline specific handling requirements.

Each laboratory will maintain a SDS sheet for each chemical listed in the inventory.

Bacteriology SDS binders are located on shelf outside the 37 degrees walk-in incubator.
Virology SDS binders are located on shelf of Alinity bench.

For most recent versions of SDS, log in to MySDS.ca using *Application Login Information* in Microbiology Internal Manual.

Chemical Labelling

All chemical containers will have either a supplier or workplace label identifying the nature and risk of the hazard.

PPE and Chemical Fume hoods

Employees are trained in the proper use of PPE when handling corrosive, toxic and carcinogenic substances. All laboratories maintain a supply of PPE appropriate for the types of chemical hazards present.
A chemical fume hood is provided for handling noxious and flammable chemicals. Fume hoods are certified annually by Con-Test.
Eyewash stations are available where hazardous chemicals are in use and are checked weekly.
Overhead showers are checked annually.

Chemical Spill Control Procedure and Supplies

A chemical spill kit is available to handle minor manageable spills. Instructions are posted (and outlined in the Chemical Spill Control) and appropriate supplies are available, for the treatment of chemical splashes and injuries and the control of chemical spills wherever chemical hazards exist

Refer to Chemical Inventory SDS Documents for instructions on how to handle different chemicals.

For larger chemical spills:

1. Dial 5555 (Code Brown) may be required if the spill is assessed to be unmanageable based on volume, potential toxicity, reactivity or a combination of the three. The employee then follows the chemical spill control SOP to clean up the spill

The materials remaining after a chemical spill clean-up, are disposed of through the chemical waste disposal process.

Chemical Spill Kit

Each spill kits will be inspected as part of the safety inspections and after use to ensure they have all the required contents, items are in good condition (not damaged) and in sufficient quantity.

The following tables will be completed with each inspection.

30 Gallon Chemical Spill Kit			
Expected Contents	**Quantity**	**Expiration Date (if applicable)**	**Acceptable Condition (Y/N)**
2 pairs of goggles			
2 vials of pH paper			
10 pairs of disposable chemical resistance nitrile gloves			
2 pairs of silver shield gloves			
2 Silver Shield Coat Aprons (1 M & 1L)			
3 packages of cartridges for respirators			
2 Pillows (18"x18")			
2 pairs of rubber booties			
3 half mask respirators (SM, M, Lg)			
6 Universal Socks (3"x 4")			
125 Hazmat Pads (15 x 18")			
3 Large Hazmat Disposable			
Bags and Ties			
1 1 Pair of Forceps			
1 Putty Epoxy Stick and Compatibility Chart			
1 bottle acid neutralizer			
1 Disposable Dustpan and Brush			
1 bag flammable solvent absorber			
1 Roll of Caution Tape			
1 Rubber mat			
Contents list **Checklist** **Clean-up procedures** **PIAR forms** **Hazardous spill response poster**			

Complete the section below for any items requiring attention.

FOLLOW UP ACTION	***RESPONSIBLE PERSON***	***DATE COMPLETED***

Chemical Storage and Disposal

Laboratories are required to store minimum volumes of chemicals. Hazardous liquids such as acids are stored below eye level. Chemical storage containers are used appropriate to the hazards and nature of the chemical. Storage areas are adequately ventilated.
Larger volumes of chemicals are stored in an appropriately located, constructed and equipped chemical storage room. The containers are stored at floor level.
Compressed gas cylinders are secured according to regulations and are stored away from sources of heat.
Chemical waste is stored in labeled waste containers appropriate for the type of hazard.

Criteria for Exposure Monitoring

Regular environmental or employee exposure monitoring of airborne concentrations is not usually warranted in laboratories because chemicals are typically used for relatively short periods of time, in small quantities and in conjunction with engineering and work practice controls. Monitoring, appropriate to the type of exposure, will be performed if there is reason to believe that limits have been exceeded, as specified by the Ontario OHS Regulations. At the time of this revision, there are no apparent situations requiring regular exposure monitoring.

Medical Consultations and Examinations

An opportunity to receive medical attention related to hazardous chemical is available to all employees and is provided by the Occupational Health and Safety Department, or a hospital Emergency Department. Medical attention will be provided whenever an employee:

1. develops signs or symptoms associated with excessive exposure to a hazardous chemical used in the laboratory
2. is exposed routinely above the exposure limit as specified by the Ontario OHS Regulations
3. may have been exposed to a hazardous chemical during a chemical incident such as a spill, leak, explosion or fire.

JHSC Workplace Inspections

In Microbiology, the Safety Committee conducts workplace inspections monthly. The inspection checklist includes a review of hazardous chemical relating to storage and handling. These inspection findings are reviewed by management.

General Chemical Safety

Policy:
All laboratory personnel must be familiar with the standard precautionary terms for chemicals, practices for safe handling, storage, the resources for hazard containment, disposal and risk management.
All employees who work with hazardous materials must participate in training programs and apply their knowledge where appropriate.

Purpose:
This policy will help to maintain a safe and healthy workplace.

Responsibility:
Management and employee

Key Elements:
- WHMIS
- Knowledge of hazards
- Personal practices
- Using chemicals
- Control of hazards
- Storage of chemicals

Related Documents:

HANDLING CHEMICALS	MI\LS\12
LABELLING CHEMICALS	MI\LS\13
CHEMICAL INVENTORY PROCEDURE	MI\LS\13B
BULK DISPENSING OF FLAMMABLE LIQUIDS - 45 GALLON DRUM	MI\LS\14
BULK DISPENSING OF FLAMMABLE LIQUIDS - 20 L DRUM	MI\LS\15
DISPOSAL OF CHEMICAL WASTE	MI\LS\16

Procedure:

WHMIS

The WHMIS (Workplace Hazardous Material Information System) Regulation, made under the Occupational Health and Safety Act of Ontario, requires that almost all of the information listed above be available in the workplace. Information under WHMIS is disseminated in three ways:
- Labels
- Material Safety Data Sheets (SDS)
- Education and Training

WHMIS requires that all hazardous products be labeled and an SDS for every hazardous product used in the workplace be readily available. WHMIS also requires that all workers who work with or around hazardous products be trained and knowledgeable regarding the safe handling, storage and disposal of the products they may use or encounter.

GENERAL PROCEDURES FOR THE SAFE USE OF CHEMICALS

Knowledge of hazards	• Know the hazards associated with the materials you are using. Review labels and SDS sheets. • Know emergency procedures. • Know the locations of safety equipment such as emergency shower, eyewash, fire extinguisher, fire alarm, and emergency phone numbers.
Personal practices	• Avoid working alone in the laboratory. • Do not eat, drink, smoke, chew gum, or apply cosmetics, lip salve, contact lenses in areas where laboratory chemicals are used or stored. • Do not store food items or cosmetics in areas where laboratory chemicals are used or stored. • Confine long hair and loose clothing when working with chemicals. • Wear shoes with closed toes and closed heels. • Wear appropriate personal protection equipment including lab coat, gloves and eye protection. • Do not smell or taste chemicals. • Do not use mouth suction for pipetting or starting a siphon. • Always wash hands and other exposed skin after chemical use.

Using chemicals	• Date chemicals when received and when opened.
	• Ensure incoming chemicals are on the inventory list.
	• For chemicals that degrade in quality or become unsafe after prolonged storage, also date them with the shelf-life expiration date.
	• When using a chemical for the first time, read the label carefully and consult the SDS.
	• Ensure that all required safety equipment is available and in good working order, including materials and equipment for spill response
	• Conduct a visual inspection of the container and its contents routinely. Ensure that all containers are in good condition and properly labeled. Indications for disposal of the contents include:
	  ○ Cloudiness in liquids
	  ○ Material changing colour
	  ○ Evidence of liquids in solids or solids in liquids
	  ○ "Puddling" of material around outside of container
	  ○ Pressure build-up within the bottle
	  ○ Obvious deterioration of container
	• Never force open or bang a chemical container.
	• Keep work areas clean and uncluttered, with chemicals and equipment properly labeled and stored.

Control of hazards	• Use appropriate personal protective equipment. • Conduct all processes that may result in the release of toxic vapors, fumes or dust within the fume hood or other adequate containment device. • Do not leave potentially hazardous chemical processes unattended. • Handle and store laboratory glassware with care to avoid damage and dispose of any damaged glassware in an appropriate sharps container. • Always rinse used glassware and plastic ware after use and before giving to wash-up staff or placing in garbage. • Wear appropriate respiratory equipment when air contaminant concentrations cannot be sufficiently restricted by engineering controls.

Storage of chemicals	• Store all hazardous chemicals in a secure location, accessible only to authorized laboratory workers.
	• Store large containers of hazardous liquids securely near floor but at a height that allows safe ergonomic handling.
	• Minimize quantities of chemicals kept in the work area.
	• Store chemicals under appropriate conditions:
	  ○ At appropriate temperature and humidity levels
	  ○ Away from heat sources such as steam pipes or laboratory ovens
	  ○ Dry and adequately vented storage locations
	  ○ Away from direct sunlight, electric motor
	  ○ On shelves and in cabinets that are secured to prevent tipping
	  ○ Do not store liquid chemicals above eye level
	• Use only explosion-proof refrigerators and freezers for storage of flammable liquids.
	• Do not store unsegregated chemicals alphabetically. Segregate chemicals by hazard class (e.g., flammable liquids, organic acids, oxidizers, reactive chemicals) and store separately.
	• Storage areas should have a one hour resistance rating.

Handling Chemicals

Policy:
All laboratory personnel must be able to safely handle chemicals belonging to the six different hazard classes recognized by WHMIS regulations.

Purpose:
This policy will help to maintain a safe and healthy workplace.

Responsibility:
Management and employee

Key Elements:
- Class A Chemicals - Compressed gas
- Class B Chemicals - Flammable and Combustible material
- Class C Chemicals - Oxidizing Material
- Class D1 Chemicals - Poisonous and Infectious Material: Causing Immediate and Serious Toxic effects

  Class D2 Chemicals - Poisonous and Infectious Material: Causing Other Toxic Effects

  Class D3 Chemicals - Poisonous and Infectious Material: Biohazardous and Infectious Material
- Class E Chemicals - Corrosives
- Class F Chemicals - Dangerously Reactive Material

Related Documents:

GENERAL CHEMICAL SAFETY	MI\LS\11
LABELLING CHEMICALS	MI\LS\13
BULK DISPENSING OF FLAMMABLE LIQUIDS - 45 GALLON DRUM	MI\LS\14
BULK DISPENSING OF FLAMMABLE LIQUIDS - 20 L DRUM	MI\LS\15
DISPOSAL OF CHEMICAL WASTE	MI\LS\16

Class A Chemicals - Compressed gas

The **gas cylinder** pictogram is used for the following classes and categories:

- Gases under pressure (Compressed gas, Liquefied gas, Refrigerated liquefied gas, and Dissolved gas)

A compressed gas includes any product, material or substance contained under pressure greater than atmospheric pressure. This includes gases liquefied by compression or refrigeration. Compressed gases may represent many hazards depending on the type of gas, i.e. toxic, flammable, corrosive, oxidizer, reactive, asphyxiation risk or frostbite in the case of cryogenic gases. Compressed gas cylinders may also pose a serious physical hazard if handled improperly. Dropped or damaged cylinders may become missiles if they rupture or valves are knocked off.

GENERAL PRECAUTIONS FOR COMPRESSED GAS CYLINDERS

Identification of Contents	• Identify the contents of any compressed gas cylinder clearly so as to be easily, quickly, and completely determined by any laboratory worker. • Provide a durable label that cannot be removed from the cylinder. • Do not accept any compressed gas cylinder for use that does not identify its contents legibly by name. • Do not rely on colour coding as a means of identification; cylinder colors vary from supplier to supplier, and labels on caps are not reliable because many caps are interchangeable. • Attach tags to the gas cylinders on which the names of the users and dates of use can be entered. • If the labeling on the gas cylinder becomes unclear or defaced so that the contents cannot be identified, mark the cylinder "contents unknown" and contact the manufacturer regarding removal.

Transportation	• Before moving a cylinder, close the cylinder valve, remove the regulator, and replace the protective valve cap.
	  ○ Do not transport cylinders with the regulator attached to the cylinder.
	  ○ Do not transport cylinders without safety caps. Screw the cylinder cap all the way down on the cylinder's neck ring.
	• Transport cylinders on a gas cylinder transport dolly and secure the cylinder with a strap or chain.
	• Do not use the protective valve cap for moving or lifting cylinders. The cap is for valve protection only.
	• Do not allow cylinders to drop or to strike other cylinders violently.

Leaking cylinder	• Tag leaking cylinders or cylinders with stuck valves and move to a safe, secure outdoor location. • If the contents are flammable, keep away from any source of ignition. • Inform the supervisor who will make the necessary arrangements with the supplier for removal. • Do not attempt to repair cylinder valves or their relief devices while a cylinder contains gas pressure.

Storage of Cylinders	**Appropriate storage conditions:**
	• Secure empty and full cylinders at all times to a fixed support (solid wall, cylinder truck, cylinder rack, or post) by use of chains or other substantial restraining devices
	• Well-ventilated areas designated and marked only for cylinders.
	• Away from flames, sparks or any source of heat or ignition.
	• In an upright position.
	• Away from sources of heat and ignition (e.g., open flames) or to any temperature above 125 °F (52 °C).
	• Away from electrical circuits and electrical wiring where the cylinder could become part of the circuit.
	• Away from dampness, salt, corrosive chemicals or corrosive vapors. Corrosion may damage cylinders and cause their valve protection caps to stick.
	• If stored outdoors, protect cylinders from the ground to prevent bottom corrosion, and protect from the direct rays of the sun.
	• Store cylinders in compatible groups. Identify them by signs to prevent confusion.
	  ○ Store flammables separately from oxidizers.
	  ○ Store corrosives separately from flammables.
	  ○ Store full cylinders separately from empties.
	• Mark empty cylinders EMPTY or MT.
	• Keep valves closed on empty cylinders.
	• Keep protective valve caps in place when the cylinder is not in use.
	• Store liquefied flammable gas cylinders in an upright position or such that the pressure relief valve is in direct communication with the vapor space of the cylinder.
	• Do not store flammable gas cylinders with oxygen or nitrous oxide cylinders or adjacent to oxygen charging facilities.
	• Keep oxygen cylinders a minimum of 6 metres from flammable gas cylinders or combustible materials. If this cannot be done, separate by a non-combustible barrier at least 1.5 metres high having a fire-rating of at least one-half hour.

Use of Compressed Gas Cylinders	• Do not use cylinders for rolling, supports, or any purpose other than the transportation and supply of gas. • Do not charge, ship or use any cylinder which is not provided with a legible decal that identifies its contents. • Wipe the outlet with a clean, dry, lint-free cloth before attaching connections or regulators. The threads and mating surfaces of the regulator and hose connections should be cleaned before the regulator is attached. • Always use the proper regulator for the gas in the cylinder. Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used. • Before attaching cylinders to a connection, be sure that the threads on the cylinder and the connection mate are of a type intended for the gas service. • Do not permit oil or grease to come in contact with cylinders or their valves. • Attach the regulator securely before opening the valve wide. Always use a cylinder wrench or another tightly fitting wrench to tighten the regulator nut and hose connections. • Stand to the side of, and face away from, the regulator when opening the cylinder valve. • Open cylinder valves SLOWLY. Do not use a wrench to open or close a hand wheel type cylinder valve. If it cannot be operated by hand, have the valve repaired by the manufacturer. • Shut off gas cylinder valves when cylinder not in use.

Class B Chemicals - Combustible and flammable material

I. Sub-divisions

The **flame** pictogram is used for the following classes and categories:

- Flammable gases (Category 1)
- Flammable aerosols (Category 1 and 2)
- Flammable liquids (Category 1, 2 and 3)
- Flammable solids (Category 1 and 2)
- Pyrophoric liquids (Category 1)
- Pyrophoric solids (Category 1)
- Pyrophoric gases (Category 1)
- Chemicals Under Pressure (Category 1 &2)
- Self-heating substances and mixtures (Category 1 and 2)
- Substances and mixtures which, in contact with water, emit flammable gases (Category 1, 2 and 3)
- Self-reactive substances and mixtures (Types B*, C, D, E and F)
- Organic peroxides (Types B*, C, D, E and F)

Flammables or combustibles are materials that under standard conditions can generate sufficient vapor to cause a fire in the presence of an ignition source.

Special Precautions - Flammable Liquids

The use of flammable liquids in a laboratory is regulated under the Occupational Health & Safety Act and Part 4 of the Ontario Fire Code.

Flammable liquids:	Materials which generate sufficient vapors to ignite at temperatures below 100 °F (38 °C)
Combustible liquids:	Materials which require temperatures above 100 °F (38 °C) to provide sufficient vapors for ignition

Flammable and combustible liquids are classified into 3 categories. Care should be used in applying these classifications where the liquid is processed, used or stored at temperatures above ambient conditions. Increased temperatures can have the effect of moving the liquid into a classification higher than would be appropriate under ambient conditions. For example, a Class II liquid processed at higher temperatures could require application of Class I requirements.

Class I includes liquids with a flash point below 37.8 C. These liquids are considered to have the highest risk of fire or explosion because in the summer time it is not uncommon for storage areas to reach a temperature of 37.8°C, which is the upper limit of flash points for this class of liquids.

Class I liquids are further subdivided as follows:

Class IA - Flash point below 22.8°C and boiling point below 37.8°C
Class IB - Flash point below 22.8°C and boiling point at or above 37.8°C
Class IC - Flash point at or above 22.8°C and below 37.8°C

Under normal ambient temperatures both Class IA and Class IB liquids generate sufficient vapours to create vapour concentrations within the flammable range at all times.

In some areas and in closed spaces, the ambient temperature could exceed 37.8°C or only a moderate amount of heating would be required to heat the liquid to or above its flash point. As a result, an arbitrary division of 37.8°C to 60°C was established for liquids to be known as Class II liquids. Since liquids with flash points greater than 60°C would require considerable heating from a source other than ambient temperatures, they have been identified as Class III liquids. These combustible liquids are further subdivided as follows:

Class IIIA - Flash point at or above 60°C and below 93.3°C
Class IIIB - Flash point at or above 93.3°C

Since Part 4 of the Ontario Fire Code is limited to liquids with a flash point below 93.3°C, Class IIIB liquids which are not heated above their flash point do not fall within the scope of Part 4. These liquids are deemed to represent no greater fire hazard than other combustibles such as plastic, wood or paper products.

Both Class II and Class IIIA liquids are considered as combustible liquids under Part 4. Any combustible liquid, including a Class IIIB liquid, heated to or above its flash point must be handled with the same precautions as a flammable Class I liquid.

The **maximum** volume of flammable liquid that may be stored in a lab is 235 L provided;

- Individual container sizes do not exceed 23 L
- Individual containers must be sealed or in *ULC/ORD-C30-1995,* "safety containers" **UNLESS** purity would be affected. In such cases, glass or plastic containers may be used under the following restrictions:
  Class I liquid, maximum container size is 1L

Class II or III liquids, maximum container size is 5L

- Dispensing of flammable liquids in the work area may only be done from an approved *ULC/ORD-C30* "safety container". Exception as noted above for purity reasons.
- A maximum of 235 L of flammable and combustible liquids, of which not more than 50 L of Class I liquids are permitted to be in the open area of a laboratory. Quantities in excess of this amount must be stored in an approved metal flammable liquid storage cabinet, *ULC/ORD-C1275-1984*.

Store bulk volumes of flammable liquids in one of the designated flammable storage room on each site.

Flammable storage room locations:

MSH	Bunker (by Receiving)

Warning!

Dispensing of flammable liquids from the storage rooms is restricted to persons having a thorough knowledge and understanding of the dispensing procedures.

GENERAL PRECAUTIONS FOR FLAMMABLE & COMBUSTIBLE MATERIALS IN THE LAB

Use	• Know the location of the nearest Class B fire extinguisher and fire alarm pull station. • Use in well-ventilated area or in a chemical fume hood. • Eliminate ignition sources such as open flames, smoking materials, hot surfaces, sparks from welding or cutting, operation of electrical equipment and static electricity from areas in which flammable or combustible materials are used or stored. • Ensure that areas in which flammable/combustible materials are used have appropriate sprinkler systems or fire extinguishers. • Never dispose of a flammable or combustible material down a drain or sewer.
Storage in lab	• Minimize the quantity of these materials within the work area. See Special Precautions above for volume restrictions. • Use approved container with a spring-closing lid for storage of flammable liquids (except in exceptional and approved circumstances). Container is designed to safely relieve internal pressure when subjected to fire exposure • Store in grounded flammable liquid storage cabinets **or** in vented cabinets under a chemical fume hood. • Store any solvents which must be stored in glass bottles in the vented cupboard under a chemical fume hood. • Never store flammable or combustible materials near oxidizing materials. • Label storage areas or cabinets clearly as **DANGER - FLAMMABLE.** Examples of such flammable liquids are acetone, ethanol, and glacial acetic acid • For storage of flammable liquids in refrigerators and freezers, use only explosion-proof refrigerators and freezers.
Bulk storage	• Ensure that areas in which flammable/combustible materials are stored have appropriate sprinkler systems or fire extinguishers. • Bond and ground metal containers whenever filling, dispensing or storing flammable liquids. • Use portable safety cans whenever possible for storing, transporting, and dispensing flammable liquids.

Class C - Oxidizing Materials

The **flame over circle** pictogram is used for the following classes and categories:

1. Oxidizing gases (Category 1)
2. Oxidizing liquids (Category 1, 2 and 3)
3. Oxidizing solids (Category 1, 2 and 3)

Oxidizing materials include any compound that spontaneously evolves oxygen either at room temperature or under slight heating. Oxidizing materials pose a serious fire and/or explosion risk in the presence of flammable or combustible materials. Many oxidizers may be highly corrosive or toxic.

General Precautions For Oxidizing Materials In The Lab

1. Keep oxidizers away from combustible and flammable materials.
2. Store in designated areas only. Designated areas must be cool and dry.
3. Keep away from heat and sources of ignition.
4. Always wear proper personal protective equipment, including eye, face and hand protection.

Examples of strong oxidizers include:

Chromic acid	Potassium permanganate
Hydrogen or benzoyl peroxide (any peroxide)	Sodium perchlorate (any perchlorate)
Nitric acid	Sodium hypochlorite
Percholoric acid	Sulphuric acid

Examples of incompatible chemicals:

Flammable liquids such as • Methanol • Organic acids such as acetic acid	**AND**	Oxidizing materials such as • Sulfuric, nitric or perchloric acids • Sodium hypochlorite • Benzoyl peroxide • Potassium permanganate

Class D1 - Chemicals, Poisonous and Infectious Material: Immediate and serious toxic effects

The **skull and crossbones** pictogram is used for the following classes and categories:

1. Acute toxicity -
    - Oral (Category 1, 2 and 3)
    - Dermal (Category 1, 2 and 3)
    - Inhalation (Category 1, 2 and 3)

Chemicals which may cause acute toxic effects are classified as D1 materials. Such materials may be fatal or cause permanent damage if they are inhaled or ingested, or if they enter the body through skin contact. Less toxic substances should always be selected if an alternative is available.

Examples of D1 Chemicals

Ammonium oxalate	Iodine
Chloroform	Methanol
Crystal violet	Oxalic acid dihydrate
Ethanol	Potassium hydroxide
Giemsa's stain	Sulfuric acid
Hydrochloric acid	

General precautions for acutely toxic materials in the lab

1. Handle with caution. Always wear appropriate personal protection equipment including lab coat, gloves, eye protection, masks, and respirators as required.
2. Avoid inhaling by working in a well ventilated area or in a chemical fume hood.
3. When possible, eliminate Class D1 materials from the workplace and use substitutes.
4. Keep controlled substances such as controlled drugs, and chemicals such as cyanides in a locked cupboard. Secure narcotics and inhalant anesthetic agents as required by legislation.
5. Solution containing class D1 substances should be dispensed with burettes or automatic dispensers at low pressure.
6. Cover work surfaces with dry, absorbent plastic-backed paper, as appropriate. Dispose of it after each procedure.
7. Wash thoroughly after handling.

Class D2 - Chemicals, Poisonous and Infectious Material: Other toxic effects

The **exclamation mark** pictogram is used for the following classes and categories:

- Acute toxicity - Oral, Dermal, Inhalation (Category 4)
- Skin corrosion/irritation - Skin irritation (Category 2)
- Serious eye damage/eye irritation - Eye irritation (Category 2 and 2A)
- Respiratory or skin sensitization - Skin sensitizer (Category 1, 1A and 1B)
- Specific target organ toxicity - Single exposure (Category 3)

Class D2 chemicals are materials that are not immediately dangerous to health; however, repeated exposures may cause death or permanent damage over time. Many D2 chemicals will cause cancer, birth defects and sterility. Other D2 chemicals may be sensitizers, which produce a chemical allergy.

Examples of D2 Chemicals

Hexane	Sodium phosphate dibasic
Petroleum spirit	Sodium phosphate tribasic
Isopropanol	Trichloroacetic acid
2-Methooxyethanol	Acetone
Depex mounting medium	Sodium azide
Boric acid	Xylene
Potassium ferrocyanide	Ethidium bromide

General precautions for toxic materials in the lab

1. Handle with caution. Always wear proper personal protective equipment, including eye, face and hand protection.
2. Avoid inhaling by working in a well ventilated area or in a chemical fume hood.
3. When possible, eliminate Class D2 materials from the workplace and use substitutes.
4. Cover work surfaces with dry, absorbent plastic-backed paper, as appropriate. Dispose of it after each procedure.
5. Wash thoroughly after handling.

Biohazard infectious Materials

The **biohazardous infectious materials** pictogram is used for the following classes and categories:

- Biohazardous Infectious Materials (Category 1)

Biohazardous and infectious materials are any organism, or its toxins, that has been shown to cause disease or is believed to cause disease in animals or humans.

General precautions for use of biohazardous and infectious materials in the lab

Refer to LSM Section on Infectious Safety in this manual

Corrosives

The **corrosion** pictogram is used for the following classes and categories:

- Corrosive to metals (Category 1)
- Skin corrosion/irritation - Skin corrosion (Category 1, 1A, 1B and 1C)
- Serious eye damage/eye irritation - Serious eye damage (Category 1)

Corrosives are materials which chemically react at the point of contact to cause visible (often burn-like) damage to tissue. Examples of corrosives include acids and bases.When handling these materials, the following precautions should be observed:

GENERAL PRECAUTIONS FOR USE OF CORROSIVE MATERIALS IN THE LAB

Transportation	• Use Neoprene bottle carriers or Styrofoam packing crates.
Use	• Wear appropriate PPE, including laboratory coat and goggles or a face shield. Consult SDS. Additional PPE to be considered include gloves and an apron. • Limit the amount of corrosive chemicals at the bench to the amount required for testing. • Keep containers tightly closed. • Use strong corrosives in a chemical fume hood. • Always add acid to water (never the reverse), and do so slowly, to avoid a violent reaction and splattering. • Ensure that an eyewash and safety shower are readily accessible in areas where corrosives are used and stored. In the event of skin or eye contact with corrosives, immediately flush the area of contact with cool water for 15 minutes. Remove all affected clothing. Get medical help immediately.

Storage	• Store strong corrosives in well ventilated areas away from flammable and combustible liquids and oxidizing agents. Usually they are stored in one side of the cupboard under the fume hood • Label cabinet clearly as **DANGER - CORROSIVE**. • Do not store strong alkaline solutions in glass containers as glass will be etched and leachate will enter the solution. This will contaminate the solution and may dangerously weaken the container. • Because glacial acetic acid is flammable, store separately from other acids such as hydrochloric acid, nitric acid and sulphuric acid.

The **exploding bomb** pictogram is used for the following classes and categories:

- Self-reactive substances and mixtures (Types A and B*)
- Organic peroxides (Types A and B*)

Dangerously reactive chemicals are materials that react rapidly with themselves or other materials to release relatively large amounts of energy. In some situations, the reaction may be violent enough to produce a detonation.

General precautions for use of dangerously reactive materials in the lab

1. Indicate the date of purchase and date of opening on each container of peroxide forming chemicals.
2. Store reactive chemicals in a cool, well ventilated, flameproof space away from flammables and combustibles, oxidizes and corrosives.

A number of subcategories of this chemical class together with examples and precautions for handling are listed below:

	Subcategory	**Hazard**	**Examples**	**Precautions**
1	Pyrophorics	Ignite spontaneously upon contact with air.	Metal alkyls, phosphorus, fine powders of metals such as magnesium, aluminum and zinc.	Use or store in inert environments.
2	Oxidizers	React violently with organic materials or strong reducing agents.	Perchloric acid Chromic acid Fuming nitric acid	Use minimum amounts for procedures Store away from organic materials, flammable materials and reducers.
3	Peroxidizables	React with oxygen to form peroxides which can explode with impact, heat or friction.	Diethyl ether Tetrahydrofuran Isopropyl ether	Date all upon receipt and upon opening Dispose of within 6 months of opening or 12 months of purchase Never open a container with obvious crystal formation around the lid.
4	Water reactive	React with water to produce a flammable or toxic gas or other hazardous products.	Alkali metals such as lithium, sodium and potassium Acid anhydrides such as acetic anhydride	Avoid contact and handle away from water sources Use dry sand to smother fires Provide ventilation to disperse flammable gases

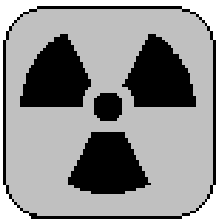
Do not store together:

Reactive materials such as those listed above	**AND**	Flammables, combustibles, oxidizers and corrosives

The **health hazard** pictogram is used for the following classes and categories:

- Respiratory or skin sensitization - Respiratory sensitizer (Category 1, 1A and 1B)
- Germ cell mutagenicity (Category 1, 1A, 1B and 2)
- Carcinogenicity (Category 1, 1A, 1B, and 2)
- Reproductive toxicity (Category 1, 1A, 1B and 2)
- Specific Target Organ Toxicity - Single exposure (Category 1 and 2)
- Specific Target Organ Toxicity - Repeated exposure (Category 1 and 2)
- Aspiration hazard (Category 1)

Radioactive Chemicals



Follow the procedures outlined in the Radiation Safety Manual.

Reference

http://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/pictograms.html

Labeling Chemicals:

Policy:
All chemicals in the clinical laboratories must be labeled in compliance with WHMIS regulations with a supplier, workplace or laboratory label.

Purpose:
Proper chemical labeling provides the employee with the information required to recognize hazards in the workplace and to protect themselves and others from these hazards.

Responsibility:
Supplier, Management and Employees

Key Elements:
- Supplier labels
- Workplace Labels
- Laboratory labels

Related Documents:

GENERAL CHEMICAL SAFETY	MI\LS\11
HANDLING CHEMICALS	MI\LS\12

Procedure:

SUPPLIER LABELS

Supplier label	Information required
• Identified by its distinctive WHMIS (hatched) border. • All products (chemicals) that are controlled under the WHMIS Regulations must have a supplier's label affixed to the container.	I. Product identifier II. Hazard symbol(s) III. Risk phrase(s) IV. First aid measures V. Supplier identifier VI. Reference to a SDS VII. Precautionary measures

WORKPLACE LABELS

Workplace label	Information required
• Label that is produced by the employer and applied to containers at the workplace. • Used when chemicals are transferred from their original container (supplier label attached) into a different (usually smaller) container.	I. Product identifier II. Safe handling procedures/Hazard warning III. Reference to a SDS

LABORATORY LABELS – May be used by Research Laboratories ONLY

These labels are meant for controlled products used in research laboratories where access is controlled. Only research labs in MSH are permitted to use laboratory labels.

Laboratory label	Information required
A controlled product that: • Originates from a laboratory supply house, • **Is intended by the employer solely for use in a lab, and** • Is packaged in a container holding **less than 10 kg**	I. Product identifier II. Reference to a SDS III. Risk phrase(s) IV. Precautionary measures V. First aid measures
A controlled product that is transferred from the original container into a smaller container and: • Originates from a laboratory supply house • Is used only in the laboratory • The SDS for the product is **readily available** • **All workers** (who may have contact with the product) **have been trained** to identify the product and obtain the information required on a SDS	I. Product identifier

Chemical Inventory Procedure

Policy:
A current inventory of chemicals will be maintained in Microbiology in the Material Safety Data Sheet Binder (SDS). An Inventory List of all Controlled/Hazardous/Designated materials will be submitted to the Occupational Health & Safety (annually, by February 1st). Any revisions will be submitted as necessary.

Purpose:
In the event of a fire, or other emergency, Occupational Health & Safety can provide emergency personnel with a hospital wide Inventory List of all Controlled/Hazardous/Designated materials.

Responsibility:
All laboratory personnel must ensure the chemical inventory is kept up to date. The Department Head/Manager will ensure that the inventory is current (annually, by February 1st).

Key Elements:
- Receiving New Chemicals
- Opening New Chemicals
- Emptying Chemicals
- Relocating Chemicals
- Disposing Chemicals to Hazardous Waste
- Verifying Chemical Inventory

Related Documents:

General Chemical Safety	MI\LS\11
Handling Chemicals	MI\LS\12
Labeling Chemicals	MI\LS\13
Disposal of Chemical Waste	MI\LS\16
W\OH&S\Safety\Hazardous Materials Inventory\600 University\14 Level\Microbiology	
Chemical Inventory List	

Procedure:

Receiving New Chemicals

1. Record date received on bottle as well as supervisor in charge of project. Use labels located on the Chemical Inventory List clipboard.
2. Determine appropriate storage location using SDS and WHIMIS labels.
3. Add new chemicals to the Chemical Inventory List that is in the SDS binder.
4. Place chemical in appropriate storage location based on classification.
5. File SDS in the binder. If no SDS was received with the new chemical, check the SDS binder to see if current SDS is already filed. If not available, download and print the SDS using MySDS log in procedure on the MSH main page.

Opening New Chemicals

1. Record the date a chemical is opened on the container. Also record the expiry date on the container if appropriate.

Emptying Chemicals

1. When a chemical is depleted, record the date and initial the Chemical Inventory List posted in SDS binder.
2. Dispose of empty containers appropriately.

Relocating Chemicals

When a chemical is moved, record the new location, the date and initial the Chemical Inventory List posted in the SDS binder.

Disposing of Chemicals to Hazardous Waste

1. When a chemical is removed from usage and is being held for hazardous waste removal/pickup, record the date and initial the Chemical Inventory List posted in the SDS binder.
2. Place Chemical in Designated area in Wash-Up Room 1472 to await disposal.

Verifying Chemical Inventory

1. The Designated person will update the computerized inventory list using the Chemical Inventory List posted in MySDS procedure.
2. Print out a new list.
3. Physically verify that all chemicals on the list are present.
4. Visually inspect chemicals for signs of deterioration and past expiry dates.
5. Remove all expired or unfit chemicals
6. Correct any errors on computerized inventory
7. Print and post new list

Bulk Dispensing of Flammable Liquids - 45 Gallon Drum

Policy:
No person shall dispense, collect or dispose of flammable liquids into or from drums unless they have received specific training on the handling of flammable and combustible liquids and WHMIS. Training shall be conducted annually. All employees required to handle, dispense or dispose of flammable solvents in bulk shall attend training sessions annually and be required to demonstrate their knowledge.

Access to The Hospital's flammable storage room shall be restricted to workers who have received specific training related to the bulk dispensing and disposal of flammable liquids and where such duties are defined within their current job description.

Purpose:
This policy ensures safe handling and dispensing of flammable and combustible liquids.

Responsibility:
Management and personnel

Key Elements:
- Definitions
- Preliminary Dispensing Procedures
- Drum Faucet and Vent Installation
- Drum Handling
- Drum Dispensing

Related Documents:

GENERAL CHEMICAL SAFETY	MI\LS\11
HANDLING CHEMICALS	MI\LS\12

Procedure:

DEFINITIONS

Bonding	Provision of metal to metal contact - usually by wire - between two containers to prevent generation of static electrical sparks
Bung	Threaded hole in top of drum
Spill Tray	A wide mouthed receptacle equipped with a perforated metal flame arrester across the opening to catch drips or spills from faucets or valves on flammable drums
Drum cradle	A steel frame on wheels for storing and moving drums in the horizontal position
Drum chime	Rim of steel drum
Faucet extension	A flexible metal hose with flame arrester screen which screws into the outlet of a safety faucet
FM	Factory Mutual Research (FM). Independent testing laboratory
Grounding	Provision of metal to "ground" contact - usually by wire - between two containers to prevent generation of static electrical sparks
Non-sparking tools	Tools made from beryllium-copper or aluminum-bronze greatly reduce the possibility of igniting dusts, gases, or flammable vapors. Although these tools may emit some sparks when striking metal, the sparks have a low heat content and are not likely to ignite most flammable liquids
PPE	Personal Protective Equipment
Safety can	Portable device for transferring or storing up to 5 gallons of a flammable liquid. A safety can must: 1. Be leak tight 2. Automatically vent vapor at approximately 5 psig internal pressure to prevent rupture 3. Prevent flame from reaching the flammable liquid contents through the spout Automatically close after filling or pouring
Safety faucet	Faucet for drawing flammable liquids from drums. Must be self-closing with replaceable, drip-proof seals and a built-in flame arrester
Vent cap	Valve designed to equalize drum and atmospheric pressure

Preliminary Dispensing Procedures

1. Inspect room. Check for:
   - Unauthorized access
   - Noticeable odors
   - Proper illumination
   - Evidence of spills
   - Physical damage to facility
   - Tripping hazards
   - Floor drain area is clear of obstructions

2. Inspect all required personal protective equipment:
   - Eye goggles (splash type) and/or Face shield
   - Nitrile gloves
   - Apron
   - Foot protection (if moving drums)
3. Organize work
   - Ensure all safety cans are labeled with the name of the product to be dispensed
   - Where possible, use only metal safety cans
   - Ensure spill tray is present
   - Know the location of absorbent spill materials
   - Ensure a clear route of escape is maintained at all times

Drum Faucet and Vent Installation

WARNING

- Use only non-sparking tools to install, adjust, or remove any valves, bungs or caps on flammable liquid drums.
- Only FM approved faucets and vents caps may be used.
- Drum faucets and vents must be installed while the drum is in the vertical position.
- Do not tilt drum until both faucet and vent cap and secured in placed

Steps

1. Eye goggles must be worn
2. Drum must be in vertical position. Fig. 1
3. Attach one end of grounding wire to edge of drum. Other end should be securely attached to room ground bar.
4. Remove steel bung caps. Store in safe place - Do not discard.
5. Apply Teflon tape onto threads of faucet and vent cap.
6. Using non-sparking tools, screw faucet into bung cap hole tightly. When drum is placed horizontal in cradle, faucet must face downward (toward immediate edge of drum). (Fig 2 & 3)
7. Using non-sparking tools, screw vent cap into bung hole. When drum is placed horizontal in cradle, arrow on vent cap must be pointing up (toward immediate edge of drum). (Fig 2 & 3)
8. Remove grounding wire.

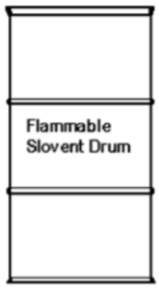


Fig. 1

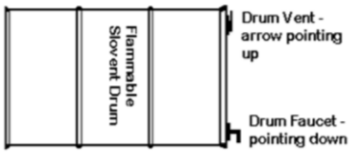


Fig. 2

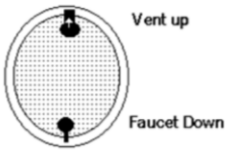


Fig. 3

Drum Handling

1. Foot protection must be worn.
2. Ensure faucets, vent caps, or bung caps are secured in place on the drum.
3. Position drum cradle next to drum.
4. Engage the hook on the handle of drum cradle onto the drum chime.
5. Pull drum cradle handle down, rotating cradle on curved bottom until cradle wheels are flat on floor.
6. Inspect faucet and vent for leaks. If a leak is detected, return drum to vertical position, attach ground lead and tighten vent or faucet. If necessary, unscrew faucet or vent completed, re-apply Teflon tape to device, then re-install. Repeat step 5 after deices are securely attached. If no leaks are detected, proceed to step 7. If leak is still present, repeat step 6.
7. Wheel drum into desired position.
8. Clamp ground lead to drum chime.

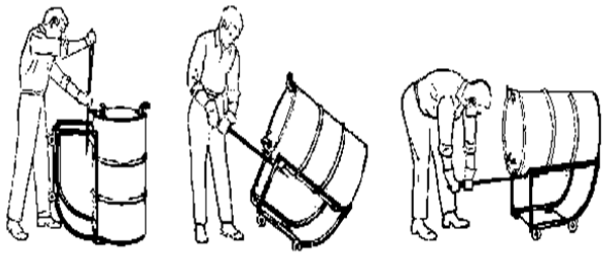


Fig. 4

Drum Dispensing

WARNING

- Use only non-sparking tools to install, adjust, or remove any valves, bungs or caps on flammable liquid drums.
- Always ground and bond.

1. **Drum Pressure relief**

- Ensure drums being dispensed from have a drum vent correctly installed (drum vent should be screwed securely into bung with valve pointing up when drum is horizontal in drum cradle. (see Fig. 2 & 3)

2. **Static Discharge Prevention**

- Ensure drums are properly grounded (see Fig 5). Grounding wire must be securely attached to drum at one end and the other attached to the wall mounted metal bus strip. Verify screw clamps are tight before proceeding. Determine whether a faucet extension is attached to drum faucet.

If a drum faucet extension is in place, follow steps b, c, & d of 20 L Drum Handling Procedure

- Ensure bonding wire is securely attached to drum at one end. Attach free end to the safety can being dispensed into.
- Place safety can on spill tray on floor.
- Open safety can lid. Guide drum faucet extension into throat of safety can. Release safety can lid trigger and allow lid to close on faucet extension.

If a funnel is to be used, follow steps e, f, & g of 20 L Drum Handling Procedure

- Ensure bonding wire is securely attached to drum at one end. Attach free end to the Funnel. Only metal funnels shall be used.
- Place safety can on spill tray on floor.
- Open safety can lid. Guide funnel end into throat of safety can. Release safety can lid trigger and allow lid to close on funnel.

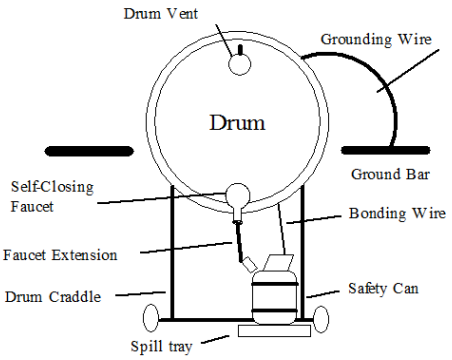


Fig. 5

3. **Dispensing**

- Ensure spill tray is under safety can
- Position body and head at arm's length from the faucet. Hold self-closing faucet on drum open to fill safety can.
- Fill safety can up to fill level mark or up to the seam that joins the top of the can to the body of the can. Release valve and remove faucet extension or funnel. Remove bonding wire from safety can and place can on appropriate transportation device.

4. **Recording (hospital sites)**

   Fill out dispensing log out sheet with the following information:
   - Your name
   - Name of your department or department in which dispensed material will be used
   - Time and date of dispensing
   - Amount dispensed in liters

5. **Equipment list**

   - Safety Cans: Available from Lab Safety Supply, 1 gal. to 5 gal. Sizes
   - Spill Tray: Available from Lab Safety Supply, 9C-7606
   - Bonding and Grounding wires: Available from Lab Safety Supply, various lengths
   - Drum Vent: Justrite, Available from Seton (#08300) brass
   - Drum Faucet: Available from Seton, Justrite, (#08910) brass, self-closing, adjustable
   - Drum Faucet Extension 8: Available from, Justrite, (#08930) brass, flexible
   - Non-Sparking Tools: Available from Seton

Bulk Dispensing of Flammable Liquids - 20 L Drum

Policy:
No person shall dispense, collect or dispose of flammable liquids into or from drums unless they have received specific training on the handling of flammable and combustible liquids and WHMIS. Training shall be conducted annually. All employees required to handle, dispense or dispose of flammable solvents in bulk shall attend training sessions annually and be required to demonstrate their knowledge.

Access to The Hospital's flammable storage room shall be restricted to workers who have received specific training related to the bulk dispensing and disposal of flammable liquids and where such duties are defined within their current job description.

Purpose:
This policy ensures safe handling and dispensing of flammable and combustible liquids.

Responsibility:
Management and employee

Key Elements:
- Definitions
- Preliminary Dispensing Procedures
- Drum Handling
- Drum Dispensing

Related Documents:

General Chemical Safety	MI\LS\11
Handling Chemicals	MI\LS\12
Chemical Inventory 2014	

Procedure:

DEFINITIONS

Bonding	Provision of metal to metal contact - usually by wire - between two containers to prevent generation of static electrical sparks.
Spill Tray	A wide mouthed receptacle equipped with a perforated metal flame arrester across the opening to catch drips or spills from faucets or valves on flammable drums.
Grounding	Provision of metal to "ground" contact - usually by wire - between two containers to prevent generation of static electrical sparks.
Non-Sparking Tools	Tools made from beryllium-copper or aluminum-bronze greatly reduce the possibility of igniting dusts, gases, or flammable vapors. Although these tools may emit some sparks when striking metal, the sparks have a low heat content and are not likely to ignite most flammable liquids.
Pail Rack	Device used to hold and dispense 20 - 25 L cans of flammable liquids.
PPE	Personal Protective Equipment
Safety Can	Portable device for transferring or storing up to 5 gallons of a flammable liquid. A safety can must: • Be leak tight; • Automatically vent vapor at approximately 5 psig internal pressure to prevent rupture; • Prevent flame from reaching the flammable liquid contents through the spout; Automatically close after filling or pouring.

1. Inspect room. Check for:
    - Unauthorized access
    - Noticeable odors
    - Proper illumination
    - Evidence of spills
    - Physical damage to facility
    - Tripping hazards
    - Floor drain area is clear of obstructions

2. Inspect all required personal protective equipment:
   - Eye goggles (splash type) and/or Face shield
   - Nitrile gloves
   - Apron
   - Foot protection (if moving drums)
3. Organize work
   - Ensure all safety cans are labeled with the name of the product to be dispensed
   - Where possible, use only metal safety cans
   - Ensure spill tray is present
   - Know the location of absorbent spill materials
   - Ensure a clear route of escape is maintained at all times

20 L Drum Handling

1. **Static Discharge Prevention**
   - Ensure cans are properly grounded (see Fig. 1). Grounding wire must be securely attached to 20 L can one end and the other attached to the wall mounted metal bus strip. Verify screw clamps are tight before proceeding.
   - Attach bonding wire from 20 L can to safety can. (see Fig. 1)

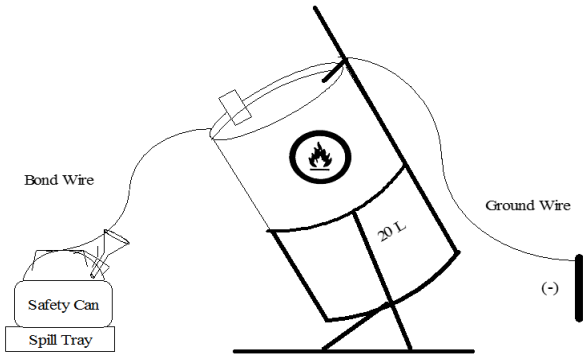


Fig. 1

2. **Dispensing**

WARNING!

Before removing screw cap from 20 L can, ensure safety can is in correct position. Tip can into pouring position to locate correct placement of safety can.

a. Ensure spill tray is under safety can. Elevate spill tray and safety can if necessary.
b. Insert funnel into throat of safety can.
c. Remove screw lid from 20 L can.
d. Using arm of pail rack, slowly rotate can down to pouring position. (See Fig. 2).
e. Fill safety can up to fill level mark or up to the seam that joins the top of the can to the body of the can.
f. Replace 20 L can into upright position and replace screw cap.
g. Remove bonding wire from safety can and place can on appropriate transportation device.

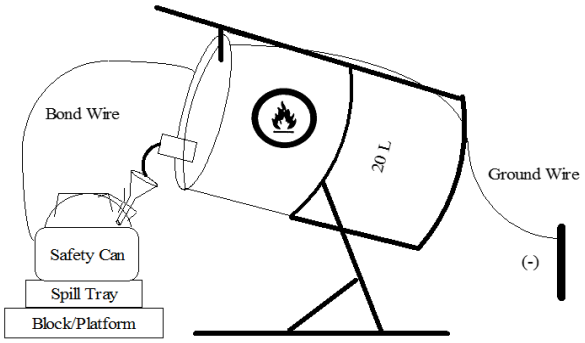


Figure 2

3. **Recording**
Fill out dispensing log out sheet with the following information:
- Your name
- Name of your department or department for which dispensed material will be used
- Time and date of dispensing
- Amount dispensed in liters

4. **Equipment list**
   - Pail Rack: Available from Lab Safety Supply, 9C-10347
   - Safety Cans: Available from Lab Safety Supply, 1 gal. To 5 gal. Sizes
   - Spill Tray: Available from Lab Safety Supply, 9C-7606
   - Bonding and Grounding wires: Available from Lab Safety Supply, various lengths

Disposal of Chemical Waste

Policy:
At MSH the disposal of chemical waste shall be done in a manner that is safe, environmentally sensitive and in compliance with MSH policies, government regulations and legislation. Chemical waste includes flammable liquids, acids and bases.

Purpose:
The objectives of chemical waste disposal are minimizing hazards to those handling, transporting and disposing of waste and minimizing expense.

Responsibility:
Management and employees

Key Elements:
- General procedures for the preparation of flammable liquids, acids and bases for disposal. These apply to both sites
- Procedure for disposal of chemical waste at MSH
- Bunker location
- Chemical Waste disposal Form SOP 17

General Procedures:

Laboratory
- Do not dispose of chemical waste down the drain or with the regular garbage.
- Do not allow chemical waste to accumulate in the lab. Every effort should be made to have chemical waste disposal pick-up weekly.
- Clearly identify the contents of any container of waste.
- If in doubt as to correct disposal procedures, contact the Laboratory Supervisor for advice.

Flammable Liquids
- Place waste solvent in approved waste solvent disposal cans with the flame arresters in good condition.
- Do not over fill these cans.
- Do not remove the flame arresters.

Acids and Alkali
- Dilute small volumes of acids and alkalis before disposal down the drain.
- Collect large volumes of acids or alkalis in labeled plastic bottles.

Handling Chemical Waste

Only designated staff who have been specifically trained to handle chemical waste shall do so. Access to the bunker always requires two persons. While one person works in the bunker, the other person observes at the doorway and holds the bunker door keys.

- Use 22 L plastic carboys to collect chemical waste.
- Label each carboy with its contents, for example, mixed alcohol waste. Chemicals with similar characteristics may be mixed together.
- Wear personal protective equipment. (See SDS).
- Use bonding and grounding procedures when transferring, handling flammable waste.
- Large volumes of acids or alkalis that have been collected in labeled plastic bottles are transported to the corrosive room of the bunker for disposal

Procedure for Disposal of Chemical Waste at MSH

- List the chemicals to be disposed of on Chemical Waste Disposal Form (from SOP 17 Chemical Waste Disposal, Pathology & Laboratory Medicine SOP) below, including: Name of chemical, Amount of chemical i.e. litres/box, Name sub department and room number if requested.
- All chemicals must be properly labeled and sealed. Refer to image below for appropriate label if indicated.
- E-mail the completed form to the contact person listed in microbiology internal manual Client Communication Procedure
- A master list will be generated from all the lists received from throughout MSH
- The master list is submitted to the purchasing department, who in turn contacts the chemical removal company with the PO# and request for pick up.
- The company will request a list of chemicals and volumes and will schedule the pickup.
- Collection of the chemicals from throughout MSH will take place the day before the scheduled pickup date. The waste will be placed in the chemical bunker to await pickup.
- Receiving area will provide access to the chemical bunker
- **Do not drop off any chemicals to room 619 –** Store chemical waste in designated area of Rm 1472 for weekly pick-up
- Chemical waste is removed by a waste hauler registered by the Ontario Ministry of the Environment to handle and transport chemical waste.
- The waste hauler utilized by MSH is **PHOTECH Environmental Solutions Inc. (CHIPPAWA) 877-938-9465**
- A copy of the hazardous waste manifest provided by the registered waste hauler must be mailed to the Ontario Ministry of the Environment as per the instructions listed on the back of the manifest.

Bunker Location

MSH	Next to shipping and receiving	South west side of MSH

Chemical Waste Disposal Form

Chemical Name	Quantity	Sub Department	Room #

Handling Liquid Nitrogen

Purpose

To provide precautions for the safe handling of liquid nitrogen.

Procedure

1. Liquid nitrogen is extremely cold, with a temperature of less than - 196^{o}C. Never allow unprotected skin to touch liquid nitrogen. It may cause severe burn-like damage to skin.
2. Personal protective equipment including lab coat, shoes with full coverage, liquid resistant closed toe and heel, cryogenic gloves and face shield. Handle freezer boxes with cryogenic gloves and manipulate cryovials with forceps.
3. Do not store liquid nitrogen in any container with a tight fitting lid. A tightly sealed container containing liquid nitrogen will build up pressure and may EXPLODE after a short period of time.
4. Only containers or fittings (pipes, tongs etc.) that have been designed specifically for use with cryogenic liquids may be used as non-specialized equipment may crack or fail. In particular, food type vacuum flasks must not be used as they can implode resulting in flying glass fragments.
5. Large volumes of nitrogen gas are evolved from small volumes of liquid nitrogen (1 litre of liquid giving 0.7 m^3 of vapour) and this can easily replace normal air in poorly ventilated areas leading to the danger of asphyxiation. Always handle liquid nitrogen in a well-ventilated space.
6. Containers of liquid nitrogen must be handled and stored in an upright position. Do not drop or tip containers, or roll them on their sides. Do not overfill containers. Do not seal containers tightly.

Related Documents

Document Title	Document Number
Liquid nitrogen SDS sheet	

PHYSICAL HAZARDS:

Ergonomics – Lifting

Policy:
The number one cause of back injury is lifting. Proper body mechanics and lifting principles should be employed whenever possible to reduce the likelihood of injury.

Purpose:
The policy provides direction for all staff to do their part to prevent back injuries.

Responsibility:
Management and employees

Related Documents:

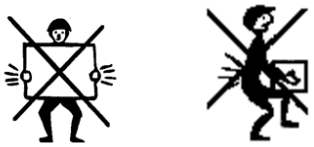
COMPUTER WORKSTATION ERGONOMIC PRINCIPLES	MI\LS\18
Occupational Health, Wellness, and Safety: Safe Materials Handling Policy& Procedure	

Procedure:
Principles of Manual Material Handling:

- Size up or test load to see if you can handle it.
- Avoid heavy loads - split larger loads into smaller ones, use mechanical aids or get additional help.
- Determine where you are lifting the object to, and where you will place it.
- Make sure the route or path that you will take is clear.
- Tighten your abdominal muscles to help brace your back as you lift.

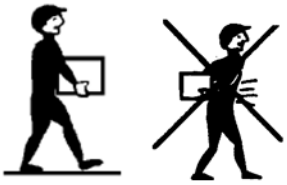
- Keep your back straight. Bend at your knees as far as you can and still be able to return to an upright position.
- Initiate the lift with your leg and buttock muscles.
- Keep the object close to your body
- Keep your head higher than your shoulders.

- Grip with your whole hand - not just your fingers



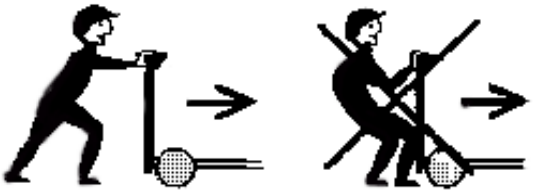
- Lift with controlled speed.
- Come to an upright position using your leg and buttock muscles.
- Keep object close to your body

- Never twist at the waist when lifting or carrying. Pivot using your feet.

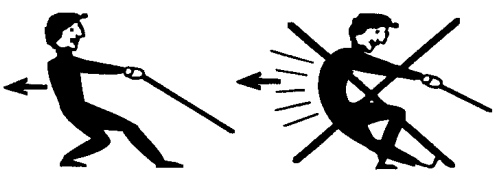


- Do not over extend when reaching. Get a ladder or tool to handle high objects.

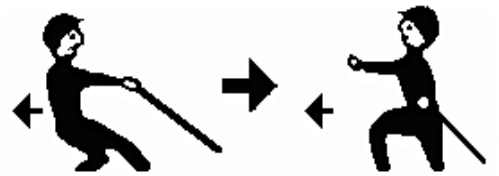
- Push instead of pull.



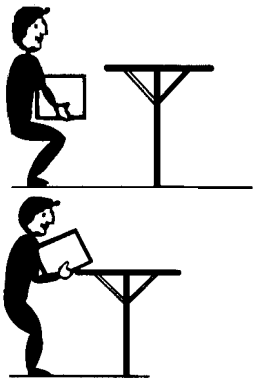
- Keep your back straight at all times



- When pulling, avoiding extending arm behind shoulder
- Face the direction of travel when possible



- Try to store objects between shoulder and knuckle height whenever possible
- When lifting to shoulder height:
  Lift the object to your waist. Brace object to allow you to bend your knees and place both hands under item. Straighten your legs to raise the item and slide it onto the shelf.



- Place objects on shelf by extending arm while keeping your back straight.

Ergonomics - Computer Work Station

Policy:
Through prevention and engineering controls work stations should be designed to reduce the risk of ergonomic distress disorders and accidents.

Purpose:
Proper ergonomics will prevent work related musculoskeletal disorders

Responsibility:
Management and employees

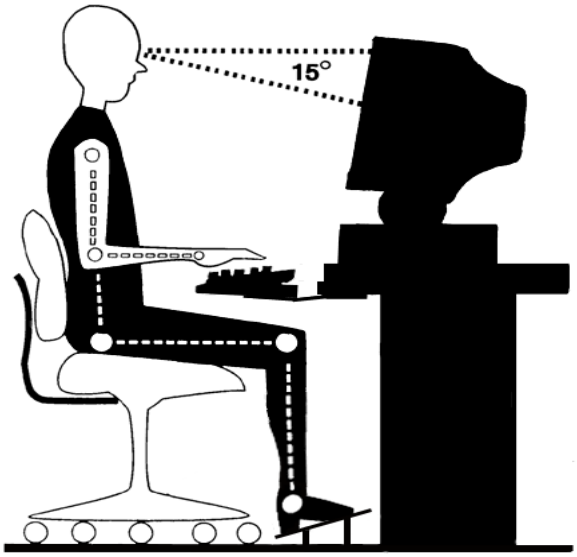
Key Elements:
- Workstation ergonomic principals
- Workstation layout/body position
- Chair adjustment
- Work surface/keyboard adjustment
- Monitor adjustment
- Workstation accessory adjustment

Related Documents:

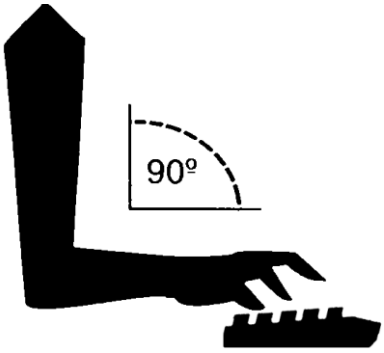
ERGONOMICS - LIFTING MI\LS\17

Procedure:

COMPUTER WORKSTATION ERGONOMIC PRINCIPLES



COMPUTER WORKSTATION LAYOUT/BODY POSITION



Right - Flat wrist

Wrong - Bent wrist

Wrong - Bent wrist

CHAIR ADJUSTMENT

- Is your chair height adjustable?
- Is the backrest height adjustable?
- Does your chair support your lower back?
- Is there room between the front edge of the chair seat and the back of your knees?
- Can you easily reach your work without interference from the arms of your chair?
- When using the keyboard or mouse, are you able to keep your arms in a comfortable position with elbows in at your sides?
- Do your feet rest flat on the floor or footrest?
- Are your knees bent at approximately 90-degree angles?

Sitting with your feet flat on the floor (or supported by a footrest) will help support your spine. Having your thighs parallel to the seat with knees bent at approximately a 90-degree angle, and having adequate clearance behind your knees, will keep the chair from interfering with the circulation to your legs.

If the back of your chair is adjustable, raise or lower it so that the contour of the chair provides maximum lumbar (lower back) support. If possible, adjust the tilt of the backrest to support your body in an upright position. A slight angle, either forward or back is also acceptable. Adjust the chair according to what is most comfortable for you.

If your chair has arms, they should allow you to get close to your work without getting in the way. If you are typing, they should be at a height where they barely contact your elbows when your arms are resting comfortably at your side. Chair arms should not force you to elevate your shoulders or wing your arms to the side. If the arms of the chair restrict you from adopting a comfortable position, remove them.

WORK SURFACE/KEYBOARD ADJUSTMENT

- With your chair adjusted properly, is your keyboard at approximately elbow level?
- Are your arms in at your sides rather than stretched out in front of you?
- Are your shoulders relaxed and not elevated when you work at your work surface?
- When using the computer, is there approximately a 90-degree angle between your forearms and upper arms?
- When using the computer, are your wrists in line with your forearms and not bent upwards, downwards, or to one side or another?
- Is there at least 2 inches of clearance between the bottom of your work surface and the top of your thighs?

Ideally, with your arms resting comfortably at your sides, the bottom of your elbow should be at the same height as the surface the keyboard is on. To easily check this, turn sideways to your keyboard. If your work surface is too high and cannot be adjusted, raise the chair to bring your elbows to the home row level of the keyboard and support your feet with a footrest if necessary. Do not raise/use the folding legs of the keyboard as this will promote a bent wrist position. If your work surface is adjustable, start by adjusting your chair as described in the first section. Once the chair is adjusted, then adjust the work surface and finally the monitor.

MONITOR ADJUSTMENT

- Is your monitor aligned in front of your keyboard rather than off to the side?
- Is the viewing distance to your computer monitor at least 18 inches?
- Is the top of the computer screen at or just below eye level?
- Is your computer monitor protected from excess glare?
- If you wear bifocals or trifocals, are you able to look at the monitor without tilting your head?

Position your monitor so it is aligned in front or nearly in front of your keyboard to allow your neck to remain straight when viewing the monitor. Raise or lower your computer monitor so that the top of the screen is at or just below eye level. You may need to unstack the monitor from the CPU to lower the monitor to the correct height or place a book or ream of paper between the monitor and CPU to raise it to the correct height. People who wear bifocals or trifocals often end up tilting their heads back to read through the lower portion of their glasses. Lowering the computer monitor by placing it directly on the desk surface typically helps. Bifocal users may want to discuss with their eye doctor the possibility of obtaining glasses specifically designed for computer use.

WORKSTATION ACCESSORY ADJUSTMENTS

- Are your input devices (mouse, trackball, digitizing tablet) at the same level and next to your keyboard?
- Are your primary work materials located in front of you?
- Are your most frequently accessed items (phone, manuals, etc.) easy to reach?
- Do you have a document or copyholder to hold reference material?
- Are you able to keep your arms from resting on any sharp, square edges of your work surface?
- If a large percentage of your time involves using a phone, do you use a phone headset?

Computer input devices such as a mouse or trackball should be located at the same level and next to the keyboard to avoid reaching. This can sometimes be a problem if using a keyboard tray, which is not wide enough to accommodate the keyboard and mouse. Modification or replacement of the keyboard tray may be necessary.

As you change tasks, remember to move primary materials in front of you. If you must frequently look at reference materials as you type, you should consider a document holder to allow your head to remain in a more upright position. Position the document holder at the same height and distance as your monitor. If doing a lot of reading or writing on the desk, inclining the material by placing it on a 3-ring binder notebook helps reduce the need to bend the neck forward.

The wrists should remain straight when typing. Wrist rests are sometimes used to rest wrists on during non-keying breaks. Do not rest wrists on a wrist rest while keying. The height of the wrist rest should not exceed the height of the space bar on the keyboard. Avoid wrist rests, which are wider than 3 inches since these results in the need to reach further for the keyboard.

When talking on the phone, it is not good for the neck to cradle the phone between your ear and shoulder. For jobs with a high volume of phone calls, headsets are recommended since they allow you to maintain the head in an upright position when talking on the phone.

WORK HABITS

- When using the computer, do you have a light touch on the keys?
- When using the keyboard or mouse, do your fingers, forearms and shoulders remain relaxed?
- When using the mouse, do you move your arm from your shoulder instead of reaching excessively with your wrist or fingers?
- Do you take short and frequent breaks throughout the day to reduce fatigue?
- Do you frequently change body positions while working?
- Do you provide your eyes with vision breaks every hour?
- Do you work fairly regular hours without a lot of overtime?
- Are you able to meet deadlines without excessive stress?
- Are you comfortable and free of pain while working?

When typing, it is important to use a light touch on the computer keys. Sometimes, slowing your typing speed just 5-10% helps you use a lighter touch and reduces tension in the fingers, forearms, and shoulders. During mouse use, hold the mouse lightly. Movement of the mouse should occur from the shoulder instead of only at the wrist. When not actively using the mouse, ease your grip on the mouse to let your hand relax.

Periodic breaks help alleviate fatigue and strain to your eyes and upper body. Taking a break does not mean that you have to stop working. Rather, it allows you to integrate other activities such as making phone calls, making copies or talking with a co-worker. Changing positions periodically helps maintain circulation and prevents putting pressure on any one area of the body for an extended period of time.

Working overtime, or working under stress to meet deadlines can add to tension or discomfort. In addition to taking breaks and frequently changing positions, you should pay attention to how your body responds to discomfort. Discomfort that goes away overnight can be a sign of fatigue. Discomfort that is continuous may build to a more serious problem. If you experience lasting discomfort, please discuss this with your supervisor or contact Occupational Health Clinic. Aches and pains which are addressed early, typically resolve quickly. Ignoring pain prolongs and may worsen the problem.

Finally, develop good habits outside of work. While you may not be able to adjust all of the work surfaces at home, you may be able to make minor adjustments that are significant to your body. Good posture and good work habits are just as important outside of work, whether you are using your home computer, doing chores around the house or involved in special projects or hobbies.

Occupational Health and Safety	Location	Phone number
MSH	60 Murray St. South Side entrance	17-1572

In case of emergency dial 5555. Please refer to page 160 in this manual for further details.

Equipment Safety

Policy:
It is essential to have adequate knowledge of the various types of equipment used including operation, maintenance and initial trouble shooting. New, modified, or repaired equipment shall be checked for safe operation before being placed into service.

Purpose:
A program of preventative maintenance including function and safety will ensure proper equipment safety.

Responsibility:
Manufacturer, management and employee

Key Elements:

- General principals of equipment safety
- Specific equipment safety

Related Documents:

ELECTRICAL SAFETY	MI\LS\20
LABORATORY DISINFECTANTS	MI\LS\34

Procedure:

General Principles of Equipment Safety

1. Reasonable efforts should be made to ensure that all equipment has appropriate safety features and that such features are properly utilized.
2. A program of preventative maintenance including function and safety checks should be developed and monitored as appropriate for all equipment.
3. The choice of location for an item of equipment should consider also its environmental implications (noise, fume / vapor generation etc.).
4. Equipment, which can be left unattended, should be monitored by occasional inspection to determine any significant malfunctions.
5. Consider safety, cleaning and maintenance requirements prior to purchase.
6. Review and follow manufacturers' instructions to ensure proper set-up.
7. Establish and maintain preventive maintenance schedules as per manufacturers' recommendations
8. Keep complete and detailed service records for each piece of equipment.
9. Decontaminate all equipment appropriately prior to servicing.

SPECIFIC EQUIPMENT	
Centrifuges	• Use only centrifuges with sealed centrifuge buckets/compartment /rotors. Use the safety buckets in the correct manner. • Use only centrifuges with interlocks. • Do not operate centrifuges in a biological safety cabinet because the motor may produce strong air currents and turbulence, which may disrupt the laminar air flow. Unload centrifuge buckets in the BSC. • Clean inside of bowl daily and document. • Routinely visually inspect the centrifuge, the container and the O-ring of the containers, grease O-ring as required. • Procedure for handling a broken tube / contamination inside centrifuge
Water baths	• Unplug before filling or emptying. • Clean on a regular basis and document • Check continuity of the ground on a regular basis and document
Mixers, homogenizers, sonicates, lyophylizers	• Take steps to minimize generation of aerosols • Open in biological safety cabinet • Filter vacuum pump exhaust where appropriate

SPECIFIC EQUIPMENT	
Suction equipment	• Use a trap containing 0.1% hypochlorite when using suction equipment.
Pipetting devices	• Take steps to minimize generation of aerosols (expel liquids down the side of the tube, perform in biological safety cabinet) • Never mouth pipette • Clean and disinfect pipettes and pipetting aids when contaminated and on a regular basis. • Shorter pipettes may be helpful for work in a biological safety cabinet. • Use appropriate pipetting aids and use in the correct manner
Microscopes	• Wipe the stage, eyepieces and focus adjustment controls with an appropriate disinfectant routinely and in the event of spills or contamination. • Inspect cords, plugs, etc., regularly. • To change a fluorescent high pressure mercury bulb, e.g., immunofluorescence microscope, wear a face shield and gloves and follow directions carefully.
Automated equipment	• Ensure that waste line discharges meet municipal regulations • Clean spill trays regularly • Disinfect lines on a regular basis as recommended by the manufacturer
Electrophoresis	• Check continuity of the ground on a regular basis and document • Post warning sign regarding voltage.
Equipment with flames	• Ensure tubing connected to gas cylinder and instrument is secure • Inspect hose connections regularly Examples: Atomic absorption spectrophotometers, Bunsen burners
Refrigerators	• Do not store flammable or combustible liquids in a domestic refrigerator. Use only an explosion-proof refrigerator.
Autoclaves	• To be effective the steam must penetrate the wrapping. The length of time required for sterilization of biological material is determined by the quantity of the load, the volume of liquid in the load and the density of the material. • Read the operating manual carefully • Post the operation procedures near the autoclave • After the pressure has been released, open the door only slightly to allow steam to escape before unloading • Wear insulated gloves when unloading the material • Monitor all autoclaves routinely for efficacy and maintain records.

Electrical Safety

Policy:
It is essential to have adequate knowledge of electrical safety as it applies to the various types of equipment used during operation, maintenance and trouble shooting. New, modified, or repaired equipment shall be checked for safe operation before being placed into service.

Purpose:
The policy provides direction for all staff to do their part to ensure a safe and healthy work environment.

Responsibility:
Manufacturer, management and personnel

Key Elements:
- Precautions required when working with electrical equipment.

Related Documents:

EQUIPMENT SAFETY MI\LS\19

Procedure:

Precautions required when working with electrical equipment.

1. Ensure that hands and work surfaces are dry before touching electrical equipment or connecting cords.

2. Use ground fault interrupter (GFI) receptacles where equipment is located around moisture.

3. Use only equipment that is equipped with a three-pronged grounded plug (the ground pin should never be removed).

4. Examine all wiring, plugs, and extension cords for any signs of exposed wires, fraying or deteriorating insulation. Replace if necessary.

5. Check all electrical outlets for current, grounding and polarity at least annually.

6. Ensure there are a sufficient amount of electrical outlets to avoid multi plug adaptor use.

7. In the event of a shock (even if minor) or emission of smoke or a burning smell, immediately tag the equipment "out of order" and remove it for servicing.

8. Ground portable equipment to prevent shock

9. Do not over-ride fuses, circuit breakers or interlock switches.

10. Remove cords from receptacles by grasping and pulling the plug, not the cord.

11. Ensure that extension cords consist of three separate insulated wires and 3-pronged connectors in good condition and that they are of the appropriate amperage for the purpose for which they are being used.

12. Do not use extension cords through walls, doorways, ceilings and floors as they are not substitutes for permanent wiring.

13. Ensure that all cords are kept off walkway floors where they can become tripping hazards or be damaged; protect cords by running them along perimeter walls or enclosing them in protective covers.

14. For all electrical equipment (including radios, kettles, etc.), check to see if they have a CSA-approved identifier or other approved identifier. If so, they may be used. If not, contact Engineering to arrange an inspection.

15. At UHN/MSH :
    - Black electrical outlets are for regular electrical power needs.
    - Red electrical outlets are for emergency power.
      Only critical equipment is connected to these outlets permanently.

Power Failure

Policy:
Staff should be aware of actions to be taken in the event of a power failure.

Purpose:
This policy enables all staff to know what their role will be during a power failure.

Responsibility:
Management and employees

Key Elements:

- Procedure for a power failure
  - Types of power failures
  - How to identify the extend of a power failure
  - Role of microbiology department upon hearing power failure announcement

Related Documents:

Emergency Procedure Manuals Home	MSH Intranet

Procedure: MSH

TYPES OF POWER FAILURES	**Level I Failure** Hydro supply to Hospital has been interrupted, **AND** • Hospital's Emergency Generators have started and are providing **SOME** power to critical systems and equipment. • Black Electrical outlets do not work. • Red Electrical outlets are working. • Some ceiling lights (about 1/3) are on. • All phones are working • Selected elevators in each area are working
	Level II Failure Hydro supply to Hospital has been interrupted **AND** • **NONE** of the Hospital's Emergency Generators have started or they have stopped working, resulting in **NO POWER** available throughout the Hospital. Battery Pack Emergency Lights and Systems Supplied with Back-Up: Battery Systems such as Computer Uninterruptible Power Supplies will work for limited duration.
	Level II Failure continued • Neither Black nor Red Electrical Outlets work. • All ceiling lights are off. • Overhead speaker system has a battery backup, will operate for about 30 minutes • Phones system has a UPS (Battery backup) that will operate for about 30 minutes. • Elevators will NOT work.

HOW TO IDENTIFY THE EXTENT OF A POWER FAILURE	**Level 1 Failure** If **SOME** of the ceiling lights come back on the following conditions will confirm a Level I Failure: • Any equipment or appliance plugged into a **BLACK** outlet **DOES NOT WORK** • Any equipment or appliance plugged into a **RED** outlet **WILL WORK**
	Level II Failure If None of the ceiling lights come back on the following conditions will confirm a Level II Failure: • Equipment or appliances plugged into a **BLACK OR RED** outlet will **NOT WORK** (unless there is a battery back-up/UPS associated with it) • Battery pack type emergency lights come on • NOTE: The best indication that a Hospital Wide Power Failure has occurred is: • All Ceiling Lights go off for more than 3 SECONDS

RECOMMENDED ACTION IF YOU SUSPECT A POWER FAILURE	• Immediately inform Locating by dialing 5133 or switch board by dialing 0, that your area has experienced a Power Failure. • Give your location, Area/Department/Floor **AND** • Describe the extent of the Power Failure (e.g. all or some lights off, all or some equipment off, nothing works, only some lights have come back on. etc.). Locating will determine if this is a **LOCAL** or a **HOSPITAL-WIDE** Power Problem based on the number of calls and their location. • If only a single area reports a problem, Locating may conclude it is a local problem and will dispatch Building Services personnel to your Area/Department/Floor. If multiple reports are received in Locating from different floors (along with certain conditions that are evident in the Communications Room), they will initiate the Power Failure Plan by making the following overhead announcement: ***ATTENTION ALL STAFF! WE ARE CURRENTLY EXPERIENCING ELECTRICAL POWER PROBLEMS. PLEASE IMPLEMENT POWER FAILURE PLAN.*** *THIS ANNOUNCEMENT WILL BE REPEATED 2 TIMES EVERY 10 MINUTES*

ROLE OF MICROBIOLOGY DEPARTMENT UPON HEARING THE ANNOUNCEMENT	During Weekdays (Monday to Friday 0900-1700 hours) on hearing the announcement:
	• All Medical Staff and House-staff are to report to their respective clinical areas.
	• Any procedure that is dependent on electricity should be postponed or discontinued, if possible.
	• Any meetings that are taking place should be adjourned and staff should report to their respective Area/Department/Floor.
	• The person in charge of the department will:
	  ○ Assess the impact of the power problem on patients in consultation with the appropriate medical, nursing and other staff as appropriate
	  ○ Assess the impact of the power problem on staff;
	  ○ If assistance is required, call **Ext. 5075** (Nursing Office, Command Centre.) Be prepared to indicate that you need staff, equipment, supplies, etc.;
	  ○ If no assistance is required, listen to further announcements. After 30-45 minutes, call **Ext. 5075** to report the status of your area. Be prepared to report what staff and equipment may be available to assist elsewhere in the hospital
	
	During evenings, nights, weekends and statutory holidays (i.e. after normal office hours 0900 - 1700), on hearing the announcement, follow the procedure as listed below:
	• The Technologist on-call will contact the following individuals and ask them to report to the Microbiology Lab:
	  ○ Chief of Microbiology.
	  ○ Manager of Microbiology, or delegate.
	• Additional staff will be called by the Chief or Manager, or their delegates. Available staff will report to the Microbiology Lab.

RADIATION SAFETY

Follow the procedures outlined in the Radiation Safety Manual.

SPECIMEN HAZARD CONTROL:

Transportation of Specimens

Policy:
All specimens transferred between laboratory sites of the UHN/MSH Microbiology Department and the client hospitals are transported by LifeLabs Courier Services or other designated courier systems. All specimens are transported in accordance to the policy for Transportation of Dangerous Goods and Material.

Purpose:

This policy ensures the safe transportation of specimens and minimizes potential biohazards to staff handling the specimens.

Responsibility:
Management and employees

Key Elements:

- Internal Transportation
- Site to site Transportation
- Receiving of Transported Specimens

Related Documents:

General Information: Specimen Transport Process not active	**MI\GEN\07**

Procedure:

Internal Transportation

1. All specimens must be placed into leak-proof non-breakable containers and labeled in accordance with W.H.M.I.S and TDG and other applicable guidelines.
2. Assure that specimen containers are securely closed and clean on the outside (if not, wipe with alcohol).
3. Personnel must be trained in the safe handling practices and decontamination of spills in accordance with the Hospital's Spills Policy.
4. Specimens, in their leak proof containers, must be placed into biohazard Ziploc bag.

5. Place requisitions in the outer pouch of the Ziploc bag.
6. Hold specimens in the designated holding area at the nursing station until pickup.

The Pneumatic Tube System can be used to transport specimens between wards in MSH

Procedure for Sending:

1. Select the appropriate foam liner/packaging material for the specimen (i.e. use slotted foam for Vacutainer tubes).
2. Select material to provide immobility to the specimen (cloth towels are not acceptable as padding).
3. Place specimen into the carrier and secure lid tightly. Observe for movement of the specimen in the carrier by flipping it over. If movement is detected, repack the specimen. Place the carrier in the dispatcher unit, select the destination and send.
4. CSF should not use the Pneumatic Tube System to send to the Biochemistry Lab. Call a porter to send it.

Procedure for Receiving:

1. Remove the carrier from the bin.
2. Examine specimens for contamination or breakage before removing from Ziplock bag.
3. If a leak has occurred, the carrier needs to be disinfected with bleach. Padding material should be discarded.
4. If a leak has escaped into the system, notify maintenance personnel so that decontamination procedures can be done.
5. Fill out an incident report for any breakages or leaks.

Procedure:

Site to Site Transportation

1. Specimens in biohazard bags are placed in rigid, leak proof containers. Place vacutainer tubes or universal containers for other body fluids and/or pathological specimens into a foam insert. The foam insert are best practice as they restrict the specimens from contact with each other and will absorb any liquid should breakage occur during transit.
2. Place the foam inserts into leak proof plastic containers with a rubber seal.
3. Place the plastic containers into a Transport with a zipper closure.
4. Ensure proper labelling of transport bag as per TDG.

   Pre-analytical Process - Specimen Receiving QPCMI05000

   https://eportal.mountsinai.ca/MSHPresentations/public/paradigm/D0024691.pdf

   Couriers document all the information in the Specimen courier bag log sheet.

   Specimen Courier Bag Log QPCMI05000a

   https://eportal.mountsinai.ca/MSHPresentations/public/paradigm/D0024668.pdf

Receiving of Transported Specimens

1. At the specimen management receiving area, remove and sort all the specimens and check the box has been emptied. Flip the card to empty sign into the clear plastic holder on top of the bag
2. Appropriate PPE must be worn when handling all specimens.
3. Take temperature of transport bag/box QPCMI04004 for couriers and record it on the temperature log sheet in receiving.
4. Personnel must be trained in the safe handling practices and decontamination of spills in accordance with the Hospital's Spills Policy.
5. 1% hypochlorite based cleaning product or equivalent must be used to wipe contaminated tubes.
6. Visibly contaminated laboratory requisitions must be discarded and requested to be replaced.

Movement of Infectious Materials between the Microbiology Laboratory and its Long Term Freezer Storage Area

Policy
The movement of infectious materials between the microbiology lab and its long term freezer storage area is carried out in accordance with the Canadian Biosafety Standards and Guidelines procedures. Processing of these infectious materials is not permitted within the storage area and must be moved to the laboratory for processing and return to storage.

Purpose
This policy will eliminate or reduce the risk of an accidental release or contamination of the infectious materials and protect laboratory personnel who handle these infectious materials from exposure.

Responsibility
Management and employees

PROCEDURE
Samples of infectious materials are stored in 2.0ml vials at -80 degrees Celsius. Vials are leak-proof, impact resistant and are housed in thermal boxes with fitted lids and 8 x 8 cell inserts (*freezer box*). Freezer boxes and vials are labelled according to W.H.M.I.S guidelines. Whenever it is necessary to move infectious materials between the microbiology laboratory and its long term freezer storage area the following protocol should be followed with strict adherence to Good Laboratory Practices.

SUPPLIES
- Dedicated cart with raised edges and minimum 2 shelves (Labelled as “Freezer Room Only”)
- 4 yellow garbage bags
- 1 clean lab coat
- 1 box of disposable gloves
- 1 pair of insulated gloves
- 1 bottle of hand sanitizer
- Virox
- 1 package paper towel

- 4-6 green towels
- 1 plastic leak proof container with fitted lid (for liquid waste)
- Dry ice in Styrofoam lined box (when needed)
- 1 insulated courier tote bag with zipper closure and rigid plastic bin
- Frozen ice packs as needed
- All supplies with the exception of ice packs and dry ice are stored in a plastic bin on the cart in the microbiology freezer room. Supplies must be restocked after use. Cart must be constructed of non-absorbent materials with a solid cleanable surface that is resistant to repeated decontamination. A solid surface cart will also provide additional containment in the event of a spill or leak.

1. Verify that all required supplies are available on the dedicated cart before work begins. Ensure cart is clean and functional.

2. Wipe down with Virox if needed before cart is moved outside the laboratory.

3. Collect keys for freezers and freezer room entrance and proceed to the freezer storage area if a frozen freezer vial(s) is to be taken from storage.

4. For small number of vials use an empty freezer box instead of plastic biohazard bag. This will restrict contact of vials with each other and reduce the likelihood of contamination during movement.

5. When moving full or multiple freezer boxes ensure lids are securely fitted and boxes are loaded in a manner that will prevent tipping during movement.

6. Add ice packs on and around boxes to maintain temperature. The use of the thermal or insulated gloves is recommended to protect against low temperature exposure.

7. When moving a large number of freezer boxes and a delay in storage is anticipated, collect dry ice in Styrofoam lined box from the 9th floor hallway outside room 975A and use instead of ice packs to prevent thawing of the infectious materials.

8. Follow the above procedure when infectious materials are moved from the microbiology laboratory to the freezers for long term storage.

9. Load freezer boxes in designated freezers according to Soft Store protocol.
Ensure freezers and entrances are locked securely before leaving the storage area.

10. Lab coat, disposable gloves and all other supplies used in the storage area must be separated from the unused supplies and returned to the laboratory in double yellow garbage bags for disposal and or decontamination.

11. Replace keys and used supplies on the dedicated cart before storing in the laboratory freezer room.

12. Document the changes if you move the freezer boxes from one freezer to another.

13. See the pathogen inventory in the intranet.

Transportation of Dangerous Goods

Policy:
Transportation of all **infectious substances** outside this hospital must comply with the Transportation of Dangerous Goods Regulations **(TDGR).** For air transport, International Civil Aviation Organization (ICAO) technical instructions must be followed. The requirements for ICAO can be found in the IATA Dangerous Goods Regulations. A copy of the IATA DGR can be found in Microbiology Room 1470. Each shipment must be properly packaged, labeled and include appropriate documentation.

Purpose:
To ensure that all shipments transported outside this hospital comply with the Transportation of Dangerous Goods Regulations (TDGR) when shipping within Canada.

Responsibility:
Certified shippers, or a person under the direct supervision of a trained individual.

Procedure:

Refer to Transportation of Dangerous Goods Procedure

If Dry ice is needed:

Obtain Dry Ice

1. Wear insulated gloves
2. Wear goggles
3. Refer to Dry Ice SDS Praxiar Dry Ice SDS for hazard and detailed information on dry ice.
4. Attach the label for dry Ice

RECEIVING SHIPMENT OF GOODS ON DRY ICE

The same precaution and care must be taken when dealing with dry ice that is received in a shipment in the laboratory.

- Wear insulated gloves
- Wear goggles
- Open box and unload content in a well ventilated area.
- **DO NOT dispose Dry Ice in the sink or garbage can**.
- Allow dry ice to dissipate in a well ventilated room.
- In order to prevent gas buildup, dry ice should never be placed inside an airtight secondary container.

If shipment cannot be attended to immediately, ensure the container is left in a well ventilated area but unpack in a timely manner to prevent compromising the content. **DO NOT put unopened containers with dry ice in any refrigerator.**

EMERGENCY RESPONSE AND HAZARD CONTROL MEASURES

Emergency Response Plan (ERP)

Emergency situations may include power failure, fire, spills (e.g., chemical, biological, radiological), medical emergencies, incidents or accidents, discrepancy or violation of an inventory of pathogens or toxins, failure of primary containment devices, loss of containment (e.g., heating, ventilation, and air conditioning [HVAC] system failure), or natural disasters.
The emergency response plan (ERP), based on an overarching risk assessment, describes the procedures relevant to any emergency situation and is essential to protect lives, property, and the environment. The ERP will identify foreseeable emergency scenarios and describe response measures that are proportional to the scale and nature of the emergency.

The hospital wide ERP was developed by Mount Sinai Hospital in coordination with local first responder organizations, including police and fire department.

The ERP should be specifically tailored to the organization, facility, and containment level and will address the safety of emergency personnel who may enter the containment zone, particularly at high containment levels.

The ERP in the microbiology lab (containment zone) include, but is not limited to, the following:

- The microbiology management and all staff are responsible for the implementation of the ERP;
- In case of emergency situations, the senior or the most senior MLT on the shift (regular or after hour) should report the change of existing access control and biosecurity to BSO, manager and microbiology special queries.
- Microbiology staff should inform emergency personnel of the type of infectious material in use within the containment zone. While responding to an emergency in microbiology lab, emergency personnel should be accompanied by microbiology staff in the pathogen storing zones for the security of restricted infectious material and toxins.
- The staff are familiar with emergency exits/evacuation routes, which can be accessed in the quality manual: Microbiology Site Map and the type of emergency equipment available in the containment zone (e.g., first aid kits, spill kits, Emergency Wash Facilities (Eyewash and shower stations) and directions for proper use.
- zone (e.g., first aid kits, spill kits, eyewash and shower stations
- Medical Emergency: follow the procedure detailed in Medical Emergency.
- Fire: follow the procedure detailed in Fire Safety and Prevention.
- Chemical spills: refer to Chemical Spill Control Procedure and Supplies, Chemical Spill Kit, and Chemical Spill Control.

- Biological spill: follow the procedure detailed in Biological Spill Control.
- Power failure: refer to Power Failure and hospital Hospital Power Failure Plan for details.
- Failure of primary containment devices: BSC is the main primary containment device used in microbiology lab. Other primary containment device may include sealed centrifuge cups. In case of BSC failure follow Equipment Maintenance Process for Equipment Failure and assign relevant tasks to alternative BSC temporarily in case of a BSC failure.
- Loss of containment: refer to Ventilation for the two types of ventilation system. For planned Heating, Ventilation or Air Conditioning (HVAC) shutdown and unplanned loss of HVAC systems, report to senior, refer to hospital HVAC Downtime guide and contact building services.
- Incident/accident reporting and investigation: refer to Reporting Work Related Incidents, Workplace Accident Investigation andResponse procedure for incidents involving pathogens.
- Emergency training program for microbiology staff is done by annual mandatory e-learning courses including emergency codes, Human Pathogen and Toxin Regulation and WHMIS-Globally Harmonized System, bi-annually fire drill and N95 mask fitting sessions.

General Control Measures

Policy:
By the provision of comprehensive health, safety, communicable disease and environmental control measures MSH is able to protect employees against any health or safety hazard in the workplace.

Purpose:
This policy ensures a hazard free work environment for all employees

Responsibility:
Management and personnel

Key Elements:

- Location of the control
- Types of controls

Related Documents:

GOOD LABORATORY PRACTICE - SUMMARY	**MI\GEN\05**

Procedure:

Location of the control	Control	Examples
At the source of the hazard	• Elimination • Substitution • Isolation	• Redesign work station, equipment or work process • Use non-hazardous or less hazardous material or process • Closed tube system in automated analyzer • Interlocks on centrifuges
Along the path between the hazard and the worker	• Local ventilation • Portable barrier or screen which prevent exposure to energy hazards, e.g., heat, noise, electricity, some forms of ionizing radiation • General housekeeping measures	• Biological safety cabinet, chemical fume hood, vents at rear of bench • Sound baffles • Cleaning up spills, disposal of waste, proper cleaning
At the worker	• Administrative controls • Personal protective equipment	• Safety policies and procedures • Lab coats, gloves, aprons, safety goggles, face mask

Types of Controls	Examples
Engineering controls	Preferred method of control because they eliminate or significantly reduce exposure to workplace hazards, e.g., design of workstation, equipment, tools or environmental surroundings
Administrative controls	Actions taken by management to reduce employee exposure to hazards, e.g., • Job design • Policies and procedures for safe work practices • Personal controls, e.g., Use of personal protective equipment, • Hygiene practices and facilities, e.g., Hand wash sinks

Fire Safety and Prevention

Policy:
The fire plan is based on the requirements of Section 2.8 of the Ontario Fire Code. It provides an audit of Fire Safety resources in the building, emergency procedures and actions to be taken in the event of a fire, training schedule and duties of designated personnel and details maintenance procedure and fire protection measures.

Purpose:
The information of a properly prepared Fire Safety Plan will help the occupants in utilizing life safety features in the building, ensure an orderly evacuation at the time of an emergency and provide a maximum degree of flexibility to achieve the necessary fire safety for the building.

Responsibility:
Management and personnel

Key elements:

- Classification of Fire
- Extinguisher Operation
- Fire Alarm Signals
- Fire Safety Information
- Evacuation Routes and Procedures
- What to do If You Discover a Fire
- Fire Wardens

Related Documents:

Emergency Procedure Manuals Home	**Code Red**

Procedure:

CLASSIFICATION OF FIRE	EXAMPLES	EXTINGUISHERS
Class A	Ordinary combustibles Wood, paper, cloth, etc.	Pressurized water and dry chemical
Class B	Flammable liquids Gases, greases, paints	Dry chemical and carbon dioxide
Class C	Electrical Instruments, computer	Dry chemical and carbon dioxide

EXTINGUISHER OPERATION	WATER	CARBON DIOXIDE	DRY CHEMICAL
	1. Pull pin 2. Aim nozzle 3. Squeeze handle 4. Sweep extinguisher	1. Pull pin 2. Aim nozzle 3. Squeeze handle	1. Pull pin 2. Aim nozzle 3. Squeeze handle
Discharge Range	30 - 40 feet	3 - 8 feet	5 - 20 feet
Discharge Time	60 sec	30 sec	30 sec
Inspected	monthly	monthly	Monthly

Fire Alarm Signals	MSH
1st stage (fire alarm)	20 beats /min x 1 min
2nd stage (total evacuation)	60 beats/ min x 1 min

FIRE SAFETY INFORMATION

Site Map	Posted by elevators and stairwells Shows locations of pull stations, fire exits, fire hoses and extinguishers, evacuation routes, emergency showers, fire blankets
Pull Stations	Beside all exits to the outdoors
Fire Exits	Marked with EXIT. Clearly illuminated with emergency lighting Each floor has a minimum of 2 exits Know location of fire exits, i.e., all stairwells to the outdoors MSH: Stairwell # 5 is by the men's washroom. South East corner. Stairwell # 7 is by the Wheelchair access washroom. North East corner.
Fire Doors	Self-closing fire doors limit the spread of fire from floor to floor
Fire Detection	Automatic smoke or heat detection systems are provided. Sprinkler systems engage automatically
Fire Drills	Employees must participate in a fire drill twice In Ontario, fire drills in laboratory should be done at intervals no greater than 6 months

WHAT TO DO IF YOU DISCOVER A FIRE

MSH	**R. R**emove occupants (Remove anyone in the room while calling out "Code Red, location..." for assistance. Close the door to the fire room and any room connecting doors). **E. E**nclose area (close all remaining doors and windows in the fire zone, placing patients into rooms. Clear halls of equipment (do not place equipment in patient rooms). **A. A**ctivate the fire alarm **C. C**all 5555 **(**Call Communications Centre (5555). Give exact location and nature of fire). **T. T**ry to fight fire NOTES: 1. If the fire is small and you know you can put it out **quickly**, do so using available sources (bed spread, blanket, sheet, fire extinguisher, etc.). Otherwise, do not attempt to extinguish the fire. Shut the door and leave it closed. 2. Order of the above steps is somewhat flexible. However, the evacuation of the room's occupant(s) and confinement of the fire shall be the top priorities. 3. Oxygen shut-down at the bedside will be the responsibility of Nursing or Respiratory Therapy. Oxygen shut-down of the zone valves will be the responsibility of Respiratory Therapy. 4. Mark the door to the fire room with a fire extinguisher to indicate the fire room should not be re-entered. Extinguishers are stored in the hose cabinets or on the walls. If the room has been evacuated, additionally mark the door with a wastebasket.

Fire Wardens	**MSH** Fire Wardens Refer to **Code Red** for MSH	Fire Wardens on each floor are responsible for checking all areas and ensuring evacuation of staff prior to leaving themselves.

Evacuation Plan

Policy:
In the event of a fire, training schedule, or other internal disaster staff must be familiar with evacuation procedures and duties of designated personnel. Assistance for non-ambulatory personnel, patients and visitors are included.

Purpose:
The information of a properly prepared Evacuation Plan will help the occupants in utilizing life safety features in the building to ensure an orderly evacuation at the time of an emergency.

Key elements:
- Evacuation routes HORIZONTAL
- Evacuation routes VERTICAL
- Evacuation procedure VERTICAL
- NON-AMBULATORY Evacuation MSH
- Quality Manual\Organization\Microbiology Site Map QORMI02000

Related Documents:

MSH Emergency Procedure Manuals Home	**Code Red**

Procedure:

Evacuation routes HORIZONTAL	A complete evacuation of all people in the Fire Area beyond designated Fire Doors to a previously designated safe area on the same floor CODE GREEN
Evacuation routes VERTICAL	Use stairs. Do not use elevators.
Evacuation procedure VERTICAL	Walk down stairs in single file on outside (beside wall) of stairwell Meet at Murray St. entrance CODE GREEN- STAT
NON-AMBULATORY Evacuation	If non-ambulatory personnel, patients or visitors are in the area, evacuate them past two (2) sets of fire doors on the same floor

Emergency Wash Facilities

Policy:
Staff should be trained and familiar with what actions should be taken in the event of accidental exposure to potentially hazardous materials.

Purpose:
To reduce the possibility of personal injury.

Key Elements:
- Eyewash facilities
- Emergency showers

Related Documents:

REPORTING WORK RELATED INCIDENTS	MI\LS\31
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32

Procedure:

Eyewash Facilities	**Know location of eyewash facilities and how to use them**. If eye protection fails, go to eyewash facility: **Eyewash fountain (preferred)** • Plastic covers will pop off or turn water on and pull knob on top for other type. • **Wash eyes / face continuously for 15 min**, to prevent serious damage to the eyes**.**
	Eyewash station (Sterile Isotonic Eyewash Solution) • If the victim is a contact lens wearer and the lenses cannot be removed immediately, wash for one minute, then continue washing for a total of 15 mins. **Seek medical attention immediately thereafter.** Eyewash fountains are at designated laboratory sinks. They are located near potentially hazardous areas. They must be inspected once weekly and documented. If possible, eyewash fountains should be plumbed with tepid water.

Emergency showers	Know locations of emergency showers and how to use them. Every laboratory must be equipped with or have ready access to a safety shower. They are located near potentially hazardous areas. In case of chemical burns, go to nearest shower. • For ceiling shower, pull handle to activate. • For hand-held shower, pull out and press handle to activate. • **Shower, washing affected areas, for 15 min.** • **Seek medical attention immediately thereafter.** Ceiling shower must be inspected twice per year and documented Hand-held showers must be inspected once weekly and documented

Portable Eyewash (Eyesaline)	Know locations of **Portable Eyewash (Eyesaline)** In case of splash: • Remove contacts before using • Twist top to remove the top • Flush the affected area as needed • Control rate of flow by pressure on the bottle • If necessary, continue flushing with emergency eyewash station or emergency shower

Biological Spill Control

Policy:
MSH is responsible to protect patients, visitors, staff and property from hazardous or potentially hazardous biological spills. MSH will provide a fast and safe means of containment and clean up of hazardous spills.

Purpose:
In the event of a spill, competent, prompt action is necessary for immediate clean-up to reduce and eliminate the hazards present.

Responsibility:
Management and employees

Key Elements:
- Small spill
- Large spill
- Management of an accidental biohazardous spill depends on the infectious agent, the quantity of the material and whether an aerosol was produced.

Related Documents:

Emergency Procedure Manuals Home	**Code Brown**
MSH Policies and Procedures	

A Biological Spill Kit is available in the main laboratory for use with small spills with contents described in the table below.

The spill kits will be inspected as part of the safety inspections and after use to ensure they have all the required contents, items are in good condition (not damaged) and in sufficient quantity.

The following tables will be completed with each inspection.

Biological Spill Kit (Small spills)			
Expected Contents	**Quantity**	**Expiration Date**	**Acceptable Condition (Y/N)**
1 pair of Nitrile Gloves			
1 pair goggles			
Yellow biohazard bags			
Bleach with 2 squirt bottles			
2 forceps			
1 box N95 repirator			
Paper Towel			
Brush and dust pan			

Complete the section below for any items requiring attention.

FOLLOW UP ACTION	***RESPONSIBLE PERSON***	***DATE COMPLETED***

.

Procedure:

Small Spill

1. If the spill is in a public area such as a corridor, warn others to leave and start the clean up immediately.
2. Use appropriate personal protective equipment (laboratory coat, gloves, face protector shield or goggles, etc.).
3. Use forceps or heavy gloves to pick up any broken glass and discard into a sharps container.
4. Cover spill with paper towels to avoid splashing during the addition of disinfectant.
5. Squirt disinfectant (1% hypochlorite) onto paper towels and with circular motion move from the outside towards the centre.
6. Let stand for 30 minutes.
7. Clean up paper towels and place them in a yellow biohazard bag.
8. Disinfect contaminated surface with appropriate disinfectant and wipe with additional paper towels. Place paper towels in a yellow biohazard bag.
9. Wash hands

Manageable Procedure:

Large Biological Spill (possible aerosol formation)

1. Any individual involved in the clean-up of a spill must determine the nature of the spill and the appropriate clean-up procedure before beginning clean-up.
2. Hold breath, alert others, leave the area and close the door.
3. If the spill is in a public area such as a corridor, warn others to leave
4. After 30 minutes, when aerosols have settled, enter the area to begin cleanup.
5. Obtain the spill control materials.
6. Use appropriate PPE (gloves, gowns, face shield or goggles, footwear).
   For high risk agents, a N95 mask should be used.
7. Use forceps or heavy gloves to pick up any broken glass and discard into a sharps container.
8. Cover the spill with disposable absorbant material (paper towels or spill control pillows) or encircle the spill to prevent spreading.
9. After absorption of the liquid, discard contaminated material into a yellow biohazardous bag.
10. Follow disinfection procedure as for a small spill.

11. Inform the Supervisor or designate. Document the spill on the Employee Incident Form.

IN ALL INSTANCES, IF IT HAS BEEN DETERMINED BY THE PERSON IN CHARGE THAT A SPILL CANNOT BE HANDLED IN A SAFE, COMPETENT MANNER BY HOSPITAL STAFF, OR, IF THE NATURE OF THE SUBSTANCE CANNOT BE DETERMINED, THE USER DEPARTMENT WILL ACTIVATE THE FIRE ALARM/PULL STATION AND CALL LOCAL 5555 IN ORDER TO OBTAIN THE ASSISTANCE OF THE EMERGNECY RESPONSE TEAM OR THE FIRE DEPARTMENT.

INDICATE: **CODE BROWN**

- THE TYPE OF SPILL (IF KNOWN)
- THE LOCATION OF THE SPILL
- THE NAME OF THE PERSON IN CHARGE IN THE USER DEPARTMENT

The Fire Department, when they arrive, will assume responsibility for co-ordinating and directing the clean-up procedure.

Cleanup of Spills in Biological Safety Cabinet

1. Leave fan ON
2. Cover spilled material with paper towels
3. Gently pour disinfectant onto paper towels, working with a circular motion, from the outside to the centre
4. Wait 10-30 minutes, then remove with forceps
5. Repeat above steps
6. If spilled material goes through perforated work surface or grills to catch trey below, pout disinfectant to dilute spill tenfold
7. Let stand, drain through drain cock and clean

Cleanup of Spills of potential Risk Group 3 Agents:

Allow any potential aerosols to settle; wearing protective clothing, gently cover spill with paper towel and apply 1N sodium hydroxide, starting at perimeter and working towards the centre; allow sufficient contact time (1 hour) before clean up

If surfaces cannot tolerate NaOH or undiluted sodium hypochlorite, thorough cleaning will remove most infectivity by dilution

Handling Broken Glass and Tubes

Policy:
MSH is responsible to protect patients, visitors, staff and property from hazardous or potentially hazardous broken glass and tubes. MSH will provide a fast and safe means of containment and clean up of hazardous spills.

Purpose:
In the event of a breakage, competent, prompt action is necessary for immediate clean-up to reduce and eliminate the hazards present.

Responsibility:
Management and employees

Key Elements:
- Broken Glass and Tubes
- Broken Blood Bottles in BacT/ALERT and Virtuo BacT/ALERT
- Broken Tubes in Centrifuge

Related Documents:

Emergency Procedure Manuals Home	**Code Brown**
MSH Policies and Procedures	
Occupational Health and Safety	

Procedure:

Broken Glass and Tubes
1. Never handle broken glass or tubes with your hands. Use forceps only.
2. Dispose of broken tubes or contaminated glass in a sharps container. Never dispose of broken glass into the regular garbage.
3. Decontaminate as outlined in Biological Spill Control or Chemical Spill Control
4. Non-contaminated broken glass can be gathered using a broom and dustpan and dispose into a sharps container or broken glass pail.
5. If you experience a skin puncture with a contaminated sharp, follow the protocol as outlined in Accidental Occupation Exposure

Broken Blood Bottles in Equipment

1. Call customer support.
2. Disable cell
3. Remove and dispose contaminated broken glass with forceps into a sharps container
4. Insert absorbent material, such as gauze into the cell to remove any remaining fluid. Use caution around LED at bottom of cell
5. Wipe cell with gauze soaked in **Hypochlorite 1%**. Leave soaked hypochlorite gauze in cell for 15-30 minutes
6. Remove gauze
7. Wipe cell with gauze soaked in distilled water
8. Let cell air dry
9. Calibrate cell
10. Enable cell if it passes calibration

Broken Tube(s) / Contamination in Centrifuge

1. Turn OFF centrifuge
2. If in sealed safety buckets, proceed to step 7. If in unsealed cups, inform others in vicinity and DO NOT open the centrifuge for 30 minutes to allow aerosols to disperse or settle
3. After 30 minutes, slowly open centrifuge lid.
4. In a biological safety cabinet, remove all broken tubes with forceps & dispose into a sharps container.
5. Remove and place buckets, rotors, etc. to a basin of disinfectant which is non-corrosive; let stand for time recommended for selected disinfectant. Alternatively, these items may be autoclaved
6. Unbroken capped specimens should be disinfected.
7. Wipe down the bowl of the centrifuge twice with disinfectant and rinse with water; dry.
    a. See Biological Small Spill Protocol
8. Dispose of wipe-down cloths as infectious

Chemical Spill Control

Policy:
The Mount Sinai Hospital (MSH) is responsible to protect patients, visitors, staff and property from hazardous or potentially hazardous chemical spills. MSH will provide a fast and safe means of containment and clean-up of hazardous spills.

Purpose:
In the event of a spill, competent, prompt action is necessary for immediate clean-up to reduce and eliminate the hazards present.

Responsibility:
Management and employees

Key Elements:
- Small spill
- Large spill
- Spill Control Materials

Related Documents:

Emergency Procedure Manuals Home	**Code Brown**
MSH Policies and Procedures	

Procedure:

Small Spill

A small spill will be defined as less than 1 litre and no toxic fumes/vapours. A **manageable spill** is a situation in which the material released can be identified, patients or property and the spill can be safely managed by a trained competent individual using the existing spill kit. An individual, who is competent and has been trained, can safely contain, clean up and dispose of the spill without risk to themselves or others.

1. If the spill is in a public area such as a corridor, warn others to leave the area.
2. If the spill is manageable the individual may initiate the clean-up process, using items found in Spill Kits, in accordance with the specific guidelines of the material or SDS (material safety data sheet) and advise their supervisor/manager.
3. Use appropriate personal protective equipment (laboratory coat, gloves, face shield or goggles, etc.).
4. Use forceps or heavy gloves to pick up any broken glass and discard into a sharps container.

5. Environmental services may be paged through locating to provide further clean-up of the spill.

Large spill

A large spill will be defined as more than 1 litre and/or toxic fumes/vapours.
For **manageable chemical spill** follow the protocol on the following page.

1. Notify all individuals in the immediate vicinity of the spill. If necessary, they should move a safe distance away from the spill location. Barricade the spill area with floor signs or yellow barrier tape to notify people to keep away from the hazard.

2. Identify the spilled material, if necessary by checking labels, product supplier and/or Material Safety Data Sheets. Identify any immediate hazards, including flammability, toxicity and any surrounding or contributing hazards.

3. For flammable or combustible liquids, immediately eliminate all potential ignition sources, only if this can be done safely.

4. Be sure fume hood and other local exhausts are operating. Advise engineering to take the necessary steps to eliminate the possibility of air re-circulation. Ventilate the spill area as much as possible. Vapours will be emitted from the spill, regardless of the size.

The following steps are only to be performed by qualified persons:

5. Obtain the spill control materials.

6. Select the appropriate personal protective equipment (protective clothing, goggles or face shield, gloves, footwear [and respirator if indicated]).

7. Estimate the volume of the spill and slowly place an appropriate number of spill control pillows, starting from the perimeter of the spill and working inwards, on the spill. Larger spills can be encircled with the spill control socks to prevent their spread. Allow the absorptive action of the spill control pillow to absorb the spill.
   For a spill of liquid acid or alkali, use the appropriate neutralizer to neutralize and absorb the spill. See instructions on neutralizer bottle.
   PH paper is useful in determining whether neutralization is complete.

8. Use forceps or heavy gloves to pick up any broken glass. Discard the glass into the broken glass bucket or into a sharps container.

9. Place pillows into yellow polyethylene bags. Seal and label contents.

   Note: Spill control pillows DO NOT contain any chemicals designed to make liquids less toxic, hazardous or flammable. Liquids, when contained in any absorbent material, will continue to be unsafe. Therefore, exercise extreme care when handling, storing or disposing of spill control pillows containing such liquids.

10. For a spill of a dry chemical, sweep up the chemical with a dustpan and broom and dispose of into a yellow polyethylene bag and label.

11. For a spill of a dry chemical or after the use of neutralizers, wash the surface with detergent and water and clean by ordinary means.

12. Double bag the yellow polyethylene bag with a second yellow polyethylene bag. Label it and transfer it to the chemical waste storage area.

13. Inform the Supervisor or designate. Document the spill on the Employee Incident Report and give it to the Supervisor.

An unmanageable spill is a situation in which an individual is not competent, untrained or simply unable to safely contain, clean up and dispose of the spill without risk to themselves or others.

IN ALL INSTANCES, IF IT HAS BEEN DETERMINED BY THE PERSON IN CHARGE THAT A SPILL CANNOT BE HANDLED IN A SAFE, COMPETENT MANNER BY HOSPITAL STAFF, OR, IF THE NATURE OF THE SUBSTANCE CANNOT BE DETERMINED, THE USER DEPARTMENT WILL ACTIVATE THE FIRE ALARM/PULL STATION AND CALL LOCAL 5555 IN ORDER TO OBTAIN THE ASSISTANCE OF THE EMERGENCY RESPONSE TEAM, OR THE FIRE DEPARTMENT.

INDICATE: **CODE BROWN**

1. The individual will provide communications with the following information (repeat twice):
   - ☐ Name of reporter
   - ☐ Name of Supervisor or person in charge in the user department
   - ☐ Location of spill
   - ☐ Substance involved and type of spill
   - ☐ Extent of spill
2. If safe to do so the reporter will remain at the scene until the arrival of the Emergency Response Team, or leave the safety zone only when directed to by the ERT Leader, the Toronto Fire Department or when a Code Green is announced.
3. The Supervisor/Manager must ensure that the following information about the material spilled is available for those involved in the clean-up:
   - ☐ proper classification
   - ☐ appropriate equipment is available
   - ☐ necessary precautions are taken
   - ☐ appropriate expertise is available
   - ☐ external resources are requested, if necessary
4. Ensure that clean-up is done in a safe manner, using the information available on the SDS.
5. If a Code Brown is called the supervisor will provide the appropriate information pertaining to the spill to the Emergency Response Team and will assist in clearing the area of visitors, non-emergency response personnel and workers as directed by the Team.
6. Will initiate an Incident Report and an investigation process, which will be forwarded to the Department of Occupational Health & Safety

RESOURCE INFORMATION

For further information, see Hazardous Chemicals: Information and Disposal Guide. 2nd or 3rd edition.

SPILL CONTROL MATERIALS

Clean up spills in accordance with SDS.

First Aid

Policy:
Requirements for first aid training and availability of a first aid kit depend on legal requirements, degree of hazard involved in the work, and proximity to a hospital emergency department.

Purpose:
The policy provides direction for all staff who may require first aid to ensure a safe and healthy work environment.

Responsibility:
Management and employees

Key Elements:
MSH First Aid

Related Documents:

Emergency Procedure Manuals Home	**Code Blue**
MEDICAL EMERGENCY	MI\LS\30
REPORTING WORK RELATED INCIDENTS	MI\LS\31
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32

Procedure:

For minor cuts a box of bandages is available in the cupboard above the main hand wash sink. Any other incidents should be taken care of in Occupational Health and Safety or after hours report to the Emergency Department. Refer to MEDICAL EMERGENCY for further information.

Medical Emergency

Policy:
All injuries/incidents/accidents however slight, must be reported immediately to your Supervisor and to Occupational Health and Safety using the Hospital's '**Employee Incident Report**' form.

An incident or accident is any personal injury, illness or condition sustained by an employee as a result of work-related trauma, inhalation or contamination.

Purpose:
Timely reporting of a work-related injury/incident/accident is necessary to comply with the provincial Workplace Safety & Insurance Act, which requires employers to submit a written signed report within three work days of learning of a work-related injury/incident/accident.

Responsibility:
Employer and employee

Key Elements:
- Medical Emergency Requiring Immediate Assistance
- Where to Report Monday to Friday, 0730-1530 hours
- Where to Report After Hours
- Quick Guide to MSH Emergency Codes

Related Documents:

Emergency Procedure Manuals Home	**Code Blue**
REPORTING WORK RELATED INCIDENTS	MI\LS\31
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32

Procedure:

Medical Emergency Requiring Immediate Assistance

MSH

Go to Emergency or call Code Blue, ext. **5555**, depending on circumstances.

Call Code Blue for a person who is having a cardiac arrest, seizure, or who has fainted.

WHERE TO REPORT MONDAY TO FRIDAY AT MSH,

0730-1530 hours: Report to: **MSH Occupational Health and Safety**

Hours: Monday to Friday, 0730-1530 hours, **Closed** 1200-1300
Location: 60 Murray St, South Side Entrance
Telephone: 416-586-1572

Occupational Health and Safety provides assessment(s), treatment(s) and referral(s), as is/are necessary, for employees who have sustained an injury/incident/accident.

WHERE TO REPORT AFTER HOURS AT MSH

Report to the **MSH Emergency Department** at ext. #5054, who will follow-up and notify Occupational Health and Safety.

The Emergency Department responds only when the incident is obviously serious or Occupational Health and Safety is closed.

THE PERSON INITIATING AN EMERGENCY CODE IS INSTRUCTED TO STATE:

TYPE OF EMERGENCY AND

LOCATION OF EMERGENCY, IF KNOWN

MICROBIOLOGY IS ON THE 14TH FLOOR, **ROOM 1470**

QUICK GUIDE TO MSH EMERGENCY CODES

TO INITIATE, DIAL 5555

BLUE	CARDIAC ARREST
Omega	Massive Transfusion
Beta *B*	Urgent Infant transfusion
PINK	INFANT EMERGENCY
77	Mother/Fetal Emergency
RED	FIRE
GREEN	HORIZONTAL EVACUATION
GREEN STAT	VERTICAL EVACUATION
WHITE	VIOLENT PERSON
BLACK	BOMB THREAT
Grey	Internal Disaster
YELLOW	MISSING PATIENT
Amber	Missing Infant
ORANGE	EXTERNAL DISASTER
Purple	Hostage
Silver	Active Attacker
BROWN	HAZARDOUS SPILL

Reporting Work Related Incidents

Policy:

Mount Sinai Hospital supports that all workplace employee accidents/incidents resulting in personal injury, in potential for injury and / or loss of process (damage to equipment) are reported to their Manager/supervisor and to Occupational Health and Safety using the Hospital's **'Employee Incident Report'.** Following the completion of the Employee Incident Report, the responsible Manager/supervisor must assist with the investigation/debriefing into the causes of the accident/incident. This policy includes everything from needle stick injuries to cuts and falls.

Purpose:
Timely reporting of a work related accidents/incidents is necessary to comply with the provincial Workplace Safety & Insurance Act, which requires employers' to submit a written signed report within three work days of learning of a work-related accident/incident.

Responsibility:
Employee, Manager/supervisor, Occupational Health Nurse, WSIB Case Coordinator

Key Elements:
- Procedure for the Employee
- Procedure for the Manager/supervisor
- Where to Report Monday to Friday, 0730-1530 hours
- Where to Report After Hours
- Employee Incident Report Form

Related Documents:

Emergency Procedure Manuals Home	**Code Blue**
FIRST AID	MI\LS\29
MEDICAL EMERGENCY	MI\LS\30
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32
INCIDENT REPORTING, EMPLOYEE	V-d-11
EMPLOYEE INCIDENT REPORT FORM: MSH GENERAL MANUAL	APPENDIX 9
MANAGEMENT OF NEEDLE STICK INJURIES AND SIGNIFICANT BODY FLUID EXPOSURE	VI-e-10
FOLLOWING ACCIDENTAL PUNCTURE WITH A USED NEEDLE OR INSTRUMENT OR MUCOSAL EXPOSURE	4.50.001

Procedure:

EMPLOYEE

- Completes the employee portion of the Employee Incident Report ensuring that all sections of the form are completed and details are accurate.
- If unable to work or first aid treatment required, reports to Occupational Health & Safety for assessment and treatment. If Occupational Health and Safety is closed the employee may report to the Emergency Department.
- Advises Occupational Health and Safety when a workplace incident has resulted in lost time or the need to see a medical practitioner for treatment.

MANAGER/SUPERVISOR

- Ensures that an Employee Incident Report is completed when a workplace incident occurs that has or could have caused an employee injury or illness.
- Reviews the completed Employee Incident Report Form to ensure that all sections of the report are complete.
- Reviews incident details with employee and identifies any corrective actions needed or taken. As required, utilizes other resources such as witnesses to the incident, union representatives, health and safety representatives, Medical Microbiologist (for biological incidents) and Risk Management. Occupational Health & Safety is available to assist with the investigation as required.
- Signs and dates the report in the Manager Signature Area.
- Sends the original of the Employee Incident Report to the Occupational Health & Safety Department.
- Sends a copy to the Safety Committee for review.
- Notifies Risk Management as required.

Where to Report Monday to Friday,

0730-1530 hours: Report to: **MSH Occupational Health and Safety**

Hours:	Monday to Friday, 0730-1530 hours, **Closed** 1200-1300
Location:	60 Murray St, South Side Entrance
Telephone:	416-586-1572

Occupational Health and Safety provides assessment(s), treatment(s) and referral(s), as is/are necessary, for employees who have sustained an injury/incident/accident.

Employee Incident Report

Employee Incident report form

Workplace Accident Investigation

Policy:
Following the occurrence of a workplace accident and completion of the Employee Incident Report, the responsible Manager/Supervisor must assist with the investigation/debriefing into the causes of the incident. Timely reporting of a workplace accident is necessary to comply with the provincial Workplace Safety & Insurance Act.

Purpose:
The objective of the investigation is to investigate the circumstances related to an accident, determine the causes and to implement corrective actions to prevent reoccurrence. The investigation provides an opportunity for the Manager/Supervisor and employee to discuss concerns related to the incident.

Responsibility:
Immediate Supervisor or Manager, Joint Health and Safety Committee, Occupational Health and Safety, OPSEU or representing union, Ministry of Labour

Key Elements:
- Person(s) Conducting Investigation
- Steps Involved in Accident Investigation
- Critical Injury Definition

Related Documents:

JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
MEDICAL EMERGENCY	MI\LS\30
REPORTING WORK RELATED INCIDENTS	MI\LS\31
WORKPLACE ACCIDENT INVESTIGATION	MI\LS\32

Procedure:

PERSON(S) CONDUCTING INVESTIGATION

Nature of accident	**Person(s) Conducting Investigation**				
	Immediate Supervisor or Manager	**JHSC Joint Health and Safety Committee**	**Occupational Health and Safety**	**OPSEU or representing union**	**Ministry of Labour**
First aid accident	✓		As required*		
Lost time accident	✓		As required*		
Medical aid accident	✓		As required*		
Loss of process (damage to equipment	✓		✓		
Critical injury** or death	✓	✓	✓	✓	✓

STEPS INVOLVED IN ACCIDENT INVESTIGATION

The level of investigation required depends largely on the seriousness or potential seriousness of the outcome of the accident. Investigations may be finished in minutes or may take weeks to conclude.

Once the injured worker has received medical attention:

1. Secure and manage the accident scene, if required. If possible, neutralize any hazards or dangers that may be present.
2. Notify required parties as per the chart above.
3. Collect the names of any and all persons who witnessed the accident or may have knowledge of the accident.
4. Do not restart any machinery involved in an accident or disturb any physical evidence unless cleared by the Supervisor / Manager.
5. Investigation may include;
   - Completed Employee Incident Form
   - Witness Statements
   - Drawings, pictures and or descriptions of all equipment involved.

* As required - May depend on the nature of the accident, frequency and / or potential for a more serious outcome / injury.

** Critical injury – see below

6. For more information, see Module 6: Accident Investigations in the Manufacturing Sector Certification Training Program Manual.

CRITICAL INJURY - DEFINITION

Regulation 834 under the Occupational Health and Safety Act

"A Critical Injury" means an injury of a serious nature that,

a) Places life in jeopardy
b) Produces unconsciousness
c) Results in substantial loss of blood
d) Includes the fracture of a leg or arm but not a finger or toe
e) Involves the amputation of a leg, arm, hand or foot but not a finger or toe
f) Consists of burns to a major portion of the body
g) Causes the loss of sight in an eye

PREVENTIVE MEASURES

Personal Protective Equipment

Policy:
MSH provides appropriate personal protective equipment (PPE) that employees must use when contact with body substances/chemicals is deemed likely. All human blood or body fluids are capable of harbouring infectious pathogens. All Microbiology personnel must adhere to the Mount Sinai Hospital (MSH) policy for personal protective equipment regarding appropriate footwear in all clinical and laboratory areas. The MSH policy has been developed in line with the Ontario Occupational Health and Safety Act (OHSA) Regulation for Health Care Facilities. Additional footwear requirements have been set forth by the Accreditation Canada Diagnostics (ACDx). Specifics of the MSH policy and ACDx requirements, as they apply to Microbiology, are outlined below.

Employ proper personal hygiene. Frequent hand washing is the single most important measure to reduce the risks of transmitting organisms. Wash your hands whenever you leave the laboratory and remove laboratory coats/gowns before entering other non-laboratory facilities or areas which are considered to be clean.

Purpose:
Use of personal protective equipment will minimize the risk of transmission of diseases to patients, visitors and staff at Mount Sinai Hospital.
Appropriate clothing and footwear will mitigate safety risks while working in a level 2 laboratory.

Responsibility:
Employer and employee

Key Elements:
- Clothing
- Hand protection
- Footwear
- Eye and face protection

Related Documents:

GOOD LABORATORY PRACTICE - SUMMARY	MI\LS\05
BODY SUBSTANCE PRECAUTIONS	MI\LS\06
BIOLOGICAL SAFETY	MI\LS\07

PPE	PROCEDURE	PRECAUTIONS
Clothing	Laboratory coat • Wear an appropriate long sleeved cuffed laboratory coat with a closed front at all times when working in the laboratory. • Minimum PPE, along with gloves Apron • Use if there is potential for splashing / aerosolization with body fluids Warm clothing • For extended work in cold rooms	• Remove the lab coat worn in the laboratory prior to exiting the work area or entering office areas. • Treat all linen used in the laboratory as biohazardous. • Place soiled linen in the clear plastic soiled linen bag. • If a laboratory coat becomes grossly soiled with biological material, remove it immediately and place it in the soiled linen bag • The lab aid transports lab coats to receiving for cleaning • MSH linen is cleaned by Faster Linen 416-252-2030. Bleach is used in the chemical formula for lab coats

PPE	PROCEDURE	PRECAUTIONS
Hand protection	Disposable gloves • Staff trained in appropriate use/treatment of gloves • Wear disposable gloves when handling biological specimens. • Gloves are not required for handling of bacterial culture plates except for isolates suspicious of bioterrorism and *Neisseria meningitidis*. These plates need to be processed in a biological safety cabinet while wearing gloves. • Minimum PPE, along with lab coat • For staff with allergies/reactions (latex/talc/starch/vinyl), unpowdered gloves &/or alternatives provided • Wash hands after removing gloves Other gloves • Purpose of gloves varies – to protect against chemical burns; abrasions, cuts, punctures; temperature extremes in the work environment (eg., autoclave, -80^{o}C freezer)	Disposable gloves • Provide a protective barrier • Prevent gross contamination of hands to blood or body fluids. • Remove before leaving the laboratory • Dispose of used gloves into yellow biohazard bags. • Do not touch your face/hair or clean areas with gloves on. Non-sterile gloves should be non-latex, according to Mount Sinai Hospital latex sensitivity policy.

Hand protection	Procedure for removing gloves • Take hold of the outside of the cuff of one glove with the fingers of other gloved hand • Pull the glove down over the fingers. Continue to hold the glove after it is removed. • With the index and middle fingers of ungloved hand, grasp the inside of the glove on the other hand. • Pull the glove down over the fingers without touching the outside of the glove. One glove will now be inside the other. • Drop both gloves into a biohazard bag.	
Eye and face protection	Eye protection should be used, especially if contact lenses are worn. All contact lens users are advised not to wear contact lenses or to wear safety glasses in the event contact lenses are worn. If there is a risk of splashing samples/reagents, use one of the following: • Face shield/splashguards • Safety goggles that protect the top, bottom, front and sides of the eyes Masks/personal respirators used when appropriate Respirators fit tested by CSA std Z94.4-93, "Selection, use, & care of respirators" Protective goggles should be worn where UV light used	• If contact lenses are worn, the supervisor / principal investigator / co-workers should be aware of this, in the event that, following an accidental splash, the individual requires assistance in removal of the lenses • Whenever airborne infectious agents, e.g., M tuberculosis, are being handled, a N95 respirator face mask must be worn in addition to other barrier protection.
Footwear	For details, refer to below Footwear Policy	

Footwear Policy

All laboratory personnel, staff, students, volunteers, and visitors who are entering and/or conducting activities in clinical and/or laboratory areas must adhere to this policy.

Footwear must comply with the following requirements:

1. Secure and well-fitting, with non-slip soles and low to moderate heels (2-5cm)
   Note: While the OHSA does not define shoes with “non-slip soles”, such shoes may be identified as follows: indicated on the shoe box when purchasing new shoes, has a tread made of material soft enough to grip, has a rubber sole (or similar material), and/or is resistant to slippage when worn.
2. Must provide full coverage (toes, heels and instep must be covered).
3. If frequent walking/standing is required, shoes should have sufficient ankle support.
4. Shoe upper part should not be perforated (i.e. canvas and mesh should not be worn).
5. The shoe material must be durable and impermeable to protect from liquid materials spills or sharps (i.e. needles, scalpels, etc.). Acceptable materials include leather, vinyl, or any fluid-impermeable material.

Running or walking shoes are examples of appropriate footwear, so long as they meet the abovementioned criteria. Sandals, clogs, "crocs" with perforated uppers, ballet flats, and other footwear with open toes, heels, and/or insteps are not appropriate since they do not provide adequate protection.

Acceptable footwear:

Unacceptable footwear:

.

For possible reimbursement for the purchase of appropriate footwear, please refer to your union's Collective Agreement and the Uniform Allowance form document located in the internal manual.

References:

Institute for Quality Management in Healthcare (IQMH) (2019). *Medical laboratory accreditation requirements* (version 8). Toronto, Canada.

Mount Sinai Hospital. Personal Protective Equipment (Footwear, Eyewear, Hand Protection). Revised November 2010. Retrieved from the MSH intranet: http://info2/departments/ochealth/policies-and-procedures

Ontario Regulation, Health Care and Residential Facilities, O. Reg. 67/93, s.11.

Laboratory Disinfectants

Policy:
Biological hazards are present in clinical laboratories. The risk of exposure and subsequent infection by these agents can be significantly reduced through the use of specific protocols for decontamination/cleaning/disinfection of each piece of equipment after spills, before servicing, and at the end of each shift.

Purpose:
The principle is to clean and disinfect. Some compounds clean only, some disinfect only and some do both.

Virox is a new cleaner and disinfectant recommended by MSH that may be used for most disinfecting purposes. It is non-corrosive and non-irritating. It comes as a liquid and in a disposable wipe format (user friendly).

Responsibility:
Management and employees

Key Elements:
- Application
- Recommended Product(s)
- Ordering Information
- Preparation, Procedure & Precautions

Related Documents:

LABORATORY SAFETY	MI\LS\02
GOOD LABORATORY PRACTICE - SUMMARY	MI\LS\05
BIOLOGICAL SPILL CONTROL	MI\LS\27

Procedure:

Application	Recommended Product(s)	Ordering Information	Preparation, Procedure & Precautions
Benches	**Virox 5 Wipes RTU**	**Ready to use dispenser system** Virox 5 Wipes RTU (6" x 6.25") 160 / pail. Vendor code 50338 Hospital #701129	Wear gloves. Apply to surfaces, allow to remain wet for 5 minutes then wipe dry.
Centrifuges, metal surfaces, Autoloop **Microscopes** **Telephone and keyboards / keyboard covers**	**Virox 5 RTU**	**Ready to use spray bottles** Virox 5 Ready to use (RTU). Vendor code 50309	Spray surfaces. Wipe dry.
Biological safety cabinets	**Virolex**		Spray, wait 3 minutes then wipe dry.
Water baths	Benzalkonium chloride 10%)	Media Room	Dilute 10mL in 4L of water. Clean and descale water bath. Disinfect with wipes. Fill with deionized water. Clean and disinfect a minimum of once a month.
Pipettes	**Alcotab** Phosphate content 4%	VWR	Add 2 tablets to the pipette washer. Mix and dissolve. Soak for 1 hr. Rinse with deionized water.
Test Tube Racks	**Divermax M9 Machine Dish Powder**	Stores	Autoclaved if contaminated and then washed in dishwasher
Floors	**Hydrox**	Housekeeping orders from Stores - MSH - UHN	**Hydorx** is the hospital-approved cleaner and disinfectant for low-risk areas.

Application	Recommended Product(s)	Ordering Information	Preparation, Procedure & Precautions
Spilled (wet) or dried biological material	**Hypochlorite 1%**	Stores **Note:** Full strength sodium hypochlorite (Javax) is 5%, 50,000 mg/L free available chlorine. Other forms of hypochlorite (e.g., Haztabs, stabilized solutions) are acceptabel if they give the same amount of free available chlorine.	Dilute full strength sodium hypochlorite 1:5 Make up fresh daily **OR** Dilution is stable 1 month **if stored in a dark bottle.** • Refer to BIOLOGICAL SPILL CONTROL for procedure Hypochlorite is inactivated by organic matter. Remove as much blood / protein matter as possible before decontamination **or** use a concentration of disinfectant higher than 1%.
Cleaning hands	**Bactosat with Triclosan** **Betadine** Providone iodine 7.5% Alcohol-based antimicrobial hand Rinse – Cida-Rinse Gel	Stores Stores Stores-various manufacturers	 Use in areas where there is no hand-washing sink.

Workplace Health and Safety Inspection Procedures

Policy:
According to the Occupational Health and Safety Act inspections are carried out by a worker member and a management member of the JHSC. Inspect the workplace at least once a month (or a section of the workplace once a month).

Purpose:
The purpose of the inspection is to identify actual and potential hazards that can cause injury, illness or damage.

Responsibility:
The JHSC is responsible for inspecting the physical condition of the workplace on a regular basis.

Key Elements:

- Frequency of Inspections
- Initial Inspection Preparation
- Regular Safety Audits Required in the Laboratory
- General Inspection Information
- Lab Inspection Guide
- Inspection Record Form
- Lab Inspection Checklist

Related Documents:

JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
GENERAL CONTROL MEASURES	MI\LS\24

Procedure:

FREQUENCY OF INSPECTIONS

Location	Frequency	What to Inspect
MSH	Monthly or at least annually	All clinical and research laboratories

INITIAL INSPECTION PREPARATION

Prior to the initial inspection, the member should read Module 5: Workplace Inspections in the Manufacturing Sector Certification Training Program Manual. Obtain from Certified member.

REGULAR SAFETY AUDITS REQUIRED IN THE LABORATORY

As part of the inspection process, the JHSC checks that the audits listed below are carried out with the frequency indicated and are documented.

The JHSC inspectors record their observations on an inspection audit form.

- Documents hazards on this form as they are identified. llf
- **Immediate Hazards:** These are hazards that could cause injury or illness unless they are corrected right away. Inform the Supervisor responsible for the area immediately and asked him/her to take action to correct the problem.
- Forward the completed inspection record to one of the co-chairs for inclusion on the agenda of the next JHSC meeting.

The Manager / Supervisor is responsible for ensuring that the following are checked with the frequency indicated.

AREA	FREQUENCY
Eye wash stations	Weekly
Hand-held showers	Weekly
Water bath cleaning * * Not required under the OH&S Act but is required by other bodies	At least once a month
Fire extinguishers	Monthly
Inspections	Monthly on institutional basis • Hospital sites – once per year
Deluge shower	6 monthly
Biological safety cabinets	Yearly
Fume hoods	Yearly
SDS	Yearly
Chemical inventory	Yearly

GENERAL INSPECTION INFORMATION

Laboratories are subject to inspection by the following:

1. Joint Health and Safety Committee
2. Occupational Health and Safety Department
3. Fire Marshall
4. Ministry of Health
5. Ministry of Labour
6. Atomic Energy Control Board

LABORATORY INSPECTION GUIDE

The following guide has been developed to assist you in your scheduled safety surveillance of laboratories and departments under your auspices as lab supervisor. This guide is by no means all encompassing, however information contained after each item should assist you in determining whether your area may be in full, partial or non-compliance. This is designed for use with the **LABORATORY INSPECTION CHECKLIST** that follows.

1. Entrances, Exits, Hallways and Stairways - All entrances, exits, hallways and stairways must be clear and unobstructed.
2. Showers/Eye Wash Operative – Weekly inspections (every 6 months for overhead showers) are required. Any area, which deals with corrosive, flammable or otherwise hazardous material is required to have immediate access to eyewash and drench shower facilities. All showers and eye wash equipment must be in full operational order and unobstructed. Eye wash bottles are not adequate equipment.
3. Personal Protective Equipment - Personal Protective Equipment such as goggles, masks, gloves and cover gowns must be readily available and not worn outside the immediate work areas. Lab coats and appropriate shoes shall be worn to avoid any contact with harmful materials.
4. Fire Extinguisher/Inspection and Location - All fire extinguishers must be inspected monthly. Extinguishers must be properly mounted, unobstructed and be properly labeled for the intended use. Training classes are offered through the MSH Fire Marshal.
5. Pressurized Cylinders - All cylinders must be stored in proper locations. All cylinders must be secured in an upright position and properly restrained to prevent falling. Containers must be labeled for contents and usage.
6. Room Use Identification - All access doors must be marked when rooms or areas are being used for chemical, biological or radioactive purposes. All doors must remain closed and the vision panel must remain unobstructed. Unattended labs shall be locked at all times.
7. Electrical Equipment and Cords - Only Canadian Standards Association approved equipment and cords are authorized for use. Cords must not be frayed.
8. Fume Hood Operation - Face Velocities should be between 80 and 150 FPM at the working sash height with an optimum level of 100 FPM. The sash should never be higher than 12 inches except when accessing equipment. Hoods should not be located in high traffic areas or under air supply vents. The hood must have user spill protection and cup sinks must have spill guards.

9. Biological Safety Cabinets - Certification is required annually or any time the hood is moved or has had maintenance performed. Cabinets must not be located near high traffic areas or air supply ducts.
10. Hazardous Chemicals - All chemicals must be appropriately labeled and shall not be placed near or over floor drains. Flammable liquids must be stored in appropriate containers.
11. Equipment and Utility Labeling - Refrigerators, ice machines and microwaves must be labeled for intended use. Food, personal medication and hazardous materials shall not be housed in the same refrigerator. All utility and plumbing lines need to be labeled and indicate the product contained; i.e., gas, water, etc.
12. Location of Cut-off Valves/Circuit Breakers - All cut off valves and breakers must be properly labeled.
13. General Safety (Dress, Eating, Smoking, etc.) - Eating, drinking, smoking and applying cosmetics is not permitted in the lab. Lab personnel shall not wear loose clothing, perforated shoes, sandals, or cloth sneakers.
14. Use of Flame and Heat - No heat generating devices should be left unattended.
15. Ventilation - Airflow in most labs should be "negative" with respect to the corridor. Laboratory doors shall be kept closed when laboratory procedures are in progress. Volatile hazardous materials shall not be used on the open bench top.
16. Housekeeping/Drains Flushed - All unnecessary material, boxes, and containers must be disposed of in the appropriate manner. All drains, including floor drains and cup sinks should be flushed with water on a weekly basis to eliminate sewer odors. Proper housekeeping must be maintained to provide adequate clearance of sprinkler systems and emergency equipment.
17. Sharps (Glass, Scalpel, Blades, Syringes, Etc.) - All sharps, needles and glass must be disposed of in an approved labeled container. Glass containers and other potentially sharp objects shall not be disposed of in common office refuse. Containers must not be overfilled and must be labeled and sealed for proper handling and disposal.
18. Emergency lighting - Where necessary, emergency lighting units shall be properly mounted and unobstructed. If emergency lighting exists, it should be checked periodically to ensure it is functional.
19. Emergency Plans/Posted Numbers - All emergency and contingency plans and evacuation routes shall be clearly posted in conspicuous places. A list of emergency numbers and contacts must be kept updated and posted along side the emergency plans.
20. Safety Manuals - Manuals must be current and readily available for all employees.

21. Biosafety and Biosecurity Procedures and known and followed by all personnel within the microbiology department including understanding potential for dual use.

INSPECTION RECORD CHECKLIST

- File completed inspection forms in the Health and Safety Inspection Binder
- Send a copy of the completed inspection forms to management

LABORATORY SAFETY INSPECTION CHECKLIST

Department/Lab: _____ Building/Room #: _____ Lab Supervisor/PI: _____

Inspected by: _____ Inspection Date: _____

S= Satisfactory U=Unsatisfactory N/A = Not applicable

Item	S	U	N/A	Comment	Corrective Action Taken
Are general signs and information properly posted?					
Are all floors clean and dry?					
Are passageways, storerooms, work areas & aisles clear?					
Is proper illumination provided in the work area?					
Is proper clothing being worn by employees in the work area?					
Do work areas have at least two exits available?					
Are exits visible and unobstructed?					
Are SDS readily available to the employees?					

Are fire safety and WHMIS training for all employees documented?					
Are standard operating procedures readily available to workers?					
Do employees know the procedures for a general emergency?					
Are emergency telephone numbers posted?					
Are telephones in the work area conveniently located?					
Are first aid supplies adequate for potential hazards and are they available?					
Is PPE available to the employees and is it being utilized properly?					
Are safety showers visible, operational and easily accessible?					
Are eye wash fountains / stations visible, operational and easily accessible?					
Are hand wash stations available and easily accessible?					
Is the chemical spill kit visible and easily accessible?					

Is Chemical Spill kit contents up to date? Print and attach Chemical_Spill_Kit to inspection report					
Is Biological Spill kit contents up to date? Print and attached Biological_Spill_Control_Kit to inspection report					
Is access to electrical panels unobstructed?					
Are all electrical switches marked to show their purpose?					
Are electrical systems checked periodically by a qualified person?					
Are electrical and / or phone cords properly secured on the floor?					
Are any electrical cords frayed?					
Chemicals stored by classification and not alphabetically?					
Are all chemicals properly labeled?					
Are bottle carriers provided for all glass containers > 500 mL?					
Are good housekeeping practices followed by employees?					
Are all materials piled, racked or					

stored in a safe manner?					
Are step stools available to reach high places in the work area?					
Are the work areas or bench tops uncluttered?					
Are temperature sensitive equipment (refrigerators, freezers, incubators) in good working condition, clean and well maintained?					
Are fume hoods certified and properly operated?					
Are flammable storage cabinets available and in good condition?					
Are fume hoods, centrifuges and biological safety cabinets uncluttered, in good condition and accessible?					
Are waste containers properly labeled and in good condition?					
Is waste reduction practiced?					
Are sharp containers available and in good condition?					
Are compressed gas cylinders properly secured (locked), labeled and in good condition?					

Are portable fire extinguishers provided in adequate number and type?					
Are fire extinguishers mounted in accessible locations?					
Are explicit instructions posted for acid splashes and acid spills?					
Is the Ventilation acceptable?					
Are Physical space conditions satisfactory?					
Are Entrances, exits, hallways, stairways are clear?					
Are all Rooms properly labeled?					
Are all containers Labeled properly with the name and SDS?					
Is there proper policy in place for Hazardous Waste Disposal and is it followed accordingly?					
Are General safety followed by laboratory personnel? Such as: (lab coat, no eating/drinking/ smoking, no personal items, hair tied back, proper shoes and, etc.)					
Are Emergency lightings functioning and visible?					
Is the Safety manual up to date and					

available to all staff?					
Are environmental conditions appropriate?					
Is Equipment properly labeled?					
Are flame and heat used safely and appropriately?					
Are pathogens readily traceable through the laboratory					
All persons within the department have completed safety and HPTR biosafety/biosecurity training.					
Staff are aware of visitor sign in procedure.					

Reviewed by: _____ **Date:** _____
(Signature / Position)

Annual Laboratory Director Assessment completed: YES / NO

If NO, please indicate previous date of completion: _____

"On-site personal assessment of physical and environmental conditions is acceptable."

_____ _____
Laboratory Director Date

Immunization and Surveillance

Policy:
For the health and well-being of Mount Sinai Hospital employees, all Microbiology personnel will have a health review and be screened for immunity to certain infectious diseases. Personnel will also be screened for Tuberculosis on an ongoing basis.

Purpose:
To prevent the transmission of infectious, communicable diseases among persons carrying on activities in the hospital, patients and co-workers.

Responsibility:
Occupational Health and Safety and Employees

Key Elements:
- Tetanus
- TB
- Hepatitis B
- Varicella
- Measles
- Rubella
- Influenzae
- COVID

Related Documents:

JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
TUBERCULOSIS SURVILLANCE PROGRAM	V-f-5
VARICELLA VACCINATION POLICY	V-j-5
RUBELLA SURVEILLANCE PROGRAM	V-k-5
MEASLES SURVEILLANCE PROGRAM	V-l-5
PREVENTION AND MANAGEMENT OF INFLUENZA	V-n-5

Procedure:

The chart below is an outline of the health review procedures for MSH personnel. Refer to individual MSH policies to review the entire process.

ORGANISM	PROCEDURE	PRECAUTIONS
Tetanus	• It is recommended that staff maintain current immunization status.	
TB	• All new hires, students, in house staff, physicians and volunteers will undergo two-step Mantoux screening prior to the commencement of work within the hospital. • After initial testing, laboratory staff will be tested annually • Written notification of annual requirement for surveillance testing will be sent. • Staff not responding within 15 business days will receive a reminder notice. • Staff who remain non-compliant for a further 15 business days will receive a copy of a Final Notice – to the staff's department manager advising of continued non-compliance requesting the staff be placed on an unpaid leave until such time as they undergo TB Surveillance	• Any employee who experiences a conversion will be referred to the TB Specialist for follow-up. • Occupational Health will inform Infection Protection and Control immediately of any conversion in order that a thorough investigation as to any possible sources can be undertaken. • Extensions will be accepted in the case of absence due to illness/injury, vacation, maternity or other types of leaves. However within 15 business days of return to work, the employee must report to Occupational Health to undergo surveillance.

ORGANISM	PROCEDURE	PRECAUTIONS
Hepatitis B	• Immunization to Hepatitis B with Hepatitis B vaccine is strongly recommended. • Hepatitis B vaccine provided free of charge	
Varicella	• All new employees shall, at their initial occupational health visit, be screened for immunity to VZV by having a blood test taken for serology. • Employees who are susceptible to varicella (as assessed by serology) will be offered vaccination. • Vaccination to prevent illness is recommended for all susceptible health care workers.	
Measles	• Each employee's status will be determined preferably by serological evidence of antibodies to measles or by documentation of vaccination for measles with live virus vaccine on or after the first birthday. • Persons born before 1957 or with physician-documented history of clinical measles will be accepted as proof of measles immunity as well. • Susceptible employees must be vaccinated for measles except where precluded on a medical or religious basis.	• Anyone who is pregnant, or thinks they might be pregnant should not get the vaccine. They have a responsibility to report to the OHD when they are no longer pregnant.

ORGANISM	PROCEDURE	PRECAUTIONS
Rubella	• At the time of initial health review status will be determined by serological evidence of antibodies to rubella • If status is non-immune, these persons must be immunized for Rubella, except where precluded on a medical or religious basis.	• Females of child-bearing age must first assure Occupational Health that they are not pregnant. • Occupational Health must counsel the women not to become pregnant for three months after receiving the vaccine. • They have a responsibility to report to the OHD when they are no longer pregnant.
Influenza	• All employees will have access to influenza vaccination • All employees are strongly encouraged to be vaccinated yearly • All employees have the right to refuse influenza vaccination. • The cost of the vaccine will be covered by the Ministry of Health • The cost of prophylactic medication for staff will be covered by the hospital insurance plan during an influenza outbreak • The staff vaccination campaign will occur during a two-week period in October.	• The influenza vaccine is a killed virus vaccine—one *cannot* get influenza from receiving the vaccine. • The only significant side effect of the vaccine is arm soreness, which is significantly reduced if acetaminophen is taken with the flu shot.

Accidental Occupation Exposure

Policy:
Ensure that all employees who have been exposed to blood or a body fluid of a patient have appropriate management of their exposure.

Purpose:
To prevent the transmission of infectious disease to employees.

Responsibility:
Occupational Health and Safety and employees.

Key Elements:
- Major Hazards
- Significant Body Fluids
- Routes of Entry
- What to do if an Accidental Exposure Occurs

Related Documents:

JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
TUBERCULOSIS SURVILLANCE PROGRAM	V-f-5
VARICELLA VACCINATION POLICY	V-j-5
RUBELLA SURVEILLANCE PROGRAM	V-k-5
MEASLES SURVEILLANCE PROGRAM	V-l-5
PREVENTION AND MANAGEMENT OF INFLUENZA	V-n-5
IMMUMIZATION AND SURVEILLANCE	MI\LS\36

MAJOR HAZARDS

- Hepatitis B virus (HBV)
- Human Immunodeficiency virus (HIV)
- Hepatitis C virus (HCV)
- COVID

SIGNIFICANT BODY FLUIDS

- Blood
- Cerebral Spinal Fluid (CSF)
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Amniotic fluid
- Human tissue
- Seminal fluid
- Vaginal secretions
- Any body substance containing visible blood
- BAL & other respiratory, UTM swab

* Hepatitis B vaccine is highly recommended

Routes of Entry

Significant exposures require a route of entry of the infectious agent which can be by:
a) Percutaneous: Injuries due to needle stick or sharp instruments such as scalpels, contaminated with blood or body fluids
b) Mucocutaneous: Accidental splashes to mouth, nostrils or eyes or to an open wound (e.g. cuts, abrasions, dermatitis) by blood or body fluids.

What to do if an Accidental Exposure Occurs

In the event of an injury, the employee shall:

- immediately wash the site of the exposure with large amounts of water while gently encouraging bleeding.
- notify their supervisor.
- proceed to employee occupational health, or to the Emergency department during off hours.
- Fill out an employee incident form.

Occupational health will further manage the exposure by screening, treatment and counseling the employee.

Ventilation

Policy:
Environmental conditions in the laboratory are monitored and recorded to ensure they do not adversely affect the quality of results. Airflow in the laboratory shall avoid dispersion of potentially infectious agents and ensure adequate ventilation disruptions are avoided. The location, design, type of venting of BSC shall be appropriate to level of risk containment required according to Health Canada Laboratory Biosafety guidelines.

Purpose:
Proper ventilation ensures a comfortable and safe work environment.

Responsibility:
Management

Key Elements:
- Types of Ventilation Systems
- Biological safety cabinets
- Chemical fume hoods
- Vents

Related Documents:

BIOLOGICAL SAFETY CABINETS	MI\LS\09

TYPES OF VENTILATION SYSTEMS

There are **2 types** of ventilation systems:

1. HVAC (heating, ventilation, air conditioning) systems are designed primarily for temperature, humidity and air quality movement.
2. Local ventilation systems are designed to remove contaminants generated by work procedures or equipment from the workplace. Examples are biological safety cabinets, chemical fume hoods and vent.

FEATURE	PROCEDURE	PRECAUTIONS
Biological Safety Cabinets	• Class I - a primary barrier which offers protection to laboratory personnel and to the environment • Class II - a primary barrier which offers protection to laboratory personnel and to the environment and also provides product protection from external contamination of the material • Class III - a gas-tight (glove box) which provides the highest attainable level of protection to personnel and the environment. Require special design and construction.	• Do not operate centrifuges in a biological safety cabinet since the motor may produce strong air currents and turbulence which may disrupt the laminar air flow • Must be inspected and certified once a year (cabinets are inspected as per hospital contract)
Chemical Fume Hoods	• Lab air flows are balanced at time of fume hood installation to achieve designed fume hood face velocities and uniformity of airflow patterns	• Factors affecting fume hood performance e.g., open doors or windows nearby, room air currents, movement near fume hood face openings • Fume hood should be inspected and certified annually • Routine maintenance is required on exhaust fans
Vents	• Vent at the exterior of the bench connected to an exhaust duct	• For maximum benefit, place work as close to the vent as possible, e.g., urinalysis bench

Housekeeping

Policy:
Housekeeping by non-laboratory staff is restricted to the removal of non-hazardous waste, or appropriately labeled and packaged hazardous waste and periodic cleaning of the floors, walls and ceilings. A designated person in the laboratory should oversee lab housekeeping.

Purpose:
Limiting housekeeping activities in the laboratories ensures everybody's safety.

Responsibility:
Management and Housekeeping personnel

Related Documents:

GENERAL CONTROL MEASURES	MI\LS\24

Procedure:

1. Do not leave anything on the floor where it is liable to impede the free passage of others. Exits, corridors and access to safety equipment (such as eyewash equipment) should be kept free from obstruction.

2. Assume that non-laboratory personnel, (e.g. housekeeping, plant engineering, security) may be required to work in lab areas on occasion. Procedures must address their involvement in the laboratory. This is especially important with respect to tidiness, storage and disposal and labeling / signage. Acronyms are not an acceptable alternative to proper labeling. Personal protective equipment must be provided to this staff, as necessary.

3. If any pest sighting is noted in laboratory areas, housekeeping staff is notified at extension 5008. The hospital has external company to provide professional services and is contacted via housekeeping personnel for appropriate actions and also to ensure that any chemicals used do not contaminate materials or endanger the health of staff.

Personal Safety

Policy:
Personal safety and theft reduction within the hospital are shared responsibilities. Mount Sinai Hospital's efforts in reducing theft and increasing personal safety are dependent upon the support of all staff. All employees wear their photo identification badge with the name and photograph in full view. The ID system assists everyone to quickly identify authorized personnel.

Purpose:
By following the tips in this section you will improve your own security and contribute to Mount Sinai Hospital's effort to make all laboratory sites safer.

Responsibility:
Employer and employee

Key Elements:
- What to do in an **Emergency**
- What to do for **Non-Emergency** Security Concerns
- General Advice
- After Hours And At Night
- Parking Lots and Garages
- Elevators
- Bank Machines

Related Documents:

JOINT HEALTH & SC AND INTERNAL RESPONSIBILITY SYSTEM	MI\LS\03
GENERAL CONTROL MEASURES	MI\LS\24

Procedure:

WHAT TO DO IN AN EMERGENCY

IN AN EMERGENCY AT MSH CALL 5555

- Fire, smoke or smell of gas
- Life safety
- Bomb threats
- Accidents/serious sickness
- Crimes in progress
- Suspicious persons or incidents

Do not endanger yourself or attempt to deal with hazardous or suspicious situations yourself.

WHAT TO DO FOR NON-EMERGENCY SECURITY CONCERNS

For all other **non-emergency** security concerns or assistance call Security:

MSH	17-5056

General Advice

- Know the emergency number to reach Security Services.
- Be aware of what is going on around you.
- Follow your instincts. If you feel you are at risk, try to leave the situation or area quickly.
- If you are harassed, report the incident to Security Services.
- Use the buddy system. Plan to watch out for one another.
- MSH Security Services offers an escort service. Use them if you feel uncomfortable walking alone within the hospital or hospital parking lots/garages.
- Lock your lab, room or office door, even if you are leaving only for a few minutes.
- Never prop open doors, even for a brief time. This places you and everyone else in your building/area at risk.
- Lock all purses, wallets, cash and valuables in a locker, desk or cabinet.
- If a trades person, repair person or courier requests admittance to your lab or office, ask for identification. If you are not satisfied with the person's credentials, refuse the individual access and direct him/her to your supervisor.
- If an individual unknown to you requests or attempts to enter a locked/restricted area with you, refuse entry. Suggest to the individual, if you are told the employee's name he/she wishes to visit, you will inform that employee that someone is waiting for them outside the secure area.
- Report any unauthorized entry to a locked or secure area to Security Services.
- Be especially aware of maintaining security in your building/area after hours, and on weekends, holidays or vacation, when there are fewer people around.

After Hours And At Night

- If you suspect you are being followed, indicate your suspicion by looking behind you. Change directions and vary your speed of walking. Immediately, head for a place where there are other people.
- Be aware of people around you and your work area.
- Try to stay in well-lit areas and use routes that are frequently traveled by others.
- Know which entrances to the hospital buildings are locked after hours, and try to park your car as close as possible to after hours access doors.
- Avoid walking through isolated areas. Avoid shortcuts through parking lots, hospital parkettes and deserted spaces.
- Familiarize yourself with the locations of hospital emergency telephones and pay telephones.
- Use the buddy system if possible when working after hours, weekends, and holidays or at night. If you are going to work at night in a hospital building, try to locate yourself close to someone you know. Let someone know where you are and when you expect to leave.
- Inform Security Services if you are going to work in the hospital buildings after hours, weekends or holidays. Inform Security Services of your location and expected time of occupancy in your workplace.
- Lock your lab, office or room at all times when working at night or after hours.
- Use the Security Services escort service if you are nervous walking between your lab/office to your car parked on hospital grounds.

PARKING LOTS AND GARAGES

- When you know you will be returning to your car at night, park in a well-lit area.
- Know your nearest exit route from a garage.
- Never park on levels of a parking garage that are empty or infrequently used.
- Have your keys ready in your hand before you reach your car.
- Visually check the interior of your car before getting in.
- Utilize the Security Services escort service if you are nervous walking to your car parked on hospital grounds.

ELEVATORS

- If you enter an elevator and the person riding with you makes you feel uncomfortable, leave. Get off before the door closes or leave at the next floor.
- In elevators, stand with your back to the wall near the control panel. If you are threatened or harassed, push the alarm button and as many floor buttons as possible.
- If the elevator should breakdown with you inside, push the alarm button until someone responds. Do not attempt to pry open the doors or escape through the roof hatch. You are safer inside the car until qualified help arrives. Then follow their instructions.

Bank Machines

- Avoid using bank machines when the hospital is deserted or when you are alone.
- Be aware of other people around you before and during usage of bank machines.

Record of Edited Revisions

Manual Section Name: Laboratory Safety Manual

Page Number / Item	Date of Revision	Signature of Approval
Annual Review	May 01, 2002	Dr. T. Mazzulli
The whole manual was reformatted according to OLA specifications	May 01, 2003	Dr. T. Mazzulli
Added a visitor and contractor safety policy pgs 10-12	May 01, 2003	Dr. T. Mazzulli
MI\LS\16\v01 Disposal of Chemical Waste. Added section for MSH chemical waste & added more to St Patrick site procedure. Took out references to TGH, TWH and PMH. Added form at the end for MSH chemical waste disposal. Pgs 70-73	May 01, 2003	Dr. T. Mazzulli
MI\LS\18\v01 Ergonomics. Updated Occupational Health Department locations and phone numbers. Pg 82	May 01, 2003	Dr. T. Mazzulli
MI\LS\19\v01 Equipment Safety. Under centrifuge took out reference to 1% hypochlorite. Pg 84	May 01, 2003	Dr. T. Mazzulli
MI\LS\20\v01 Electrical Safety 1st pg, added a few OLA requirements: Examine all wiring, plugs, and extension cords for any signs of exposed wires, fraying or deteriorating insulation. Replace if necessary, Check all electrical outlets for current, grounding and polarity at least annually, Sufficient electrical outlets to avoid multi plug adaptor use, Portable equip grounded to prevent shock (X.K.) Pgs 86-87	May 01, 2003	Dr. T. Mazzulli
MI\LS\20B\v01 New policy added re: power failure procedure for both sites.	May 01, 2003	Dr. T. Mazzulli
MI\LS\22\v01 Transportation of Specimens. Made one section for internal transportation and another for site to site. Also added: Assure that specimen containers are securely closed and clean on the outside (if not, wipe with alcohol). Also added: Do not send specimens with needles attached to any lab, these will not be processed. From VI-d-13. Pgs 93-94	May 01, 2003	Dr. T. Mazzulli

Page Number / Item	Date of Revision	Signature of Approval
MI\LS\23\v01 Transportation of Dangerous Goods. The first page has been reworked according to Jo-Ann's specifications. To help classify in which Risk Group a specimen is in under Classification, a flow chart was added. Also mentioned which Classes micro deals with most. Section on PACKAGING FOR EXTERNAL **T**RANSPORTATION was taken out because its covered under MI\LS\22\v01 under site to site transport of specimens. Added a section about Shipping with Dry Ice. Put in a part about Emergency Response in case of a spill in transit. Added a separate section on Training. Under Diagnostic Specimens: added reference to Risk Group I and some exemptions. Under Infectious Substances: more specific about: Labeling Documentation and added a chart for Shipper's Document Checklist. Pgs 95-104	May 01, 2003	Dr. T. Mazzulli
MI\LS\25\v01 Fire Safety and Prevention New Name pg 1 : policy, purpose made from MSH Code Red introduction, deleted last section on related materials, added reference to site map under fire safety information, made separate chart for evacuation routes & procedures, added code green & code green stat, added chart for what to do if you discover a fire. Added a bit about fire doors, detection systems and sprinklers. Separated Evacuation procedure into another policy. Pgs 107-110	May 01, 2003	Dr. T. Mazzulli
MI\LS\25B\v01 Evacuation Plan. This is a new policy. Used III.2.6 & X.G.4.1 & MSH policy to make policy & purpose Pgs 111-112	May 01, 2003	Dr. T. Mazzulli
MI\LS\26\v01 Emergency Wash Facilities pg 1: under eyewash and emergency showers added: They are located near potentially hazardous areas X.J.7 Pgs 113-114	May 01, 2003	Dr. T. Mazzulli
MI\LS\27\v01 biological spill control 1st page used MSH Code Brown info for policy & purpose and to make a separate small & large spill section for MSH. Pgs 115-117	May 01, 2003	Dr. T. Mazzulli

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MI\LS\28\v01 Chemical Spill Control 1st page revamped using MSH Code Brown info. Added chemical spill measures for MSH. Used MSH Code Brown info. Took info out about where TGH/PMH/TWH spill cart locations. Updated spill control materials chart. Pgs 119-122	May 01, 2003	Dr. T. Mazzulli
MI\LS\29\v01 First Aid: 1st page updated. Added bit for MSH. Added parasitology as another site for first aid box. Pgs 123-124	May 01, 2003	Dr. T. Mazzulli
MI\LS\30\v01 Medical emergency: 1st pg updated, rearranged what was already there and updated OHD times and location. Also updated QUICK GUIDE TO MSH EMERGENCY CODES Pgs 125-127	May 01, 2003	Dr. T. Mazzulli
MI\LS\31\v01 Reporting work related incidents: Updated this policy using MSH V-d-10 and MSH V-d-11. Added a copy of the employee incident report form. Used same "where to report" as in MI\LS\30\v01 (pgs 128-130)	May 01, 2003	Dr. T. Mazzulli
MI\LS\32\v01 Workplace accident investigation: Updated pg 1 using MSH V-d-10. Took out the Employee Incident Form since it was a UHN version. Pgs131-133)	May 01, 2003	Dr. T. Mazzulli
MI\LS\33\v01 PPE: reworded what was there before to make policy & purpose. Also used VI-d-11 an infection control document. Under hand protection added: Provide a protective barrier, prevent gross contamination of hands to blood or body fluids. Moved Wash hands after removing gloves to procedures side. Added under hand protection: Staff trained in appropriate use/treatment of gloves. Added For staff with allergies/reactions (latex/talc/starch/vinyl), unpowdered gloves &/or alternatives provided. Also added: Masks/personal respirators used when appropriate, Respirators fit tested by CSA std Z94.4-93, "Selection, use, & care of respirators", Protective goggles should be worn where UV light used (OLA X.F.) Pgs 134-136	May 01, 2003	Dr. T. Mazzulli

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MI\LS\34\v01 lab disinfectants, used X.H.6 & X.H.8. to make policy. Purpose: used already existing intro. Updated disinfectant chart according to what MSH uses. Added section on test tube racks. Added section about BacT/ALERT Cell Decontamination after Bottle Breakage. Took section out about spills because that is covered on Pgs 137-140	May 01, 2003	Dr. T. Mazzulli
MI\LS\35\v01 Workplace Health and Safety Inspection Procedures: Removed reference to TGH/TWH/PMH. Rearranged order of Key Elements so that both inspection sheets are at the end. (pgs 141-144)	May 01, 2003	Dr. T. Mazzulli
MI\LS\36\v01 Immunization: changed the title to Immunization and Surveillance. Used what was already here and part of MSH policies V-f-5, V-j-5, V-k-5, V-l-5, and V-n-5 to make policy, purpose and charted procedure (pgs 148-151)	May 01, 2003	Dr. T. Mazzulli
MI\LS\37\v01 Ventilation: Used III.4 and X.I.3 to make policy. To Class III added Require special design and construction. (pgs 154-155)	May 01, 2003	Dr. T. Mazzulli
MI\LS\38\v01 Housekeeping: Used X.H.10 to make policy (pg 156)	May 01, 2003	Dr. T. Mazzulli
MI\LS\39\v01 Personal Safety: Used material that was already there to make policy and purpose. Removed non MSH / Michener security #s. (pg 157)	May 01, 2003	Dr. T. Mazzulli
Annual Review	May 27, 2003	Dr. T. Mazzulli
MI\LS\40\v02 Handling Broken Glass and Tubes	October 22, 2003	Dr. T. Mazzulli
MI\LS\36B\v01 Accidental Occupation Exposure. New policy added to the safety manual. (pgs 152-153)	December 18, 2003	Dr. T. Mazzulli
MI\LS\04\v01 Employee Safety Orientation and Training: Updated chart Page 3 of 3	December 18, 2003	Dr. T. Mazzulli
MI\LS\13B\v01 Chemical Inventory Procedure: Updated Page 2 of 3	December18, 2003	Dr. T. Mazzulli
MI\LS\23\v01 Transportation of Dangerous Goods: Page 9 of 10: Added current certificate holders	December 18, 2003	Dr. T. Mazzulli
MI\LS\04\v01 Page 1 of 3: Added PPE into the purpose	December 18, 2003	Dr. T. Mazzulli
MI\LS\31\v01 Page 2 of 3: Updated information in MANAGER/SUPERVISOR section	December 18, 2003	Dr. T. Mazzulli

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MI\LS\02\v01 Page 2 of 5: Added to the chart where the minutes for safety committee minutes are posted	December 18, 2003	Dr. T. Mazzulli
MI\LS\35\v01 Page 4 of 6: Added what to do with safety inspection checklist forms	December 18, 2003	Dr. T. Mazzulli
MI\LS\03\v01 Page 2 of 2: Added information about liaisons between various institutions safety committees	December 18, 2003	Dr. T. Mazzulli
MI\LS\20\v01 Page 2 of 2: Added information as to what each type of coloured outlet indicates	Dec 18, 2003	Dr. T. Mazzulli
MI\LS\05\v01 Page 2 of 2: Updated chart	December 18, 2003	Dr. T. Mazzulli
MI\LS\18\v01 Page 6 of 6: Information abut the safety officer for MSH was added	December 18, 2003	Dr. T. Mazzulli
After introduction: Added new section called: Annual Safety Program Audit	January 06, 2004	Dr. T. Mazzulli
MI\LS\27\v04 Biological Spill Control Page 3 of 4: Added chart with contents and whereabouts of biological spill kit on 12th floor.	March 11, 2004	Dr. T. Mazzulli
Annual Review	May 26, 2004	Dr. T. Mazzulli
MI\LS\05\v04 Good Laboratory Practice - Summary Page 2 of 2: Pregnancy Precautions added to chart	June 08, 2004	Dr. T. Mazzulli
MI\LS\23\v04 Transportation of Dangerous Goods	June 08, 2004	Dr. T. Mazzulli
Annual Review	May 12, 2005	Dt. T. Mazzulli
Annual Review	July 23, 2006	Dr. T. Mazzulli
Annual review	April 01, 2007	Dr. T. Mazzulli
MI\LS\41\v01 Handling Liquid Nitrogen added	July 30, 2007	Dr. T. Mazzulli
MI\LS\02\v04 Removed UHN/UHN references Pages 3 and 4 of 5	August 01, 2007	Dr. T. Mazzulli
MI\LS\03A\v04 Removed St Patrick/UHN emergency evacuation alarm references Page 2 of 2	August 01, 2007	Dr. T. Mazzulli
MI\LS\03\v04 Removed UHN references and adjusted wording indicating we are only on one JHSC now. Pages 1 and 2 of 2	August 01, 2007	Dr. T. Mazzulli
MI\LS\04\v04 Removed UHN references Page 2 of 3	August 01, 2007	Dr. T. Mazzulli
MI\LS\10\v04 Removed St Patrick site references on Page 1 of 1. This policy is now 1 page instead of 2.	August 01, 2007	Dr. T. Mazzulli
MI\LS\41\v04 Removed St Patrick procedure for larger chemical spills on Page 3 of 3. Policy is now 3 pages instead of 4.	August 01, 2007	Dr. T. Mazzulli

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MI\LS\16\v04 Removed St Patrick procedure **and references** for disposal of chemical waste at St Patrick site. Pages 1 and 3 of 4.	August 01, 2007	Dr. T. Mazzulli
MI\LS\18\v04 Removed UHN Occupational Health references Page 6 of 6	August 01, 2007	Dr. T. Mazzulli
MI\LS\20B\v04 Removed Procedure for a Power Failure at St Patrick site Page 4. Policy is now 3 pages instead of 4.	August 01, 2007	Dr. T. Mazzulli
MI\LS\22\v04 Removed St Patrick reference Page 2 of 3	August 01, 2007	Dr. T. Mazzulli
MI\LS\25\v04 Removed St Patrick and UHN references Pages1, 2 and 4 of 4.	August 01, 2007	Dr. T. Mazzulli
MI\LS\25B\v04 Removed St Patrick references Page 1 of 1. Policy is now 1 page instead of 2.	August 01, 2007	Dr. T. Mazzulli
MI\LS\28\v04 Removed St Patrick references Page 5 of 5	August 01, 2007	Dr. T. Mazzulli
MI\LS\29\v04 Removed St Patrick references Page 1 of 1. Policy is now 1 page instead of 2.	August 01, 2007	Dr. T. Mazzulli
MI\LS\30\v04 Removed St Patrick references Page 1 of 3.	August 01, 2007	Dr. T. Mazzulli
MI\LS\35\v04 Removed St Patrick references Page 1 of 6.	August 01, 2007	Dr. T. Mazzulli
MI\LS\39\v04 Removed St Patrick references Page 1 and 2 of 3.	August 01, 2007	Dr. T. Mazzulli
Add report to “Medical Microbiologist (for biological incidents)” in page 131 – Reporting incidents	December 01, 2007	Dr. T. Mazzulli
Annual Review	August 30, 2008	Dr. T. Mazzulli
Revised Transportation of Dangerous Goods – Dry Ice handling per MOL recommendations	March 11, 2009	Dr. T. Mazzulli
Annual Review	March 11, 2009	Dr. T. Mazzulli
Annual Review	April 30, 2010	Dr. T. Mazzulli
Annual Review	April 25, 2011	Dr. T. Mazzulli
Added Risk Group 3 re communication/notifications of Infectious/Biological Hazard Risk Precautions to Biosafety hazard section	April 25, 2011	Dr. T. Mazzulli
Added Risk Group 3 Disposal instructions to Biological Disposal section	April 25, 2011	Dr. T. Mazzulli
Added Risk Group 3 Spill clean-up instructions to Biological Spills section	April 25, 2011	Dr. T. Mazzulli
Annual Review	January 25, 2012	Dr. T. Mazzulli

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Added pest control line from PLM Safety Manual	October 17, 2012	Dr. T. Mazzulli
Annual Review	May 31, 2013	Dr. T. Mazzulli
Added Link to Viral Hemorrhagic Fever Lab Biosafety Guidance QFSMI03001 Added UHN/MSH logo Added proper header/footer	August 6, 2014	Dr. T Mazzulli
Annual Review	August 06, 2014	Dr. T. Mazzulli
Moved CJD procedure to this section from Sendout manual	August 06, 2014	Dr. T. Mazzulli
Annual Review Chemical Spill Kit contents added Addition of section: "**Movement of Infectious Materials between the Microbiology Laboratory and its Long Term Freezer Storage Area"** Update Employee Incident form to latest hospital form Revised footer	June 12, 2015	Dr. T. Mazzulli
Link added to Physical Hazard: Ergonomics section as a related document link. **Occupational Health, Wellness, and Safety: Safe Materials Handling Policy& Procedure**	July 16, 2015	Dr. T. Mazzulli
Updated safety checklist for orientation for new staff -Merged with checklist from orientation MI\ORIEN\v16 checklist - Updated to further highlight ergonomics factors/heavy lifting points	August 24, 2015	Dr. T. Mazzulli
Under Infectious Safety: Added Routine Donning and Doffing section with link to level 2.5 lab area donning/doffing document.	February 02, 2016	Dr. T. Mazzulli
Updated UHN/MSH logo in header Visitors and Contractors Safety Added link to Microbiology Laboratory Safety Awareness for Non Laboratory Personnel with No Laboratory Electronic Access	February 10, 2016	Dr. T. Mazzulli

Page Number / Item	Date of Revision	Signature of Approval
Annual Review In PPE section under Eye and Face added: All contact lens users are advised not to wear contact lenses or to wear safety goggles in the event contact lenses are worn. Addition of signature of revision of safety inspection at end of checklist. Addition of annual physical and environmental assessment by laboratory director added at bottom of safety inspection checklist Laboratory Procedure for Visitors and Contractors modified to link to Laboratory Access Procedure	June 03, 2016	Dr. T. Mazzulli
Updated CJD decontamination protocol	April 28, 2017	Dr. T. Mazzulli
Annual Review Merged and Moved TDG section to TDG manual and referred to this document with hyperlink,.	May 26, 2017	Dr. T. Mazzulli
Add signature lines for safety training page. Merge Safety Form and Checklist. Added biosecurity, biosafety and dual use to safety inspection list Update Fire "RACE" procedure to "REACT" Updated WHMIS elements.	December 20, 2017	Dr. T. Mazzulli
p.55 CJD section updated with reporting comments for tests pending CJD results as well as after CJD results are received: }CJDR, }CJDD, }CJDX	February 23, 2018	Dr. T. Mazzulli
Annual Review Handling of CJD specimens instructions removed replaced with link to related new manual. All CJD instructions are housed in new Suspect Risk group 3 & 4 Biosafety Manual.	May 16, 2018	Dr. T. Mazzulli
Minor format change	September 14, 2018	Dr. T. Mazzulli
Annual Review Updated pathogen Risk group classifications	April 30, 2019	Dr. T. Mazzulli
pg 46 added procedure for fumehoods to Biological Safety Cabinet section	August 02, 2019	Dr. T. Mazzulli
p.187 addition of safety inspection item to inspect temperature sensitive equipment.	November 26, 2019	Dr. T. Mazzulli

Full document review included in all updates. Annual review conducted when no revision had been made within the year.

Page Number / Item	Edited by:	Date of Revision
Annual Review Updated SDS location, fire drill frequency, Updated Emergency codes	Dorna Zareianjahromi	December 30, 2020
Disposal of RG3 specimens – Incinerate (removed instructions to soak and/or autoclave prior to incinerate)	Dorna Zareianjahromi	January 29, 2021
Addition of Portable Eyewash (Eyesaline)	Dorna Zareianjahromi	February 12, 2021
Minor formatting change	Jessica Bourke	April 11, 2021
Updated Biological and Chemical Spill kit list to included new table to document assessment with each safety inspection or after use. Removed quarterly check of kits. Updated safety inspection to include assessment of biological and chemical spill kit. Archived / removed PLM and Micro chemical spill kits.	Jessica Bourke	April 28th, 2021
Added Footwear Policy and examples of acceptable and unacceptable footwear. Added that employees may refer to their union's collective agreement for possible reimbursement for the purchase of appropriate footwear.	Oliver Li	November 18, 2021, 2021
Updated the email contact of disposal of chemical waste, and waste hauler information.	Oliver Li	December 13, 2021, 2021
Added "For specimen processing and presumptive identification of suspect biological agents, follow the instructions in **Suspect Risk Group 3_4 Biosafety Manual (Policy # MI_RG34)**" in Infectious Safety on page 42	Oliver Li	March 15, 2022
Annual Review: • Minor formatting and wording • Updated **Disposal of specimens and contaminated products used in the processing of Risk group 3/4 identified specimens** on page 51 • Updated Internal Transportation procedure for **Transportation of Specimen** on page 127	Qin Liu	November 24, 2022
Updated wording for waste removal	Wayne Chiu	December 5, 2022
Updated safety checklist-Orientation of new staff to the department	Oliver Li	December 7, 2022

Page Number / Item	Edited by:	Date of Revision
Added “safe handling, use and disposal of sharp instruments and devices” to SAFETY CHECKLIST - ORIENTATION OF NEW STAFF TO THE DEPARTMENT	Oliver Li	March 3, 2023
Updated access information in the section of Chemical Inventory and SDS Sheets on page 54	Oliver Li	August 11, 2023
Updated the table of content to reflect RISK GROUP 2 AGENTS: REQUIRING CONTAINMENT LEVEL 2	Oliver Li	August 04, 2024
Annual Review • Minor formatting and wording • Changed MSDS to SDS • Removed ‘Gloves should be wiped with dilute bleach between specimens’ and added ‘Change gloves between specimens’ • Removed ‘The 10 commandments’ • Added location of Level 2.5 BSC • Removed extra pH paper from 30 Gallon Chemical Spill Kit • Consolidated the steps for handling risk group 3 organisms in mycology	Qin Liu	April 30, 2025