THE MICHENER INSTITUTE
SAFETY MANUAL
920-026

SECTION 1 - CONCEPTS OF SAFE PRACTICE

Updated September 2023

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SECTION-1 CONCEPTS OF SAFE PRACTICE

HEALTH AND SAFETY POLICY

PURPOSE

The Michener Institute of Education at UHN is committed to the welfare of our community members by preventing occupational injuries and illnesses and by providing a healthy and safe environment. As such, the health & safety of the Michener community is not only paramount, but also part of the fabric of our philosophy and our everyday practice.

ORGANIZATIONAL SCOPE

Each and every individual within the Michener community has a personal responsibility and accountability for reporting problems and ensuring that healthy and safe practices are exercised on a daily basis in all that we do.

OBJECTIVES

From the Board of Governors to the Executive Leadership Team, together with the academic and support management, Michener is committed to ensuring that health excellence and accountability begins with each of us. It is Michener's corporate commitment that this policy is communicated to, understood by, and actively adopted by all employees, students, supervisors/Managers, contractors, clinical partners, and vendors integral to the delivery of our services and operations.

• To continually improve internal health & safety standards and guidelines

• To ensure compliance with all relevant health & safety legislation

• To aggressively pursue a zero accident/ incident rate

POLICY GUIDELINES

Through focused health and safety audits, reviews, feedback and internal responsibility and accountability, Michener is committed to continuous improvement of our Health and Safety program and supporting initiatives. Compliance with all applicable health and safety legislation, codes of practice, internal standards and guidelines are how we continue to promote a positive health and safety culture.

All members of the Michener community are expected to promote and commit to maintaining a safe and healthy workplace. Any individual acting in contravention of this policy or who may be deemed to have failed to meet their obligations towards health and safety, depending on the circumstances, may face appropriate disciplinary action up to and including termination or academic dismissal.

Remember…'Safety starts with me.'

September 2, 23

Harvey Weingarten
Principal, The Michener Institute of Education at UHN

ASPECTS OF SAFE PRACTICE

There are four major aspects of safe practice in the workplace:

- Adequate Training
- Policies and Procedures
- Compliance
- Inspection and Review

ADEQUATE TRAINING

Each new employee and student must receive adequate training in those aspects of worker safety which will apply to the individual's workplace. While there are many safety principles common to all groups, certain groups of employees or students require more extensive training according to the specific needs of the job or program of study. Basic safety concepts are contained in this Manual, while the more highly specific information will be given as part of the orientation package or taught within particular courses of study or as part of the course of employment. Pertinent information will be provided by the respective supervisor, manager, or the program faculty.

POLICIES, PROCEDURES & PRACTICES

Management prepares policies and ensures the development of procedures to prevent accidents and promote safety and health through the enforcement of best practices.

The Joint Occupational Health and Safety Committee (JHSC) identifies health and safety concerns, evaluates, and makes recommendations, as appropriate. The Committee's terms of reference are included in the Appendix.

Table 1.1 lists some of the legislation that must be considered in formulating health and safety policies and procedures. Other guidelines, issued by agencies such as the Canadian Standards Association (CSA), may apply to the workplace. Municipalities may also issue regulations for building requirements, hazardous waste management, fire safety and disaster planning.

TABLE 1.1

ACTS AND REGULATIONS WHICH APPLY TO WORKPLACE HEALTH AND SAFETY

- The Occupational Health and Safety Act
  - *Regulations for Industrial Establishments*
  - *Regulations respecting Window Cleaning*
  - *Regulation respecting Asbestos on Construction Projects and in Buildings*
  - *Regulations respecting Control of Exposure to Biological or Chemical Agents*
  - *Workplace Hazardous Materials Information System Regulations*
  - *Regulations respecting X-Ray Safety*
- Public Hospitals Act – REPEATED BELOW
- Canadian Nuclear Safety Commission
- Ontario Environmental Protection Act
  - *Waste Management Regulation*
- Hazardous Materials Information Review Act
- Hazardous Products Act and Controlled Products Regulation
- Municipal regulations for waste recycling and fire
- Ontario Building Code
- Ontario Fire Code
- Transportation of Dangerous Goods Act
- Workplace Safety and Insurance Act
- Criminal Code (of Canada)
- Labour Relations Act
- Chase McEachern (Heart Defibrillator Civil Liability) Act
- the Human Pathogens and Toxins Act (HPTA)
- The Human Pathogens and Toxins Regulations (HPTR)

NOTE: This list may not be all inclusive.

The following do not directly apply to the Institute but impact on practice:

- Healing Arts Radiation Protection Act
- Public Hospitals Act
- Regulations for Health Care and Residential Facilities
- Ontario Hospitals Association (best practices)

COMPLIANCE

Safety policies and procedures are ineffective unless followed. It is the employee and the student's responsibility to always work safely and responsibly by taking all necessary precautions either set in this manual or by consulting with their respective supervisor or faculty member.

INSPECTION AND REVIEW

Regular inspections of the workplace are conducted by representatives of the JHSC to identify and correct situations that may be dangerous or hazardous to all stakeholders (employees, students, and visitors). For further information consult the Workplace Inspections sheet in the Appendix.

WHOSE RESPONSIBILITY IS IT?

Safety is **everyone's** responsibility. Levels of responsibility are expressed in general terms below.

NOTE: Although the Occupational Health and Safety Act applies only to employees/ workers, Michener's students are expected to comply with the rules set out in this Manual and any academic program specific safety guidelines.

THE EMPLOYER IS RESPONSIBLE

- take every precaution reasonable in the circumstances for the protection of a worker.
- to provide a safe and healthy working environment.
- prepare policies with respect to workplace violence and harassment.
- to ensure that equipment, materials, and protective devices are provided, maintained in a good condition.
- to establish and enforce health and safety policies and working procedures.
- provide information, instruction & supervision to the worker to protect their health and safety.
- to provide health and safety programs appropriate to the workplace.
- to help the JHSC carry out their duties and functions.
- to employ only those legally eligible to work in the workplace.
- to post a copy of the OHSA and explanatory material prepared by the MLTSD in English and the majority language of the work place.
- to provide expertise and leadership in health and safety issues.

THE SUPERVISORS/INSTRUCTORS ARE RESPONSIBLE

- To take every reasonable precaution and to protect workers.
- To make sure that workers work as required by the OHSA, wear and use personal protective devices and receive training and instruction on workplace hazards and safe working procedures.

- To use and implement current procedures related to their specific disciplines.
- To ensure the effective application of all safety policies and procedures within their area of responsibility.

- To address deliberate or repeated disregard for a policy or procedure effectively and promptly.
- To promote a positive attitude towards health and safety issues in themselves, their employees and students;
- To respond quickly and effectively to employee/student concerns and suggestions regarding safety issues.
- To investigate any accidents/incidents, with the employee/student involved.

NOTE: Instructors are responsible for ensuring safe working conditions in the laboratory at the beginning, during and end of laboratory sessions.

ALL EMPLOYEES/STUDENTS ARE RESPONSIBLE

- To be familiar with and abide by the Occupational Health & Safety Act and the established health & safety policies and best practices of Michener.
- To work in a manner which will not endanger themselves or their colleagues, including but not limited to pranks and boisterous conduct.
- To use, wear and care for personal protective equipment, clothing and other safety equipment provided for their safety and well-being.
- To report health and safety hazards, incidents or infractions of the rules or any contravention to the Act to their supervisor/instructor.
- To report any medical incidents and/or occupational injuries to their immediate supervisor/ faculty immediately and subsequently to the health Nurse (Students) and People & Culture (Employees) *See Student or Employee Incident Report Form
- For notifying the Occupational Health Nurse of a visible or invisible disability that may require academic or workplace accommodation.

NOTE: For a complete listing of duties and further information about them, consult the Occupational Health and Safety Act posted in the Staff Lounge on the fifth floor.

BASIC WORKER RIGHTS

Employers have the general right to direct workers and their processes in the workplace. In the interest of health and safety, the Act affords the following basic rights to all workers to balance the rights of employers:

THE RIGHT TO PARTICIPATE

Workers have the right to be a part of the process in addressing health and safety in the workplace. This right can be realized through participation in the Joint Occupational Health & Safety Committee and or by working to identify and resolve workplace health and safety concerns through the safety representatives and or supervisors or employers.

THE RIGHT TO KNOW

This means that workers have the right to be made aware of any potential hazards to which they may be exposed. Awareness can be in the form of training, information, process or procedures, equipment, hazardous substances (see WHMIS), and even overall working conditions.

THE RIGHT TO REFUSE UNSAFE WORK

Under The Occupational Health and Safety Act, individual workers have the right to refuse unsafe work including workplace violence and/ or domestic violence that may carry over into the workplace and expose a worker to violence in the workplace, without fear of reprisal, if they have reason to believe that the work may endanger themselves or another worker. Due to the gravity of such an occurrence, the Act sets forth a very specific process for a work refusal, which must be followed in conjunction with the Supervisor and member(s) of the JHSC. (See also Incident Report and "Workplace Violence Incident Report")

THE RIGHT TO STOP WORK WHERE HEALTH OR SAFETY ARE IN DANGER

This right is not afforded to all workers, rather, only under certain circumstances, if certified members of the JHSC find that dangerous circumstances exist for any worker, they have the right to stop specified work through a process set out in the Act.
The dangerous circumstances may be identified during a workplace inspection or during the investigation of an accident, employee complaint or work refusal. (See JHSC Terms of Reference)

REPORTING AN INCIDENT

Immediate reporting of hazards, including workplace violence or workplace harassment, spills involving hazardous materials, enables the opportunity to address the problem before an incident or injury results.
In the event an incident has occurred, and an injury resulted in the workplace, it is critical that the person affected is provided the appropriate level of medical attention, be it basic first aid to services from a medical doctor or facility. Although reporting incidents is essential for purposes of prevention, it is even more important to report incidents where injuries have been sustained as prompt reporting to external government bodies may be required by law.

NOTE: To obtain the most accurate information pertaining to an injury, all reports should be written in the first person. If the affected individual cannot complete the report, the supervisor/ faculty or witness must complete a report form to be reviewed and authorized by the affected individual.

WHERE CAN I GET THIS FORM?

The Incident Report forms for students, patients, visitors, and employees are available from:

- the Health Nurse
- People & Culture
- Printed from the electronic copy located on myMichener.ca.

WHAT HAPPENS TO THE REPORT?

The Health Nurse (in the case of students) and People & Culture (in the case of employees) use the report to assess medical need and to complete a Workplace Safety and Insurance claim form, if necessary.

The JHSC reviews the report at its next meeting and based on the situation itself or the resolution between supervisor and affected individual they may choose to make further recommendations for future action if required.

1. The 1993 *Core Certification Training Program Participant's Manual* of the Workplace Health and Safety Agency, Ontario, page 184.
2. Ibid.

STUDENT
ACCIDENT/INCIDENT (NEAR MISS)/HAZARD REPORT

PLEASE READ THE INSTRUCTIONS ON THE REVERSE SIDE

STUDENT
INCIDENT REPORT

THE Michener INSTITUTE of Education at UHN

EMPLOYEE
INCIDENT REPORT

PLEASE REVIEW INSTRUCTION SHEET ATTACHED — **ALL SECTIONS MUST BE COMPLETED**

DATE OF INCIDENT: (MM / DD / YYYY)	TIME OF INCIDENT:	LOCATION OF INCIDENT:
NAME OF INJURED/ AFFECTED EMPLOYEE :		DEPARTMENT:
REPORTED TO SUPERVISOR (NAME):		DATE: (MM / DD / YYYY) / TIME:
WITNESSES (IF APPLICABLE):		

STEP 1 INCIDENT DETAILS — Please include type of incident (ie. Exposure to biological agent) Attach paper if additional space required.

TYPE OF INCIDENT	Check off (✓) statements that best describe the incident		
❑ Repetitive Strain	❑ Acute Strain (lifting, pulling, carrying)	❑ Caught in / between	❑ Struck, contacted by / with / against
❑ Slip/fall	❑ Vehicle	❑ 3rd party action	❑ Cut / bruise
❑ Exposure to	❑ Other (explain):		

PART OF BODY INJURED	Where applicable, indicate location of injury: "R" (Right); "L" (Left) ; "F" (Front) ; "B" (Back)			
❑ Head	❑ Eye	❑ Neck	❑ Shoulder	❑ Upper back
❑ Lower back	❑ Upper Arm	❑ Elbow	❑ Lower Arm	❑ Wrist
❑ Hand / fingers	❑ Hip	❑ Upper Leg	❑ Knee	❑ Lower leg
❑ Ankle	❑ Foot / Toes	❑ Other (explain)		

STEP 2 INCIDENT CAUSE — Attach paper if additional space required.

STEP 3 INJURY RESPONSE — ❑ Basic First Aid ❑ HEALTH NURSE ❑ MEDICAL AID (DOCTOR) * ❑ NEAR MISS / NA

*Doctor/ Hospital/ Clinic Name (if applicable):	
Treatment (if applicable):	

STEP 4 PREVENTION — Attach paper if additional space required.

STEP 5 ACKNOWLEDGEMENT

EMPLOYEE NAME:	SUPERVISOR NAME:
SIGNATURE:	SIGNATURE:
DATE (MM/DD/YYYY):	DATE (MM/DD/YYYY):

COMPLETED FORM MUST BE *RECEIVED* BY HUMAN RESOURCES WITHIN 24 HOURS OF INCIDENT

OFFICE USE ONLY

NOTIFIED PHAC: ❑Y / ❑ N	LOST TIME INJURY: ❑Y / ❑ N	# OF DAYS LOST / ABSENCE:
DATE RECEIVED (HUMAN RESOURCES):		

(SEE OVER)

REPORTING AND INVESTIGATING ACCIDENTS/INCIDENTS/HAZARDS
Ensure appropriate treatment has been administered to the student

Description
The goal of any injury response plan is to investigate the cause as soon as possible and take steps to prevent a future occurrence. It is important that this form be completed by the individual who has been non-critically* injured or directly affected by the incident.

Critical Injury* – is an injury of a serious nature that, places a life in jeopardy, produces unconsciousness, results in substantial loss of blood, involves the fracture or amputation of a leg or arm, but not a finger or toe, consists of burns to a major portion of the body or causes the loss of sight in an eye. After seeking emergency medical aid, critical injuries should be immediately escalated internally to the Manager of Health, Safety & Emergency Planning or to the Vice President of Operations.

Instructions
All sections of the form must be completed. If a required field does not apply to the incident you are reporting, such as "near miss" where there are no injuries to report, put "N/A."

STEP 1 – INCIDENT DETAILS*
Is a written account by the affected/ injured student describing the incident in full and providing specific details of what was observed or experienced. The incident report must be completed as soon after the incident as possible. Use the checklist provided to categorize the incident and injuries further. Example: During a lab exercise, I was practicing uncapping a sterile syringe which bounced back and punctured my right thumb.

*3rd Party reporting – if the student affected or injured by the incident cannot complete this report (e.g.: unconscious), a 3rd party individual who witnessed the incident firsthand should complete the report and provide details based on what they see, touch, smell, hear or taste.

STEP 2 – INCIDENT CAUSE
How did the incident occur? Describe prior activity leading up to incident as well as any factors such as relevant materials or equipment that may have contributed to the incident occurring. Example: I was distracted momentarily and applied too much force when uncapping the needle.

STEP 3 – INJURY RESPONSE
Action or treatment taken to assist injured or affected student. If available, provide name of Doctor, Hospital or Clinic treating the injured student.
Example: Minor first aid was issued by the faculty. The wound area was cleaned, and a bandage was applied.

STEP 4 – PREVENTION
This should be an interactive review/ discussion of the incident between the student and their supervising faculty member to prevent this incident from happening again.
Example: Reviewed this accident with my faculty member- sharps handling technique has been reviewed and additional supervision will be provided until I am more confident with handling needles.

STEP 5 – ACKNOWLEDGEMENT
Both the student and supervising faculty member must review, agree to and be accountable for the contents prior to signing and submitting.

HEALTH NURSE MUST RECEIVE COMPLETED FORM
WITHIN 24 HOURS OF THE INCIDENT OCCURRING
FAILURE TO SUBMITAN INCIDENT REPORT IN A TIMELY MANNER MAY RESULT IN DISCIPLINARY ACTION FOR THE STUDENT AND PENALTIES SUCH AS FINES AGAINST MICHENER
(FAX: 416-596-7214)

EMPLOYEE INCIDENT REPORT

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab

Workplace Safety Report
Health & Safety

Print Form | Submit by Email

No Injury No WSIB Claim	Injury No WSIB Claim	Injury WSIB Claim
Hazardous Situation ☐	First Aid ☐	Health Care ☐
		Lost Time ☐

TGH ☐ TWH ☐ PMH ☐ TRI-UC ☐ TRI-BC ☐ TRI-RC ☐ TRI-LC ☐ TMDT ☐ KDT ☐ Other ☐ _____

A. Employee Identification (*please print clearly*)

Last Name	First Name	Date of Birth DD/MM/YYYY	
Address	City	Phone	Postal Code
Occupation / Years Exp.	Department	Supervisor/Manager	

B. Incident Information (*All information must be completed prior to submitting this form*)

Did the incident occur while you were at work: Yes ☐ No ☐ | Location (Bldg / Fl / Wing / Rm):

Date of incident	Time of incident	Date Reported	Normal working hours on last day worked (from / to)	Last Day and hours worked (from / to)

Who did you report the incident to? (name of individual)	Position/Title	Phone

1. Witness to the incident? (Name, contact #).	2. Witness to the incident? (Name, contact #)

Please state what happened / What you were doing / Injury details (if any). Include details of equipment, sizes & weights of objects handled.

Seen in OHS ☐ Seen in Emergency ☐ Other ☐ Where? | Date

Seen by: Dr. ☐ RN ☐ Other ☐ ? | Name | Phone

Previous similar injury? Yes ☐ No ☐ If yes, Recurrence of previous WSIB claim ☐ *OR* Non-work related injury ☐

Manager / Supervisor actions taken to prevent recurrence.

Employee Name or Signature	Date	Manager/Supervisor Name or Signature	Phone	Date

Email to Parklane@uhn.ca or fax/mail to: (TG, PM, TW, TMDT, KDT) 416-340-4117 / TGH 2EN-260 (TRI) 416-597-3026 / TRI-UC, 5-145

Form 3005 (Rev. 07/2017)

Submit by Email

EMPLOYEE (UHN)
INCIDENT REPORT

Employee Details (click the 'Lookup' button below to search for an employee)

Employee Name [Lookup] VINH XUAN PHAM — University Health Network (001)

Employee ID	509056	Department	EMPLOYEE RELATIONS
Job Class / Position	COORDINATOR II, HUMAN		
Employee Union	NON-UNION PROFESSION		

Employment Details

Supervisor

Reporting Information

Your Telephone Number

Your Email Address

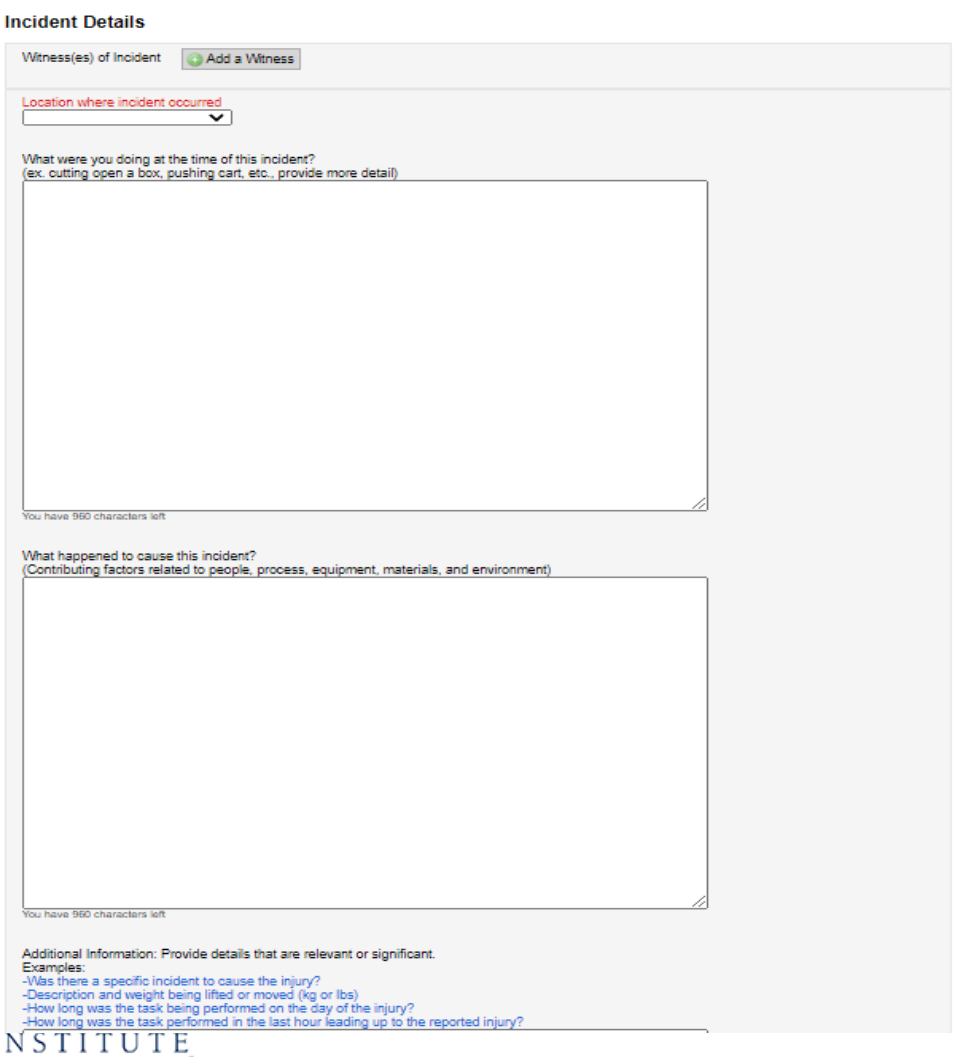
Incident Description

Incident Classification

- ○ I am reporting a hazardous situation or near miss, where there was no personal injury.
- ○ I was injured. I did not receive first aid or I received first aid from someone other than a physician or other health care professional. I returned or will be returning to work.
- ○ I was injured. I received medical attention at a hospital or at a medical clinic or at a doctor's office. I returned or will be returning to work.
- ○ I was injured and I will be off from work as the result of my injuries.

Date of Incident YYYY/MM/DD [Today] [...] Time of Incident [Pick]

Was Violence or Harassment a part of this incident? ○ Yes ○ No ○ Unknown



Incident Details

Witness(es) of Incident — Add a Witness

Location where incident occurred

What were you doing at the time of this incident?
(ex. cutting open a box, pushing cart, etc., provide more detail)

You have 960 characters left

What happened to cause this incident?
(Contributing factors related to people, process, equipment, materials, and environment)

You have 960 characters left

Additional Information: Provide details that are relevant or significant.
Examples:
-Was there a specific incident to cause the injury?
-Description and weight being lifted or moved (kg or lbs)
-How long was the task being performed on the day of the injury?
-How long was the task performed in the last hour leading up to the reported injury?

THE INSTITUTE of Education at UHN

INCIDENT REPORT

PLEASE REVIEW INSTRUCTION SHEET ATTACHED — **ALL SECTIONS MUST BE COMPLETED**

DATE OF INCIDENT: (MM / DD / YYYY)	TIME OF INCIDENT:	LOCATION OF INCIDENT:
NAME OF INJURED/ AFFECTED VISITOR:		REASON FOR VISIT: **VISITOR**
REPORTED TO SECURITY (NAME):	DATE: (MM / DD / YYYY)	TIME:

WITNESSES (IF APPLICABLE):

STEP 1 INCIDENT DETAILS

Attach paper if additional space required.

TYPE OF INCIDENT	Check off (✓) statements that best describe the incident		
❑ Repetitive Strain	❑ Acute Strain (lifting, pulling, carrying)	❑ Caught in / between	❑ Struck, contacted by / with / against
❑ Slip/fall	❑ Vehicle	❑ Third party action	❑ Cut / bruise
❑ Exposure to	❑ Other (explain):		
PART OF BODY INJURED	Where applicable, indicate location of injury: **"R"** (Right); **"L"** (Left); **"F"** (Front); **"B"** (Back)		

❑ Head	❑ Eye	❑ Neck	❑ Shoulder	❑ Upper back
❑ Lower back	❑ Upper Arm	❑ Elbow	❑ Lower Arm	❑ Wrist
❑ Hand / fingers	❑ Hip	❑ Upper Leg	❑ Knee	❑ Lower leg
❑ Ankle	❑ Foot / Toes	❑ Other (explain)		

STEP 2 **INCIDENT CAUSE** Attach paper if additional space required.

STEP 3 **INJURY RESPONSE** ❑ Basic First Aid ❑ HEALTH NURSE ❑ MEDICAL AID (DOCTOR) * ❑ NEAR MISS / NA

*Doctor/ Hospital/ Clinic Name (if applicable):	
Treatment (if applicable):	

STEP 4 **PREVENTION** Attach paper if additional space required.

STEP 5 **ACKNOWLEDGEMENT**

VISITOR NAME:	**SECURITY NAME:**
SIGNATURE:	**SIGNATURE:**
DATE (MM/DD/YYYY):	**DATE (MM/DD/YYYY):**

COMPLETED FORM MUST BE RECEIVED BY FACILITIES DIRECTOR & PEOPLE & CULTURE WITHIN 24 HOURS OF INCIDENT

OFFICE USE ONLY

	LOST TIME INJURY: ❑Y / ❑ N	**# OF DAYS LOST / ABSENCE:**
DATE RECEIVED (PEOPLE & CULTURE):		

VISITOR

INCIDENT REPORT

Description
The goal of any injury response plan is to investigate the cause as soon as possible and take steps to prevent a future occurrence. It is important that this form be completed by the individual who has been non-critically* injured or directly affected by the incident.

Critical Injury* – is an injury of a serious nature that, places a life in jeopardy, produces unconsciousness, results in substantial loss of blood, involves the fracture or amputation of a leg or arm, but not a finger or toe, consists of burns to a major portion of the body or causes the loss of sight in an eye. After seeking emergency medical aid, critical injuries should be immediately escalated internally to the Vice President of Operations or the Director of People & Culture.

Instructions
All sections of the form must be completed. If a required field does not apply to the incident you are reporting, such as "near miss" where there are no injuries to report, put "N/A."

STEP 1 – INCIDENT DETAILS*
Is a written account by the affected/ injured employee describing the incident in full and providing specific details of what was observed or experienced. The incident report must be completed as soon after the incident as possible. Use the checklist provided to categorize the incident and injuries further.
Example: *I slid down the full flight of stairs at the front of the building on my knees, breaking my fall with my wrists.*
*3rd Party reporting – if the employee affected or injured by the incident cannot complete this report (e.g.: unconscious), a third party who witnessed the incident should complete the report and provide details based on what they see, touch, smell, hear or taste.

STEP 2 – INCIDENT CAUSE
How did the incident occur? Describe prior activity leading up to incident as well as any factors such as relevant materials or equipment that may have contributed to the incident occurring.
Example: *My view was obstructed carrying a set of heavy boxes rushing to catch a cab and subsequently took a misstep which led me to lose my balance.*

STEP 3 – INJURY RESPONSE
Action or treatment taken to assist injured or affected employee. If available, provide name of Doctor, Hospital or Clinic treating the injured employee.
Example: *Recommended I go to Mount Sinai's emergency room to get stitches for my open wounds and to get an X-ray of my wrists.*

STEP 4 – PREVENTION
To be completed post incident, as part of investigation. This should be an interactive review/ discussion of the incident by Michener Facilities Director/Manager and People & Culture Departments to prevent this incident from happening again. The Root Cause of the incident must be investigated and addressed.
Example: Incident reviewed and determined lifting carpet tile was cause of trip and fall, carpet tile to be replaced.

STEP 5 – ACKNOWLEDGEMENT
Both the visitor and security guard must review, agree to and be accountable for the contents prior to signing and submitting.

FACILITIES DIRECTOR AND PEOPLE & CULTURE MUSTRECEIVE COMPLETED FORM WITHIN 24 HOURS OF THE INCIDENT OCCURRING

FAILURE TO SUBMITAN INCIDENT REPORT IN A TIMELY MANNER MAY RESULT IN DISCIPLINARY ACTION AGAINST SECURITY AND PENALTIES SUCH AS FINES AGAINST MICHENER

PATIENT

INCIDENT REPORT

PLEASE REVIEW INSTRUCTION SHEET ATTACHED — **ALL SECTIONS MUST BE COMPLETED**

DATE OF INCIDENT: (MM / DD / YYYY)	TIME OF INCIDENT:	LOCATION OF INCIDENT:
NAME OF INJURED/ AFFECTED PATIENT:		
REPORTED TO CLINIC SUPERVISOR/ ACADEMIC CHAIR (NAME):	DATE: (MM / DD / YYYY)	TIME:
WITNESSES (IF APPLICABLE):		

STEP 1 INCIDENT DETAILS

Attach paper if additional space required.

TYPE OF INCIDENT — Check off (✓) statements that best describe the incident

❑ Repetitive Strain	❑ Acute Strain (lifting, pulling, carrying)	❑ Caught in / between	❑ Struck, contacted by / with / against
❑ Slip/fall	❑ Vehicle	❑ Cut / bruise	
❑ Exposure to	❑ Other (explain):		

PART OF BODY INJURED — Where applicable, indicate location of injury: **"R"** (Right); **"L"** (Left); **"F"** (Front); **"B"** (Back)

❑ Head	❑ Eye	❑ Neck	❑ Shoulder	❑ Upper back
❑ Lower back	❑ Upper Arm	❑ Elbow	❑ Lower Arm	❑ Wrist
❑ Hand / fingers	❑ Hip	❑ Upper Leg	❑ Knee	❑ Lower leg
❑ Ankle	❑ Foot / Toes	❑ Other (explain)		

STEP 2 INCIDENT CAUSE

Attach paper if additional space required.

STEP 3 INJURY RESPONSE

❑ Basic First Aid ❑ Third party ❑ MEDICAL AID (DOCTOR) * ❑ NEAR MISS / NA

*Doctor/ Hospital/ Clinic Name (if applicable):	
Treatment (if applicable):	

STEP 4 PREVENTION

Attach paper if additional space required.

STEP 5 ACKNOWLEDGEMENT

PATIENT NAME:	CLINIC SUPERVISOR / ACADEMIC CHAIR:
SIGNATURE:	SIGNATURE:
DATE (MM/DD/YYYY):	DATE (MM/DD/YYYY):

COMPLETED FORM MUST BE RECEIVED BY ACADEMIC CHAIR & PEOPLE & CULTURE WITHIN 24 HOURS OF INCIDENT

OFFICE USE ONLY		
	LOST TIME INJURY: ❑Y / ❑ N	# OF DAYS LOST / ABSENCE:
DATE RECEIVED (PEOPLE & CULTURE):		

PATIENT

CONFIDENTIAL INCIDENT REPORT

Description
The goal of any injury response plan is to investigate the cause as soon as possible and take steps to prevent a future occurrence. It is important that this form be completed by the individual who has been non-critically* injured or directly affected by the incident.

Critical Injury* – is an injury of a serious nature that, places a life in jeopardy, produces unconsciousness, results in substantial loss of blood, involves the fracture or amputation of a leg or arm, but not a finger or toe, consists of burns to a major portion of the body or causes the loss of sight in an eye. After seeking emergency medical aid, critical injuries should be immediately escalated internally to the Vice President of Operations or the Director of People & Culture.

Instructions
All sections of the form must be completed. If a required field does not apply to the incident you are reporting, such as "near miss" where there are no injuries to report, put "N/A."

STEP 1 – INCIDENT DETAILS*
Is a written account by the affected/ injured employee describing the incident in full and providing specific details of what was observed or experienced. The incident report must be completed as soon after the incident as possible. Use the checklist provided to categorize the incident and injuries further.
Example: *I slid down the full flight of stairs at the front of the building on my knees, breaking my fall with my wrists.*

STEP 2 – INCIDENT CAUSE
How did the incident occur? Describe prior activity leading up to incident as well as any factors such as relevant materials or equipment that may have contributed to the incident occurring.
Example: *My view was obstructed carrying a set of heavy boxes rushing to catch a cab and subsequently took a misstep which led me to lose my balance.*

STEP 3 – INJURY RESPONSE
Action or treatment taken to assist injured or affected patient. If available, provide name of Doctor, Hospital or Clinic treating the injured patient.
Example: recommended I go to Mount Sinai's emergency room to get stitches for my open wounds and to get an X-ray of my wrists.
*3rd Party reporting: Intervention at time of injury – if the patient affected or injured by the incident cannot complete this report (e.g.: unconscious), a third party who witnessed the incident should complete the report and provide details based on what they see, touch, smell, hear or taste

STEP 4 – PREVENTION
To be completed post incident, as part of investigation. This should be an interactive review/ discussion of the incident by Michener Facilities Director/Manager and People & Culture Departments to prevent this incident from happening again. The Root Cause of the incident must be investigated and addressed.
Example: Incident reviewed and determined lifting carpet tile was cause of trip and fall, carpet tile to be replaced.

STEP 5 – ACKNOWLEDGEMENT
Both the visitor and security guard must review, agree to and be accountable for the contents prior to signing and submitting.

ACADEMIC CHAIR AND PEOPLE & CULTURE MUSTRECEIVE COMPLETED FORM WITHIN 24 HOURS OF THE INCIDENT OCCURRING

FAILURE TO SUBMITAN INCIDENT REPORT IN A TIMELY MANNER MAY RESULT IN DISCIPLINARY ACTION AND PENALTIES SUCH AS FINES AGAINST MICHENER

WORKPLACE RULES

BE PREPARED

- Know the layout of your workplace, especially the location of safety devices and the nearest exit.
- Know how to use safety devices and equipment safely and correctly.
- Read all labels and follow instructions.
- Ensure that all equipment is turned off and returned to its proper place after use.

PROPER HAND WASHING PROCEDURE

Simple hand washing with soap and water is the single most effective way to halt the spread of disease. Hand washing is especially important whenever there is potential contact with blood or other body fluids and secretions. Be sure to wash your hands upon exiting a laboratory before eating and after using the washroom. See also Section 7.

- Use cool to warm (never hot) water and a non-abrasive cleanser such as soap. Avoid touching the sink or backsplash area.

- Wash hands thoroughly under running water. Wet both hands and wrists before applying soap. Rub the palms of the hands together to create friction. Grasp the wrist and apply friction to lather around it. Clean the back of the hand and fingers. Rinse and repeat for the other hand.

- Pay special attention to the areas under any rings or false nails. These areas are moist and damp and therefore provide ideal sites for bacterial growth.

- Dry thoroughly with a non-abrasive towel. Use the towel to turn off the taps; this avoids recontamination of your hands.

- Apply hand lotion or cream to restore the moisture in your skin. Keeping the skin moisturized will avoid cracks and dry skin rashes; this in turn provides an effective barrier to most infectious agents.

INFECTION PROTOCOLS IN EFFECT

Although initially intended for use during a pandemic event, such as flu, the following has become a general best practice in the workplace/ educational environment where many people are in relatively proximity to one another:

- Practice proper sneeze and cough etiquette by coughing or sneezing into the crease of your elbow/ sleeve. Dispose of any used tissues immediately in a proper waste receptacle.

- Wash your hands immediately after coughing or sneezing, being sure to follow the proper hand washing protocols signs (see Hand washing).

- When running water is not readily available, hand sanitizer located in the ~~elevator~~ lobbies on each floor should be used instead. Although hand washing is the preferred methodology for heavily soiled hands, if running water is not available, attempt to remove the foreign material off your skin with a paper towel before applying the hand sanitizer.

FOOTWEAR AND CLOTHING

- Clothing and footwear must not introduce a safety hazard.

- Where there is danger of crush or puncture injury to the feet (**e.g.,** Operations, Distribution and Receiving), wear safety footwear which meets CSA standards (**e.g.,** "green patch" or equivalent). Shoes with rubber soles must be worn in Microtomy laboratories.

- Shoes with closed-in heels and toes are recommended, with maximum heel height of 2"in lab areas. A larger heel surface provides greater stability.

- Wearing canvas shoes, shoes with open toes and/or heels, and sandals are discouraged and specifically prohibited in laboratories, patient care areas, and the Café 222 kitchen, Laboratory Services-Lab work areas and Distribution and Receiving.

PERSONAL SAFETY RULES

- **Do not** wear ties, scarves, or loose dangling jewelry when operating machinery or instruments which provide any source for entanglement.

- Tie back, or secure long hair in laboratory, clinical area and where there is any danger that hair may be caught in moving equipment parts. Long hair is defined as that which reaches the collar.

- Consume lunches and snacks in designated areas only. Refreshments and food are not permitted in laboratories or the Anatomy and Physiology Resource Centre.

- Store food and beverages in designated refrigerators provided for that purpose.

PROPER LIFTING PROCEDURE

Back injuries are easily avoided by using some basic rules to lift heavy objects. Estimate the size, weight, and shape of the object. Get help before you try to lift an object which exceeds your lifting capabilities.

- Examine the sides and bottom of the object to be moved to avoid accidental contact with sharp edges, staples, splinters, etc.

- Keep your back straight. Make sure you are on firm natural footing.

- Squat down beside the object to be moved or bend your knees to lower yourself to the appropriate height.

- Grip the object firmly with both hands.

- Use your thigh or leg muscles to straighten up. Keep the object being lifted close to the body.

- When turning, turn the entire body rather than twisting at the waist. Always maintain an even balance.

- Use mechanical lifting devices for heavy loads when possible.

BUILDING SAFETY RULES

- Horseplay in the workplace is forbidden.

- Aisles, halls, workplaces, and stairways must be kept free of all obstructions and defects which might cause slips, trips or falls. The workplace should be designed to minimize traffic flow around the worker. A surface should not have any finish or protective material on it which causes it to be slippery.

Please refer to additional guidelines specific to each program.

- Where the workplace or task involves potential exposure to toxic materials, additional engineering controls (**e.g.,** fume hoods) are necessary. It is important that anyone who uses these controls be instructed on proper usage of the equipment and how to ensure that it is fully operational.

- Use small ladders or step stools to reach items stored overhead. Do not climb onto chairs, desks, tables, shelves or filing cabinet drawers.

- Avoid placing heavy loads on bookshelves above office desks.

- Do not alter, manipulate, block or store materials on the heating/ ventilation/ air-conditioning (HVAC) vents. Not only is storing combustibles on a heat source a fire hazard, but the HVAC system relies on a certain balance to heat or cool the air throughout the floor. Blocking the vents creates an imbalance of treated air throughout the floor.

- Keep storage areas neat and uncluttered. Store heavy objects lower than shoulder height. Store glass containers at a height no higher than that which the average employee can safely reach Ideally, not higher than 1.5 meters/five feet).

- Dispose of all waste and recycling in their respective bins. For hazardous waste, refer to the Decontamination and Disposal Chart. Contact a Laboratory Services staff member for any items not listed.

- Although still present in various forms of equipment or application, the use of latex is restricted. Gloves and balloons made of latex are prohibited at the Michener Institute.

For a general overview of emergency procedures, the Safety Fact Sheet is available to visitors at Reception. See Table 1.2.

SAFETY FACT SHEET

MEDICAL EMERGENCY

1. **Dial 9-911** for emergency response services.
2. **Dial Security at ext. 3333** and provide your location and the details of the emergency.

FIRE OR OTHER EVACUATION

Note: Please familiarize yourself with emergency exit routes for this floor.

1. Upon the discovery of fire, pull fire alarm stations located at all exit stairwells.
2. Leave the fire area immediately. Close all doors behind you.
3. Evacuate the building in a calm orderly fashion, keeping to the outside of the stairwells.
4. If you require assistance during an evacuation, please alert a Fire Warden.

ACCIDENTS, INCIDENTS AND HAZARDS

1. Seek medical attention as required through the nearest walk-in clinic or hospital emergency department.
2. Report accidents, incidents (near misses) and hazards immediately to your supervisor (accident/injury report forms are available at Reception or on my Michener).

BOMB THREAT

1. **Dial 9-911; then dial Security at ext. 3333**
2. Proceed to Reception to debrief with the Police

INTRUDER OR VIOLENT SITUATION

1. If safe to do so remove yourself from the situation and **dial 9-911** immediately.
2. **Dial Security on ext. 3333** to notify them of the situation.

REPAIRS OR MECHANICAL MALFUNCTION

Urgent: **Dial Reception at ext. 0** - All Other Repairs: Use “Call Mich”

IMPORTANT PHONE NUMBERS (during business hours)

HEALTH SERVICES:

Gloria Szollosi (*Health Nurse)* x. 3320
UHN Health Services 416-979-4441

FACILITIES:

Erica Tong (*Director, Facilities)* x. 3174

BIOLOGICAL AND CHEMICAL SAFETY OFFICER:

Yasmin Halley (Manager, Laboratory Services) x3200

RADIATION PROTECTION & RADIOLOGICAL TECHNOLOGY OFFICER:

N/A

COMPRESSED GASES SAFETY OFFICER:

Jody Saarvala (*Professor, Respiratory Therapy)* x. 3208

RADIATION SAFETY OFFICER, NUCLEAR MEDICINE:

Adam Zalewski (*Associate Professor, Nuclear Medicine*) x. 1711

RADIATION PROTECTION OFFICER, RADIATION THERAPY:

N/A

PEOPLE & CULTURE:

Diana Do (*P&C Coordinator)* x. 1737

DECONTAMINATION AND DISPOSAL PROCEDURES USED AT THE MICHENER INSTITUTE

MATERIAL	NOT INFECTIOUS	POTENTIALLY INFECTIOUS
1. DISPOSABLE NON-GLASS ITEMS *absorbent paper, gloves, filter paper, Kleenex™, plastic pipette tips, plastic transfer pipettes, , a cuvettes, paper lab coats, gauze, cotton balls, Band-Aids, vacutainers*	⇒ Treat as potentially infectious. ⇒	⇒ Place in biohazard waste container lined with colour coded plastic liner if soiled with potentially infectious material or else discard in regular garbage as per IPAC. (Use your judgement) ⇒ Full colour coded yellow bags should be securely tied and placed in provided bins.
2. NON-DISPOSABLE PIPETTES	⇒ Fill pipette soaker with warm, soapy water ⇒ Place pipettes in soaker tips up	⇒ Slowly submerge pipettes, tip up, in freshly prepared 10% sodium hypochlorite and soak 2 hours minimum. ⇒ **RINSE PIPETTES WITH SODIUM HYPOCHLORITE THREE TIMES TO REMOVE PROTEIN MATERIAL.** ⇒ Rinse with tap water to remove hypochlorite
3. NON-DISPOSABLE GLASSWARE AND PLASTIC LABWARE	⇒ Rinse with tap water and remove labels. ⇒ Place in totes beside sinks.	⇒ Immerse in totes containing 10% freshly prepared hypochlorite for a minimum of 2 hours (preferably overnight). ⇒ Rinse with tap water to remove hypochlorite. ⇒ Glassware requiring Washing or Autoclaving is performed through UHN support services
4. DISPOSABLE GLASSWARE AND BROKEN GLASSWARE *light bulbs, microscope slides, Pasteur pipettes, coverslips, capillary tubes* *test tubes, specimen containers, blood culture bottles and sample vials*	⇒ Place in a glass disposal box. ⇒ When full, contact Laboratory Services for replacement and Facilities for pickup of full box. ⇒ Treat as potentially infectious.	⇒ Place in a Sharps container. When contents of the container reach the indicated fill line seal the container shut. Do not overfill. ⇒ Place in a yellow colour coded biohazard bag. ⇒ Full bags should be securely tied and placed in provided bins.
PLEASE NOTE: GLASS DISPOSAL BOXES ARE FOR NON-INFECTIOUS GLASS ONLY		
5. DISPOSABLE STAINLESS STEEL SHARPS *needles, needle adaptors, butterflies, winged infusion sets, scalpels, lancets, luer adapters, angiocaths, metal caps from vial and syringe needle sets.*	⇒ Treat as potentially infectious.	⇒ Place in a Sharps container. When contents of the container reach the indicated fill line seal the container shut. Do not overfill.
6. HUMAN ANATOMICAL AND ANIMAL WASTE *human fixed tissue and animal dissection waste*	⇒ Treat as potentially infectious.	⇒ Place in provided bin lined with yellow biohazard bag. ⇒ On weekends label and take to the walk-in fridge, room 614. ⇒ On weekdays notify Laboratory Services waste is ready
7. RADIOACTIVE NUCLIDES *Decay and Storage: Follow CNSC regulations for each radioactive nuclide used. Ensure appropriate disposal documentation*	⇒ After appropriate storage/decay, dispose of non-sharp, non-radioactive material into regular garbage.	⇒ Decay and store material in appropriate bags or in sharps containers as per CNSC regulations, after appropriate storage/decay, take containers to Laboratory Services – Room 625 or basement room B39.
DO NOT FILL BIOHAZARD BAGS, GLASS DISPOSAL BOXES OR SHARPS CONTAINERS MORE THAN TWO THIRDS FULL		

MATERIAL	NOT INFECTIOUS OR NOT POTENTIALLY INFECTIOUS
8. CORROSIVE CHEMICALS *acids and alkalis*	⇒ **CLEARLY LABEL** as waste, include chemical name and concentration, and deliver to room 625.
9. ORGANIC SOLVENTS	⇒ Organic Solvents act to decontaminate or denature any infective material
acetone, xylene, alcohol, chloroform	⇒ Place each solvent in a **separate** closed solvent container that is **CLEARLY LABELLED** as waste indicating its contents; return to room 625.
ethyl acetate	⇒ Return to room 625 for disposal.
10. CHEMICALS AND REAGENTS CYTOTOXIC SOLUTIONS	⇒ All chemicals especially known or suspected carcinogens and mutagens must be **CLEARLY LABELLED** and returned to room 625 for disposal.
11. BATTERIES	⇒ Take to Room 625 for disposal.
12. RADIOGRAPHY FILM/SILVER RECOVERY	⇒ Collect into cardboard boxes for end of year pick-up. Department generating film waste is responsible for arranging disposal.
13. PHOTOCOPIER AND PRINTER INK CARTRIDGES	⇒ Repack in original packaging (for disposal or recycling) and send to DRC Room B36
14. EXPIRED MEDICINE *EXCEPT narcotics or controlled substances	⇒ For safe disposal return to room 625

HYPOCHLORITE

Industrial strength hypochlorite is available from Lab Services.
- ⇒ Prepare a 1 in 100 dilution from the concentrate for a 1% solution.
- ⇒ Prepare a 1 in 10 dilution from the concentrate for a 10% solution.

Exposure to air renders the solution ineffective after 24 hours. Pour used hypochlorite down the drain with cold water running. Do not use metal surfaces. Contact Lab Services for a suitable disinfectant.
Use 1% to wipe benches after working with potentially infectious material.
Use 10% to decontaminate spills of potentially infectious material.

DO NOT DRY THE BENCH!
Leave wet for proper surface contact time and efficient decontamination.

Spills that are flammable or toxic require specialized clean-up. The Spill Cart is available in room 627. If clean up assistance is required, dial "3333" to reach the Receptionist. Spill Response personnel will be dispatched.

DO <u>NOT</u> USE A FUMEHOOD FOR STORAGE

CHEMICAL WASTE FOR DISPOSAL MUST BE CLEARLY AND ACCURATELY LABELLED TO PREVENT REACTIONS (accidents).

FIRST AID

The goal of any safety program is an injury-free workplace. While risks can be reduced significantly, they cannot be eliminated.

FIRST AID PRIORITIES

The following section is not intended to be a comprehensive or complete first aid manual and is not a replacement for formal certification training. Always act accordingly to your ability, knowledge or comfort level and rely on emergency services (911).

1) **Primary Survey** – assess the scene for potential hazards before approaching the injured.
   - What happened? - How did it happen? - Others available to help?

2) **Check Victim** – assess the victim for unresponsiveness.
   - "Are you okay?" - Tap on shoulder - Ask for consent

3) **C-A-B's** – Circulation, Airway, Breathing
   Circulation – Head to Toe visual scan - find & control deadly bleeding
   Airway – Ensure open airway - if unconscious – Head tilt Chin lift
   Breathing – Chest rise and fall - Look, listen, feel for air

4) **Secondary Survey** – if CABs present, find out what else might be wrong
   Ask questions (if conscious)
   Check vital signs.
   Physical head to toe check

5) **Get help** – If no CABs present, identify a helper to call 9-911
   Ask/ Identify by name.
   Direct the person to call 9-911, get closest AED Direct
   the person to return when task completed.

6) **CPR** – In the absence of CABs, begin CPR until AED arrives
   Head tilt / Chin lift.
   Check breathing (5-10 sec)
   Two breaths then 30 compressions (Repeat sequence)

7) **AED (Automated external defibrillator) –** When AED arrives Turn on the unit.
   Remove clothing or jewelry that may be in contact with pads Ensure
   chest is dry and free of hair (use razors in AED kit if needed) Apply
   pads to patient's bare chest.

8) **I am clear, you are clear, everybody's clear.**
Make sure no one is touching the injured.

9) **Follow AED prompts.**

10) **EMS arrival**
Transfer the injured to the EMS upon arrival.

11) **Fill out a first aid & AED event report.**

FIRST AID KIT LOCATIONS

1. First aid supplies should be readily available for the treatment of minor injuries such as cuts or burns. In addition, each kit is inspected and signed off monthly by Facilities. First aid kits are centrally located on all floors in the elevator bays. The primary First Aid box is located at reception.
1. Supplies of Bandages may be obtained from Laboratory Services (laboratoryservices@michener.ca). Immediate use bandages may be obtained from within the First Aid Kits.

NOTE: Follow-up treatment and documentation of the incident are required for injuries involving potential contamination with blood or body fluid or radioisotopes (**e.g.,** a "needle stick" or sharps injury).

AUTOMATIC EXTERNAL DEFIBRILLATORS (AED)

All injuries must be reported to the health Nurse.

AED's or Automatic External Defibrillators are life saving devices used during an unexpected cardiac arrest due to a severely abnormal heart rhythm or sudden cardiac arrest (SCA), a typically life-threatening condition. However, in conjunction with immediate CPR (cardiopulmonary resuscitation), a shock from a defibrillator can increase the chances of survival for the victim of SCA.

DEFIBRILLATOR BOX LOCATIONS

Floor	Location
1	Located behind the main Reception desk
3	Michener Chiropody Clinic inside main doors
8	Located on wall opposite the elevator lobby

WHERE CAN I GET THIS FORM?

The Defibrillator Event Report forms are available directly from the Health Nurse, People & Culture, Reception in the lobby, or on my Michener (intranet).

WHAT HAPPENS TO THE REPORT?

The health Nurse uses the report to assess medical need and to complete a Workplace Safety and Insurance claim form, if necessary. Notify the Biosafety officer, only if necessary to report to PHAC in the case of exposure to infectious biological material.
The AED Site Coordinator will use the form to review the incident and take steps to monitor, improve the emergency aid response program and to maintain necessary equipment.
The Medical Director and receiving Hospital will use the information on the report to assist in further providing medical care to the individual wherever possible.

The JHSC reviews the report at its next meeting and then makes recommendations for future action if required.

If an AED unit is deployed, the following procedures must be completed in order to ensure proper flow of information, reporting, and quality assurance.

Emergency Aid Responder

Step 1: Deploy AED as per Emergency Aid protocols.
Step 2: Transfer patient to EMS – providing as many details as possible
Step 3: Complete (Michener) AED Event Report
Step 4: Complete (Michener) Incident Report (for Student or Employee)
Step 5: Notify Responsible Chair / Manager or People & Culture

Management Response

Step 1: Chair/Manager or PC – to notify VP Operations or alternate
Step 2: VP Operations or alternate to notify Ministry of Labour
Step 3: VP Operations or alternate to Initiate Critical Injury Response Plan

1 SITUATIONAL DETAILS

DATE OF INCIDENT:	TIME:
LOCATION:	
NAME OF INJURED/ AFFECTED:	DEPARTMENT:
REPORTED TO SUPERVISOR (NAME):	DATE & TIME:
AED PROVIDERS (NAMES):	
NATURE OF EMERGENCY: ❑ WORK RELATED INCIDENT ❑ RECREATION/ SPORT ❑ UNKNOWN ❑ OTHER (DESCRIBE):	

SURVEY SCENE *BEFORE* YOU BEGIN TO HELP … YOUR SAFETY FIRST!

2 PRIMARY ASSESSMENT OF INJURED

(VSA) VITAL SIGNS ABSENT ❑ YES ❑ NO

LEVEL OF CONSCIOUSNESS ❑ Alert Responds to verbal ❑ Responds to pain Unresponsive

3 CAB'S CIRCULATION-AIRWAY-BREATHING

CIRCULATION

Pulse present ❑ Yes ❑ No	CPR initiated. ❑ Yes ❑ No	CPR successful ❑ Yes ❑ No	Severe bleed present ❑ Yes ❑ No	Controlled bleeding ❑ Yes ❑ No

AIRWAY

❑ Spontaneously opened	❑ Head tilt / chin Lift	❑ Jaw thrust
❑ Airway obstruction	❑ Obstruction cleared	❑ Obstruction cleared

BREATHING

❑ Spontaneous	❑ Rescue Breathing	❑ Rescue Breathing

4 AED UNIT INFORMATION

MAKE: Philips Heart start SOS Technologies	**MODEL:** M5066A 4000257	**AED LOCATION:** ❑ Reception ❑ 3rd. Floor ❑ 8th Floor

5 EVENT HISTORY

TRANSFER OF PATIENT CARE TO:	❑ Ambulance Unit# _____	❑ Fire Department	❑ Checkbox
TIME OF DEPARTURE WITH INJURED:			

FORWARD TO PEOPLE & CULTURE IMMEDIATELY

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SAFETY MANUAL
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SECTION 2 - ELECTRICAL AND INSTRUMENT SAFETY

Reviewed September 2023

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SECTION 2

ELECTRICAL AND INSTRUMENT SAFETY

This section of the Safety Manual presents electrical safety rules which apply to all areas. For more information about the instruments or appliances in your respective department or workspace, consult your supervisor and/or the equipment's respective operator's manual. All other inquiries regarding power sources or electrical safety should be directed to Facilities.

ELECTRICAL SAFETY

- All electrical equipment purchased for use in Ontario must be approved by the Canadian Standards Association (CSA) or Underwriters Lab of Canada (ULC). This approval is shown by the presence of a sticker on the equipment. In addition, the installer should check each piece of equipment for cord/plug integrity and presence of sticker before the equipment is put into service.
- **For safety purposes, it is important for anyone who will use an instrument or appliance to be trained or instructed on, or to read and understand the operator's manual which accompanies each instrument or appliance.**
- All equipment in use in The Michener Institute must be grounded or, at minimum, double insulated. Grounding is accomplished using a three-pronged plug which automatically grounds the equipment and polarizes the connection at the same time. Double/triple insulated equipment uses two prongs, one of which (the power/positive) is wider than the other. This configuration ensures that the plug can be inserted into a receptacle in one orientation only. This effectively grounds and polarizes the current.
- Ensure that the appropriately sized fuse or circuit breaker is used in the instrument or circuit. The electrical circuit should fail if there is a fault in the system. The use of a fuse with a higher than specified amperage may lead to overheating of the instrument and, ultimately, to an electrical fire.
- When setting up an instrument or appliance in a workplace, ensure adequate air circulation around the unit to prevent overheating.
- **Never** handle electrical cords or equipment with wet hands or while standing in water.
- Keep all electrical cords away from heated surfaces.
- When flammable solvents are in use (**e.g.,** in a fume hood), non-sparking electrical equipment must be used.
- There must be sufficient electrical outlets to meet the needs of the instruments/appliances in the area.
- Extension cords should only be used as a temporary measure (**i.e.,** period of use to be less than 24 hours). Do not staple or nail extension cords in place.
- Power bars with a surge protector or fuse may be used to power a cluster of instruments which draw only lesser amounts of electricity. The power bar must be fixed in a convenient place so that the cords do not present a trip hazard.
- Never run an electrical cord under carpet or rug without appropriate insulated fasteners. Breaks in the covering and insulation will occur when the cord is walked on. Eventually the cord will overheat, creating a risk of fire. Where cords must be run across a traffic area, the cord must be protected. It is advisable to install a new circuit instead by contacting the Facilities Department.

INSTRUMENT SAFETY

- Instruments must be kept clean. Decontaminate all surfaces exposed to blood or body fluids at the end of the laboratory session, or more frequently if spills or breakage occur. Thorough decontamination is essential before allowing service technicians to examine or repair an instrument.
- Instruments, appliances, or other machines must only be serviced when the power has been disconnected. Only qualified service technicians are allowed to make repairs.
- Instrument users should regularly inspect electrical wiring, circuits, grounds, insulation, and cords to ensure that the integrity of the covering and insulation is maintained. Do not use equipment that has worn, frayed or loose cord connections.
- If a liquid is spilled into or onto an instrument, switch the instrument off immediately, pull the plug off from electrical power, and lock out the equipment by contacting the Facilities Department. Dry out the instrument. Do not operate it again until it is completely dry.
- If a piece of equipment presents or is suspected to be a source of possible electrical or shock hazard, contact the Facilities Department immediately to lock out the power source safely.
- All electrical contacts, connectors, and switches for an instrument must be enclosed. Any missing covers must be replaced by the operator before the instrument is used.
- Any instrument or appliance with moving parts must have a shield or guard in place to protect the operator from contact with those parts.

IN THE CASE OF OVERHEATED/DEFECTIVE EQUIPMENT

1. Only if safe to do so, disconnect the plug immediately from power supply.

2. Notify Facilities (see the Safety Fact Sheet, page 1.17).

3. Facilities Department to lock-out and tag-out ("Danger do not operate" label) the equipment.

IN THE CASE OF AN ELECTRICAL SHOCK TO A COLLEAGUE

1. Call 9-911 then call Reception (**dial 3333**), to initiate appropriate emergency action.

2. Perform a primary survey of the scene before attempting to help. Only once you are sure you are not putting yourself in danger and, if safe to do so, turn off the power at the source (**i.e., pull the plug or trip the breaker)**.

3. If you cannot pull the plug or trip the breaker, use a non-conducting material (**e.g.,** a fire blanket or a dry towel) to move the person away from the source of electricity.

4. Assess Circulation, Airway & Breathing of the individual.

5. If necessary and/or possible designate someone to retrieve the AED (**A**utomatic **E**xternal **D**efibrillator) located at the front desk in the lobby. Meanwhile, if you are qualified to provide First Aid:
    - Head-tilt / Chin lift Look, listen & feel.
    - Give two rescue breaths (to make the chest rise) 30 compressions.
    - Repeat cycle (as needed or until AED or EMS arrives)

5. If the AED arrives before EMS, follow instructions from the AED, including continuing to deliver CPR until EMS arrives or as needed.

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SECTION 3 – GENERAL FIRE SAFETY

Reviewed September 2023

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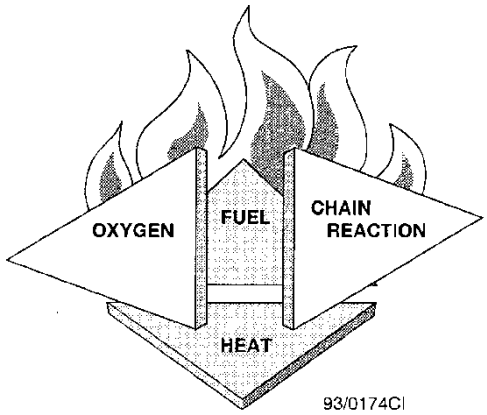
INTRODUCTION

The Michener Institute has established a Fire Safety Plan to provide specific directions to staff and students. The most important aspect of fire safety is to prevent a fire from occurring. This is best done by attention to housekeeping details (**e.g.** proper storage and disposal of flammable materials; ensuring clear access to exits and safety devices) and building maintenance (**e.g.** electrical wiring). To prevent fire, one needs to keep the four necessary elements of fire from co-existing. This section of the Safety Manual deals with the chemistry of fire, the safety devices in place at Michener, and portions of the fire safety plan. The complete Fire Safety Plan is available in both electronic and hard copy format. The electronic version can be found at http://my.michener.ca/policies/HealthSafetyEmergency.php. The hard copy version can be requested at the Reception desk on the first floor.

THE FIRE TETRAHEDRON

The fire tetrahedron is a four-sided, three-dimensional figure. Each of the sides represents one of the four factors necessary for combustion to occur.

FIGURE 3.1: THE FIRE TETRAHEDRON



These four factors are as follows.

- A combustible or reducing agent, **i.e.** any agent that can be oxidized (**FUEL**);
- An oxidizing agent, **i.e.** the element which combines with the reducing agent (**OXYGEN**);
- Temperature or activation energy, **i.e.** energy in the form of **HEAT**;
- A chemical **CHAIN REACTION**, which provides a continuous exchange of heat energy resulting from the combination of the reducing agent and the oxidizing agent.

CLASSES OF FIRE

To extinguish a fire, it is necessary to disrupt one of the aspects of the fire tetrahedron.

Suppress the FUEL (e.g.: close off the valve on a fuel source)
Suppress the OXYGEN (e.g.: smother or choke a fire with a blanket)
Suppress the HEAT (e.g.: spraying water to absorb the heat)
Suppress the CHAIN REACTION (e.g.: the use of the chemical Halon, to interfere with the chemical reaction which is the process of fire.

The above examples are not appropriate for every type of fire. The choice of fire extinguisher depends on the type of flammable material involved.

CLASS A: paper, wood; cloth, rubbish.
CLASS B: gasoline, oil, paints, grease, and other flammable liquids.
CLASS C: overloaded or short-circuited live electrical equipment, motors, etc.
CLASS D: flammable metals (**e.g.** sodium, potassium, zirconium, titanium, magnesium).
CLASS K: flammables containing a fat element such as cooking oils.

The information on fire extinguisher types and general rules for use which follow are provided as information only. In the event of a fire, staff and students must evacuate as described in the fire procedures.

TYPES OF FIRE EXTINGUISHERS

- Dry chemical extinguishers contain a fine powder (usually sodium, or potassium bicarbonate) is stored under pressure. Dry chemical extinguishers may be used on Class A, B or C fires, especially where there is a risk of a fire involving a flammable liquid that is immiscible with water (**e.g.** oil).

- Multi-purpose or Class ABC type extinguishers are found in all laboratories and Fire Hose Cabinets (FHC) at the Michener. There are at least three FHC on each floor. They are located as follows:

  - South hallway (to east of elevator lobby)
  - North hallway
  - West hallway.

Additional FHC are located in certain areas, such as room 1043 (Nuclear Medicine), the mechanical rooms and the parking garage.

Each cabinet has a system of valves connected to the main water supply, a length of

hose and a nozzle. This system is for the use of firefighters only.

- A Class K extinguisher or potassium bicarbonate possess greater extinguishing capabilities and are chosen for Class B & C fires. At Michener, Class K is restricted to the cafeteria.

GENERAL RULES FOR USE OF FIRE EXTINGUISHERS

Fighting fires is the responsibility of the fire department. The production of toxic fumes in buildings makes firefighting potentially dangerous, particularly if a large amount of smoke is being generated.

YOU ARE <u>NOT</u> REQUIRED TO FIGHT A FIRE, EVER. IF YOU HAVE THE SLIGHTEST DOUBT ABOUT YOUR CONTROL OF THE SITUATION <u>DO NOT</u> FIGHT THE FIRE.

Use a mental checklist to make a Fight-or-Flight Decision. Attempt to use an extinguisher only if **ALL** of the following apply:

1. The building is being evacuated (fire alarm has been pulled)
2. The fire department or reception (0) is being called.
3. The fire is small, contained and not spreading beyond its starting point.
4. The exit is clear, there is no imminent peril and you can fight the fire with your back to the exit.
5. You can stay low and avoid smoke.
6. You have read the instructions and know how to use the extinguisher.

- Class ABC extinguishers are wall mounted between the two exit doors of laboratories/classrooms.

- To use a portable fire extinguisher, remove it from its wall mount. Pull the pin from the handle. Aim the nozzle at the base of the fire and squeeze the handle. Direct the nozzle in a sweeping motion, working from in front of the fire to the back of the fire. Never turn your back on a fire.

- Fire extinguishers must be tested regularly and checked visually once a month to ensure that there has been no loss of pressure from the unit. Most have a light wire or plastic seal which is broken if the unit is tampered with or if it has been used. Any unit which has been fully or partially discharged must be replaced immediately.

- Maintain easy and unobstructed access to all fire safety equipment (hose cabinets, extinguishers, blankets) at all times.

- **Tampering with fire safety equipment is grounds for dismissal from Michener.**

IF CLOTHING CATCHES FIRE

- Immediately **stop, drop** to the floor and **roll** over several times to extinguish the flames.

OTHER FIRE SAFETY FEATURES

- Exit stairwells are at the northwest and southeast corners of the building.

- Fire safety doors are located in the north and south hallways of most floors at the Institute. These doors are held open by an electromagnet which is deactivated when the fire alarm is activated. The doors will swing closed to close off one half of the floor from the other.

- Self-closing fire doors at the entrance to each stairwell limit the spread of fire from floor to floor.

- **Fire doors must not be obstructed by placing objects under or in front of them at any time.** The doors must be able to close automatically in an emergency.

- A sprinkler system is in place in the mechanical rooms, the parking garage, the sub-basement, the basement and some parts of the main floor. Once activated, these sprinklers will discharge water over an area to cool and contain the fire. Where sprinklers are present, do not block them by storing material too close to the ceiling. There must be at least 45 cm (18 inches) between the sprinklers and any shelving units, boxes, etc.

SINGLE STAGE AND TWO STAGE FIRE ALARM SYSTEMS

Single Stage:

- Evacuate the building when the alarm sounds.
- Applies to the main Michener building (222 St. Patrick St.)

Two Stage:

- An intermittent alarm signal indicates a potential fire condition. Be prepared to leave the building. This alarm may be followed by a continuous alarm signal, indicating evacuation is necessary.
- Applies to Schatz Hall only.

MICHENER (222 ST. PATRICK STREET) FIRE PROCEDURES SINGLE STAGE SYSTEM

IN CASE OF FIRE

UPON DISCOVERY OF FIRE

- Leave fire area immediately
- Close all doors behind you
- Pull fire alarm station located at all fire exits
- Leave building via nearest exit stairs

DO NOT USE ELEVATORS

UPON HEARING FIRE ALARM

- Turn off equipment (where applicable)
- Close doors behind you
- Leave building via nearest exit stairs

CAUTION

If smoke is heavy in the corridor or if you encounter smoke in stairway - *use alternate stairway.*

REMAIN CALM

SCHATZ HALL FIRE PROCEDURES - TWO STAGE SYSTEM

The following instructions apply to all areas except residence rooms. Instructions for Schatz Hall residence rooms differ; they are posted in the rooms.

IN CASE OF FIRE

UPON DISCOVERY OF FIRE

- Leave fire area immediately
- Close all doors behind you
- Pull fire alarm station located at all fire exits
- Leave building via nearest exit stairs

DO NOT USE ELEVATORS

UPON HEARING FIRE ALARM

IF CONTINUOUS SIGNAL

- Close doors behind you
- Leave building via nearest exit stairs

IF INTERMITTENT SIGNAL

Stand by and be prepared to leave building

CAUTION

If smoke is heavy in the corridor it may be safer to stay in your AREA. Close door and place a wet towel at base of door.
If you encounter smoke in stairway - *use alternate stairway*

REMAIN CALM

IN GENERAL

TO AVOID FIRE HAZARDS IN THE BUILDING

- Never put burning materials into garbage containers
- Never dispose of flammable liquids in garbage containers
- Never use damaged electrical appliances, frayed extension cords, overloaded circuits, "octopus" or "cheater" devices
- Never leave combustibles in hallways, corridors and stairwells.
- If you are a resident of Schatz Hall, never leave cooking appliances or cooking food unattended while in use. (E.g.: be present in the kitchen when microwaving popcorn or if food is cooking on a stove top burner)

DO:

- Know where the fire alarm pull stations and exits are located
- Notify the Health Nurse ahead of time if evacuation assistance is required
- Know the audible fire alarm signals and the procedures established to implement safe evacuation
- Know the Floor Wardens assigned to your floor area (posted in elevator lobby of each floor)
- Report any fire hazard to your Supervisor
- Become familiar with Michener's Fire Safety Plan

UNSAFE HOUSEKEEPING PRACTISES

- Combustible refuse stored in non-designated areas
- Obstructed fire and smoke barrier doors
- Improper storage of flammable liquids and gases
- Use of defective electrical wiring or appliances
- Use of extension cords as permanent wiring
- Obstructed first aid and firefighting equipment
- Obstructed hallways, passages leading to and or in stairwells

EVACUATION GUIDELINES

- Evacuation is under the control of the Michener Fire Life Safety Director. Floor Wardens and Assistant Floor Wardens are appointed to ensure the safe evacuation of staff and students on each floor. The names are posted with the fire plans in each elevator lobby. At all times, **listen for** and **obey** instructions from these people.

- A building evacuation may be called for reasons other than a fire (E.g. gas leak or bomb threat). Just because there does not appear to be a fire does not mean an evacuation is not required. Evacuations in buildings with the size and makeup similar to The Michener Institute are more complex than many other type of occupancies due to:

1. The building's population and the distances they must travel to evacuate.
2. The building's large size and the physical challenges to fire fighters in tackling the fire.
3. The building occupant demographic I.e. Visitors and guests who may not be altogether familiar with fire exits and procedures.

PERSONS REQUIRING ASSISTANCE

- Special provisions are made for anyone who might be unable to descend the stairs safely and rapidly by themselves. It is the respective employee's / student's responsibility to notify People & Culture or the Health Nurse accordingly if assistance during an evacuation is required. Persons requiring assistance should be identified prior to emergencies, for the purpose of formulating plans for their safety, (see Appendix for List of Persons Requiring Assistance to Evacuate).

- An individual unable to descend the stairs alone safely should stay in the stairwell landing. If possible, have a "buddy" stay with you and designate someone to report your location when safely outside to the Assembly Area Coordinators or the Fire Life Safety Director or directly to the Fire Department Chief during a fire.

<u>DO:</u>

- Keep calm.
- Take your keys, close doors as you leave.
- Form an evacuation line to the stairwell.
- Remove your shoes if their design makes walking down the stairs difficult.
- Use the stairwell for evacuation: single line only, down the wall side of the stairwell, use handrails.
- Listen for instructions from the Floor Wardens and follow them.
- Clear the way for the fire personnel coming up or down the stairwell by staying close to the wall.
- Be prepared to merge with other people evacuating from each floor to the

stairwell.

- Once out of the building go to your designated assembly areas (as outlined below.)
- At the front of the building: go south to St. Patrick Church's parking lot – do not cross the street at any point.
- At the back of the building: go south to rear parking lot of St. Patrick Church – do not cross the street at any point.

<u>DO NOT:</u>

- Do not use elevators
- Do not talk loudly

- Do not run down the stairs
- Do not congregate in the lobby
- Do not obstruct the fire fighters
- Do not enter Michener for any reason until directed to do so by either Toronto Fire Chief or Michener's Fire Life Safety Director.

DUTIES OF FIRE WARDENS

FIRE WARDENS - are appointed by management and are responsible for the safety of the occupants on the floor during the normal working hours of the Institute. The primary role of the Fire Wardens is to encourage all staff and faculty on their assigned floors to leave the building during an activation of the Fire/Life Safety System. Before leaving the building, each Fire Warden will report that their floor has been cleared, and/or provide a list of persons, including their location, remaining on their assigned floors. A listing of Fire Wardens, by floor, is located on the 5th floor staff lounge.

It is everyone's responsibility, not just those of Fire Wardens, to participate in keeping Michener safe from fire and fire hazards, by advising of:

- Possible fire hazards and obstacles to effective egress.
- Local changes in the use of the building.
- Hazardous goods or equipment.
- Fire isolation doors that are prevented from closing unaided.
- Faulty, or missing, fire extinguishers and obstructions to fires hoses.
- Broken or obstructed Exit signs, and emergency lighting.
- Being aware of any mobility impaired persons.

UPON DISCOVERY OF SMOKE OR FIRE:

The Fire Wardens shall:

- If safe to do so - Promptly notify Reception or Security of the exact location and nature of the emergency
- Leave the fire area, taking any persons in the immediate vicinity with you
- Close all doors behind you
- Sound the alarm by activating a pull station located at all fire exits
- Follow the red directional arrows in the halls and try and exit via your assigned or closest stairwell taking care to remain on the outside area of the stairs to allow emergency services personnel to use the inner area for accessing affected floors.

See the Floor Map posted in the elevator lobby for closest designated exit

- Once the floor has been safely evacuated you should be available to assist the fire fighters in providing access and vital information
- Provide the fire fighters with a current list of persons requiring assistance

UPON HEARING A FIRE ALARM:

The Fire Wardens shall:

- Proceed to clear your floor: check all doors and inform people to leave the building immediately. Advise them 'Do not use elevator'. Close all doors (locked or unlocked) to slow the spread of fire.
- Leave the building even if the fire alarm stops - it could indicate a power loss to the fire panel.
- If a room is locked, knock and yell to evacuate building.
- Be sure to check all washrooms and walk-in coolers.
- Get injured or disabled people to a safe area (stairwell); have someone stay with the person if possible; report their location to reception as soon as possible.
- Don't argue with anyone who will not leave. Record their name/location and report to the reception as soon as possible
- Follow the red directional arrows in the halls and try and exit via your assigned or closest stairwell taking care to remain on the outside area of the stairs to allow emergency services personnel to use the inner area for accessing affected floors. See the Floor Map posted in the elevator lobby for closest designated exit.
- If you encounter smoke in the corridor or stairwell, take the alternate stairwell.
- Identify any areas in the building where people remain so fire fighters can rescue them if necessary
- **Note any deficiencies in the system** (e.g. defective fire alarm bells, egress obstructions, staff behaviour, or any other defect), and **report these to the Fire Life Safety Director.**
- Report information about your floor to reception and exit the building, Please state your name, the floor you are responsible for, and whether the floor is “all clear” or otherwise.

NOTE: PERMISSION MUST COME FROM THE MICHENER FIRE OFFICIAL TO RE-ENTER THE BUILDING FOLLOWING THE "ALL CLEAR" MESSAGE.

THE MICHENER INSTITUTE

SAFETY MANUAL

920-026

SECTION 4 - PROTECTIVE EQUIPMENT

Updated September 2023

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THE MICHENER INSTITUTE

SAFETY MANUAL

920-026

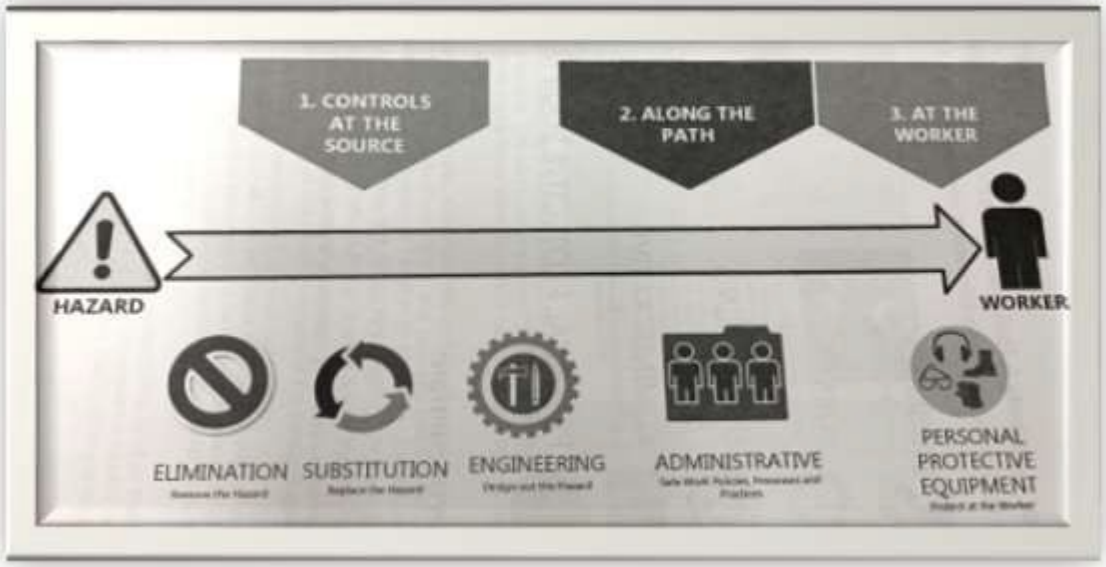
SECTION 4
PROTECTIVE EQUIPMENT

INTRODUCTION

Everyone has the responsibility to identify and report hazards!

While it is the employer's responsibility to provide the necessary protective equipment, it is the responsibility of employees and students alike to wear and use the appropriate equipment accordingly for the work they perform. Wearers must be properly trained in the use, care, and limitations of the various devices they use.

The main ways to control hazards in the workplace illustrated in following diagram of the Hierarchy of controls:



1) Elimination or substitution – perhaps the best way to address a hazard of course is to remove/ eliminate the hazard altogether or to substitute a less hazardous process or reagent, if possible.

2) Engineering Controls – include alterations to design, fabrication of the equipment itself, or can include modifications to the physical environment (i.e., barriers, guards, fume hoods, use

ventilation). Processes that reduce the exposure to the hazard also fall under engineering controls (e.g., eyewash stations, spill kits, sharps containers).

3) Administrative Controls – are essentially controls that alter how the worker deals with or interacts with the hazard (i.e., policies, procedures and work practices, training/education, standards, and hygiene protocols).

Administrative controls also include:

- Supervision
- Alarm/warning systems
- Job rotation
- Work/rest schedules
- Periods of adjustment
- Work rate
- Process changes

4) Personal Protective Equipment (PPE) – is possibly the last measure used to protect workers from hazards, after the three previous methods have been considered and/or exhausted. This can include:

- Proper selection of PPE such as lab coats, eye protection, goggles/face shield, N95 mask, respirators, gloves
- Proper fit of equipment that the worker would wear or use on themselves, and
- Even vaccinations/ immunizations since it occurs at the individual level.

LABORATORY COATS

The Michener Institute adheres to Canadian Biosafety Guidelines which stipulate appropriate dedicated PPE specific to each containment zone, to be donned in accordance with Entry Procedures and to be exclusively worn and stored in the containment zone.

A lab coat is the most common type of PPE used to protect an individual's body and personal clothes against contamination with infectious material. Lab coats that are approximately knee length and cover the arms to the wrists protect the skin and personal clothing from exposure to hazardous materials. Lab coats that fit closely to the body and have cuffed sleeves (if cuffed sleeves not available please tie it with the adhesive non-porous tape) help prevent dragging and catching of clothing during laboratory work. Snap closures are preferred over buttons to allow quick removal of the lab coat in the event of an emergency.

Between uses, students and staff are to store lab coats in the laboratory area, away from clean uncontaminated articles. Personal items are to be kept separate from areas where infectious material or toxins are handled. Laboratory coats are referred out for professional cleaning as required.

Wearing appropriate personal clothing also contributes to body protection. Wearing clothes that cover the legs down to the ankles will offer protection. Shorts, minis kirts, and other clothing that leaves the legs exposed below the lab coat should not be worn in the containment zone.

Cloth Coats

- At Michener, white polyester/cloth coats are worn only where there is danger of contamination by hazardous materials.
- Do not wear your lab coat:
    - In the Learning Resource Centre
    - In Schatz Hall (including lounge, exercise, and residence areas)
    - Outside Michener
    - In washrooms
    - Clean areas e.g., staff rooms, lunchrooms, offices, corridors, lobbies, elevators etc.

Exception:

*Laboratory Services staff carries lab coat with them and wear their lab coat before entry to the bunker and wear clean disposable lab coat while transporting trolleys with infectious material and corrosive/ flammable hazardous chemicals.

Disposable Coats

- Disposable polypropylene lab coat must be worn where hazardous materials are handled. They provide good protection against concentrated acid and bases and against solvents. The front of the lab coat must be buttoned top to the bottom; to provide maximum protection.

- Change disposable lab coats at once if they become contaminated with blood, body fluids or other hazardous materials. Remove the cloth lab coat without touching the contaminated area, place in a biohazard bag for transport to the basement. – Laboratory Services Rm B 39.

GLOVES/MITTS

FIGURE 4.1: CAUTION SYMBOL INDICATES THAT GLOVES MUST BE WORN

Medical Examination Gloves

- Gloves protect hands from contamination and reduce the risks associated with ingestion (e.g., hand-to-mouth transfer) or absorption through the skin. Gloves provide a protective barrier when handling infectious material, toxins, infected animals, or material potentially contaminated with a pathogen or toxin (e.g., tissues, cultures, blood, and body fluids). Gloves can be made from many different materials, and the type of glove selected will depend on the specific activity and hazard concerned; they should be clean, disposable, and fluid-resistant for handling infectious material or toxins.

- Only non-latex gloves are used widely at The Michener Institute due to the risk of latex allergies.

- Disposable non-latex gloves protect the wearer from most chemicals. Non-latex is more resistant than latex to gases, vapors, and liquids.

- Health care workers who do become sensitized or allergic to gloves should report this to the Occupational Health Nurse as soon as possible.

- Gloves should be removed prior to removing hands from a biological safety cabinet (BSC) after handling infectious material or toxins, and they should be discarded as biohazardous waste within the BSC. This will help prevent the inadvertent spread of contamination outside the BSC

NOTE:

- Wash your hands before and after wearing gloves.
- Frequent hand washing associated with glove changing can contribute to dry skin rashes. After each washing, apply a moisturizing lotion to restore oils to the skin and prevent dryness or cracking of the skin.

  CAUTION: Do not apply moisturizer immediately before putting on gloves. Glove Integrity may be compromised by lotions and creams. For this reason, use of a barrier film under gloves is not recommended.

Other

- Disposable nitrile gloves provide a good fit and up to two hours of protection from solvents. Because of the cost, they are used only for fine work requiring resistance to solvents e.g., in the Histo-technology labs.
- Rubber or neoprene gloves are worn to protect the wearer from strong acids or bases. These reusable gloves are generally contoured to fit the hand loosely.
- For extremes of temperature, gloves or mitts made of thermal resistant materials such as Kevlar® or Nomex® should be worn to protect the skin from burns.

APRONS

Plastic

- Wear a light plastic apron over a lab coat when splashes of reagents or stains are likely to soil the front of the coat.
- Discard aprons appropriately at the end of the procedure, or when they become visibly soiled.

Rubber

- Wear a heavy rubber apron when working with concentrated acids and bases to protect yourself from the corrosive action of these chemicals.

Lead-lined

- See Section 9, Radiation Safety.

FIGURE 4.2: CAUTION SYMBOL INDICATES THAT APRON MUST BE WORN

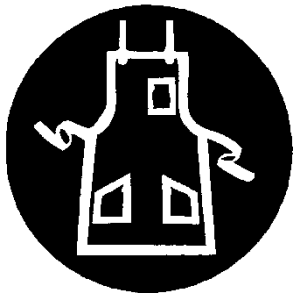
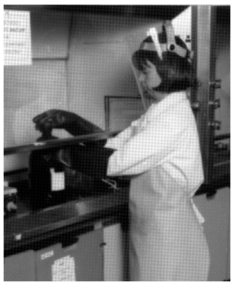


FIGURE 4.3: PERSONAL PROTECTIVE EQUIPMENT REQUIRED FOR WORKING WITH CONCENTRATED ACIDS AND BASES



OTHER ITEMS OF CLOTHING

- In certain situations, it may be necessary to wear masks, caps, and booties for protection from infectious patients or from biological hazards in various procedures (e.g., intubation, suctioning, sample sorting, preparation, and testing) in order to protect the health care worker (e.g., reverse isolation and operating rooms patient and the) from the infectious patients and biohazardous materials. See Section 7, Biological Safety, for further details.

- For details about shoes for the workplace, see Section 1, Footwear.

PROTECTIVE EYEWEAR

GLASSES/GOGGLES

Protective eyewear must be worn whenever there is the potential for contact with any injurious or explosive chemical, or projectile.

- To protect the eyes from splashes or impact with chemicals, goggles should be worn.
- Safety glasses with side shields may also be worn. However, in the event of an accident, there is the potential for these loose-fitting glasses to be knocked off the face.

FIGURE 4.4: CAUTION SYMBOL INDICATES THAT PROTECTIVE EYEWEAR MUST BE WORN

- Safety glasses and goggles can be worn over prescription eyeglasses.
- Contact lenses should not be worn in labs. If a visual problem is corrected only by wearing contact lenses, the use of tight-fitting goggles is recommended. Chemicals and/or vapors can damage the lens or eyeball if they become trapped behind a contact lens.

FIGURE 4.5A: SAFETY GOGGLES

94/00032R

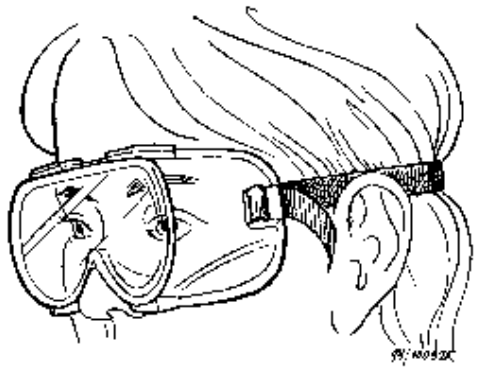
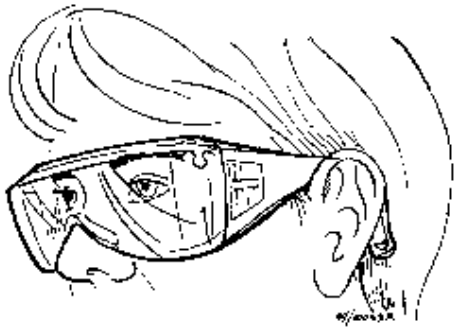


FIGURE 4.5B: SAFETY GLASSES

94/00033R



VISORS

- A safety visor with a full polycarbonate or PVC face shield must be worn when working with concentrated acids / bases or biological material (patient samples, bacteria, or fungal samples with a splash potential). The clear face shield ensures good visibility in addition to withstanding the effects of chemical splashes. Adjust the visor properly to provide protection for the eyes, face, and throat, and ensure that the visor will not slip when the head is inclined.

- An appropriate visor and goggles must be worn for arc welding to protect the eyes and skin.

- Full face, lightweight plastic shields can protect health care workers from gross contamination of biological material.

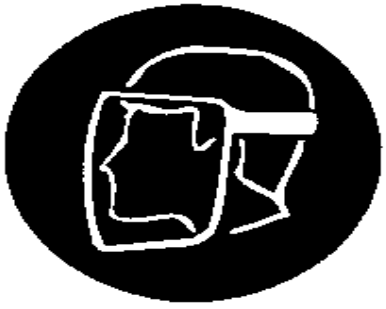


FIGURE 4.6: CAUTION SYMBOL INDICATES THAT VISOR MUST BE WORN

N95 MASKS AND RESPIRATORS INSTRUCTIONS

These instructions must be followed each time a respirator is worn or removed.

Wearing Instructions:

1. Pre-stretch top and bottom straps before placing respirator on the face. Not necessary for 8110S/1860S.
2. Cup the respirator in your hand, with the nosepiece at your fingertips, allowing the headbands to hang freely below your hand.
3. Position the respirator under your chin with the nosepiece up. Pull the top strap over your head resting it high at the tip back of your head. Pull the bottom strap over the head and position it around the neck below the ears.
4. Place your fingertips from both hands at the top of the metal nosepiece. Using two hands mold the nose area to the shape of your nose by pushing inward while moving your fingertips down both sides of the nosepiece.
    - Use both hands. Pinching the nosepiece using one hand may result in an improper fit and less effective respirator performance.
5. Perform a User Seal Check prior to each wearing. To check fit, place both hands completely over the respirator and exhale. Be careful not to disturb the position of the respirator. If air leaks around nose, readjust the nosepiece as described in Step 4. If air leaks at the respirator edges, work the straps back along the sides of your head.

If you CANNOT achieve a proper fit, DO NOT enter the contaminated area. See the supervisor.

Removal Instructions:

1. See Step 3 of Mask Fitting Instructions and cup respirator in hand to maintain position on face. Pull bottom strap over-head.
2. While still holding respirator in position, pull top strap over-head and remove respirator.

Reference: 3M Respirator User Instructions

Please refer to:

RESPIRATORY PROTECTION (MASK FIT) POLICY

Mask and respirator fitting tests: Mask fit and respirator fit testing should be performed once every two years/three years as per service provider's specification. For Michener staff mask N95 fit and respirator (full face and half face) fit tests provided by UHN Health and safety. Please contact the Laboratory Services Manager.

SAFETY DEVICES

PIPETTING DEVICES

- Use a safety bulb or other pipetting aid to fill and control delivery of fluid from serological, Mohr or volumetric pipettes.
    - Never pipette by mouth.
- If the pipettes have been used to deliver serum or other biohazardous material (e.g., bacterial suspensions), rinse proteinaceous material out of the pipette using 10% sodium hypochlorite and then soak the pipettes overnight in a tray of 10% sodium hypochlorite. After decontamination, send the pipettes to Laboratory Services for cleaning.
- Glass pipettes used to measure reagents are placed tips up into a pipette carrier in a Nalgene® pipette soaker filled with warm soapy water. The carriers are removed from the soaker and placed in a tote for transport to Laboratory Services for cleaning.
- Add pipettes to soakers very gently so that any residual fluid in the pipettes is not expelled forcefully. (This would create an aerosol of a potentially harmful substance.)
- Use automatic pipetting devices with disposable plastic tips or sampling devices to measure and deliver samples of biological materials whenever possible. Discard plastic tips into an autoclave bag and glass tips into a sharp's container.
- Wherever possible, use disposable transfer pipettes.

SHARPS SAFETY

Cuts or punctures are common injuries for health care workers who handle sharp objects such as needles, Pasteur pipettes, and syringes with attached needles, scalpels, and broken glass. These "sharps injuries" may lead to serious, even life-threatening infections, if the puncturing objects are contaminated with blood, blood products or other body fluids from patients with bacterial or viral infections.

Guidelines

- Do not attempt to catch falling objects (e.g., knives, scalpels, scissors).
- Use a foam brush and non-corrugated cardboard as a dustpan to clean up broken glass. For cleanup of glass in centrifuges, see Section 7. Contact Laboratory Services staff for supplies.
- Discard non-infectious broken glass or glass items into a glass disposal box.
- Use a sharps container for disposal of needles, scalpels, and infectious glass items.
- Do not put your hand inside a sharps container or glass disposal box opening for any reason.

Sharps Containers

- A sharps container is a puncture resistant and leak proof disposal device designed to receive sharp objects. They must be able to withstand dropping onto a hard surface or toppling over without puncture or leaking.

- Sharps containers must be capable of withstanding the temperatures to which they will be exposed during steam sterilization.

- To facilitate safe handling of medical sharps, containers must be located where the items are used (e.g., on a blood collecting tray or cart, at the patient's bedside, behind lead shielding or on a laboratory bench where dissection is done).

- Sharps containers should comply with the CSA Standard Z316.6-95 Evaluation of Single-Use Medical Sharps Containers for Bio-hazardous and Cytotoxic Waste.

<u>Sharps Containers</u>
These rigid plastic containers are yellow. Use for:

1. Sharp stainless-steel items (e.g., needles, scalpels, lancets, and butterfly needles [winged infusion] set);
2. Infectious glass items (e.g., pipettes, coverslips, microscope slides and capillary tubes).

When contents reach the fill line fold over the cover and seal shut. Return to basement Laboratory Services Rm B39 for disposal.

WARNING: Do not overfill a sharps container. Filling beyond ¾ of the container's capacity increases the risk of injury. Do not use excessive force to place sharp objects in the containers. When contents reach the fill line, seal the container to prevent overfilling. Ensure Lid is securely "snapped" into place prior to placing the sharps container in use.

Containers Used at the Michener Institute

FIGURE 4.7A: GLASS DISPOSAL BOX

FIGURE 4.7B: SHARPS CONTAINER

Glass Disposal Box

These floor models are blue and white, double bagged corrugated cardboard boxes. One bag lining the box is black and the other is clear.

Use for non-infectious broken glass.

When the box is full, remove lid, flip up rear flap and replace lid. Contact Facilities, by way of Work Order, for disposal.

WARNING: Do not put sharp stainless-steel items in the glass disposal box. They can puncture the cardboard.

SAFETY CANS

- Safety cans are used to store small amounts of flammable liquids in the laboratory. These seamless cans are made of stainless steel and are leak-proof. The guard cap at the spout is spring loaded to allow release of excessive internal pressure and closes firmly on a rubber gasket. A double wall flame arrestor smothers any spark or flame at the mouth of the spout. The guard cap protects the spout and prevents spills if the can is accidentally dropped.

- A maximum of one safety can per flammable material may be stored in a laboratory overnight. Additional safety cans must be stored in properly vented flammable storage cabinets.

- Safety cans for unused and waste flammable liquids must be clearly differentiated.

NOTE: All cans must have WHMIS workplace labels.

SAFETY CARRIERS

- Safety carriers are rubber or neoprene pails with handles used to move coated or plain glass bottles of concentrated acids or bases. The carrier guards against breakage of the bottle also serves to contain the chemical inside the carrier if a breakage does occur.

- A "coated" glass bottle used for corrosive or volatile materials has a tight-fitting plastic overwrap; this is designed to prevent splashes should a bottle break. Leaks from the plastic overwrap may still occur, but the major damage of splashes are circumvented.

- When moving concentrated chemicals, place the bottle(s) on a trolley with a high rim around the edge of the shelf. This prevents the bottle(s) from toppling off the trolley during transport and contains most spills if a bottle is broken.

SAFETY FIXTURES

FUME HOODS

Ducted Fume Hoods

The exhaust system in a fume hood draws air into the hood from the room and exhausts it through a duct to the outside.

- Ducted fume hoods serve four purposes:
  - The air flow removes mists, vapors, or gases created inside the hood.
  - The sliding glass window ("sash") provides a barrier between the worker and chemical reactions occurring inside the hood.
  - The hood protects fragile apparatus or sensitive instrumentation from jarring.
  - Chemical spills are somewhat contained within the hood.
- The fume hood should be in an area where there is little traffic and away from doors, windows, and air diffusers. Air currents may disrupt the flow of air through the hood.
- The air velocity entering the hood must be at least .50 meters per second (100 feet per minute) and no more than 1.0 m/s (200 fpm) at a sash height of 30 cm (12"). Greater face velocities may cause turbulence, which may result in vapors escaping from the hood. This value is called the "face velocity". A relatively constant volume of air is exhausted. The sash is adjusted to limit the maximum face velocity.
- All fume hoods are equipped with local flow alarms which will sound upon detecting abnormal air velocities. Always ensure the green “normal” light is illuminated. Should you experience any difficulty with the operation of the fume hood please inform Facilities immediately.
- A good test for fume hood effectiveness is determination of face velocity. This test should be done annually, or whenever a fume hood is moved, altered, or first installed.
- Ignitable concentrations of flammable gases or vapors can exist under normal temperatures and operating conditions. Equipment in use nearby must have explosion- proof electrical fittings. Use extreme caution when heating flammable liquids.
- Special fume hoods are required for working with per chloric acid or radioisotopes.
- The fume hood fan should have non-ferrous, non-sparking blades to avoid ignition of flammable vapors.
- All electrical services (fans, fluorescent lights, etc.) and other services (gas, air, and cold water) should be controlled from the outside of the hood.

Guidelines for Use

- Prior to use, ensure air is flowing into the hood. Depress the ON switch to open the damper. The gauge located below the switch should indicate between 15 and 20 pounds

per square inch (psi). Turn on the light; the switch is located on the exterior of the hood.

- Operate the hood at a sash height of 30-46 cm (12-18 inches) above the work surface. The sash (clear sliding window) is a barrier that can help prevent the potential for injury from splashes. Closing the sash serves as effective containment for vapors of accidental spills.
- Work as far into the hood as possible, at least 15 cm (six inches).
- Do not use the hood as a chemical or solvent storage area.
- Do not evaporate unwanted solvents in the hood. Refer to the Decontamination and Disposal Chart.
- Keep unused chemicals tightly capped even while under the hood sash.
- Keep only the minimum amount of equipment required for the task in the fume hood.
- Equipment will obstruct airflow.
- Minimize traffic near the hood, particularly during hazardous experiments.
- Press the OFF switch to close the damper when the fume hood is not in use.
- Keep the sash closed when the fume hood is not in use.

FLAMMABLE STORAGE CABINETS

- Flammable liquids in daily use are stored in specially designed flammable storage cabinets. The walls, floor and top of the cabinets are double walled steel and will withstand fire. There is at least a 5 cm lip at the front edge of the cabinet floor to contain any spills which may occur. All cabinets must be vented to a properly maintained laboratory exhaust system.
- The cabinet doors may have a fusible link assembly which will melt at a low temperature and cause the doors to close automatically in the event of a fire.
- Flammable storage cupboards are painted yellow and labelled "Flammables - Keep Fire Away".
- Volumes of flammable liquids greater than one (1) litre should be contained in a safety can.
- Return all safety cans to the flammable storage cabinet after use.
- Do not store flammable liquids in domestic refrigerators as vapors can accumulate inside.
- The bunker is used to store bulk chemicals and chemical waste. See Section 6.

FIGURE 4.8: FLAMMABLE STORAGE CABINETS

BIOLOGICAL CONTAINMENT (SAFETY) CABINETS

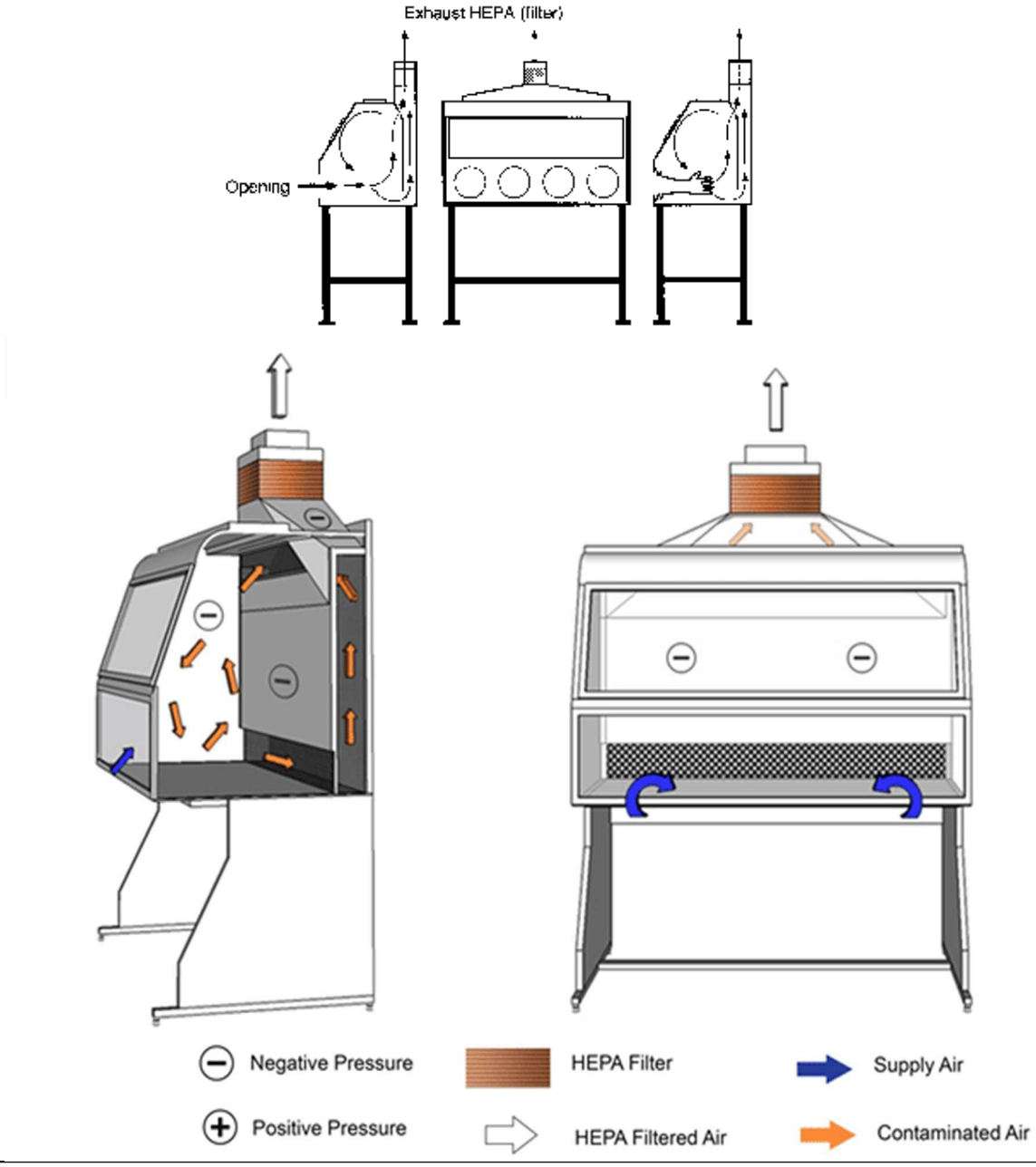
- Biological containment (safety) cabinets are used for handling biological materials. They differ in design from fume hoods. They provide a curtain of air between the worker and the potentially infectious material inside the hood. The air is filtered through a High Efficiency Particulate Air (HEPA) filter which removes bacteria and viruses. These filters have a minimum particle removal of 99.97% for particles of 0.3 m.

- There are several classes of biological containment cabinets.

Class I

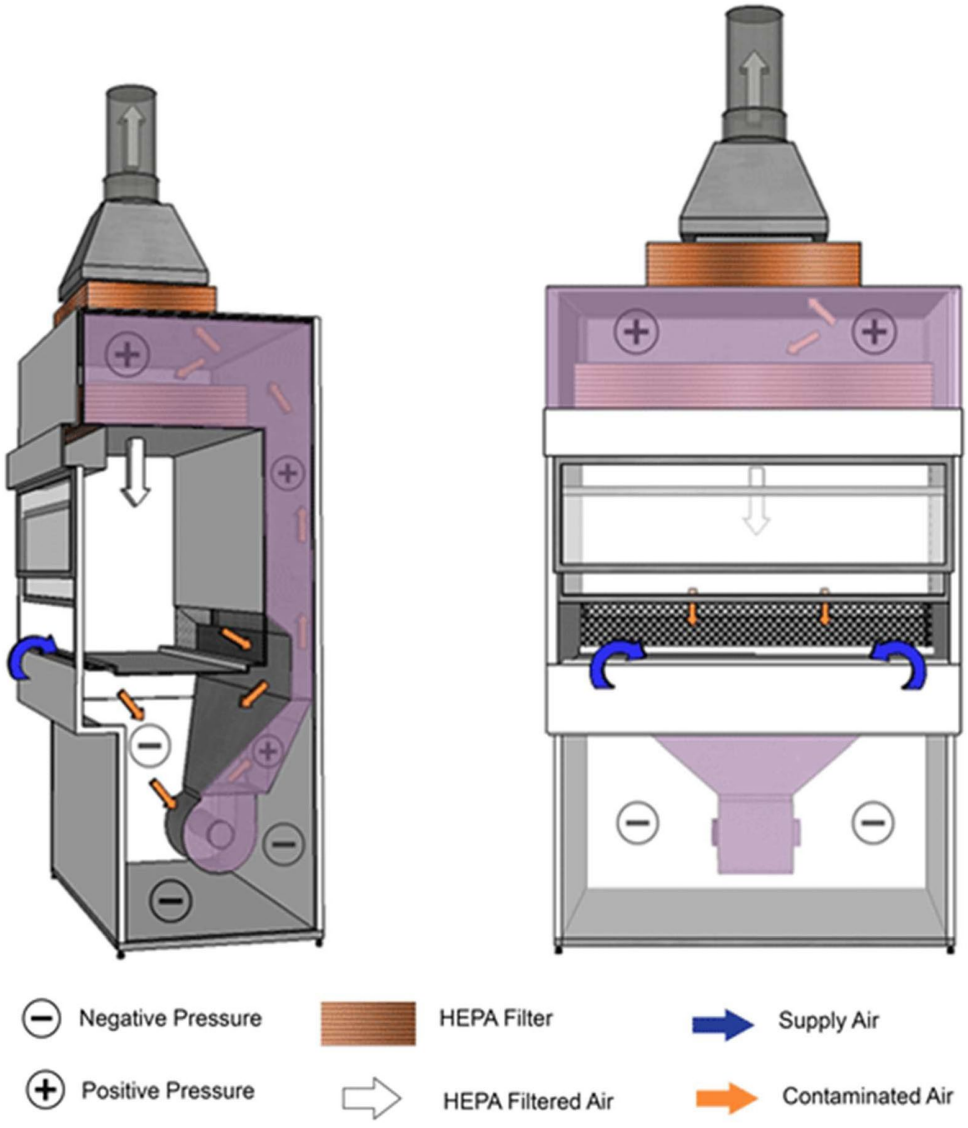
Inward airflow protects the worker and the environment from contamination. Air is not re-circulated. The air drawn into the hood is not sterile and the materials on the work surface may be contaminated by room air.

FIGURE 4.9: CLASS I



Class II, Type A

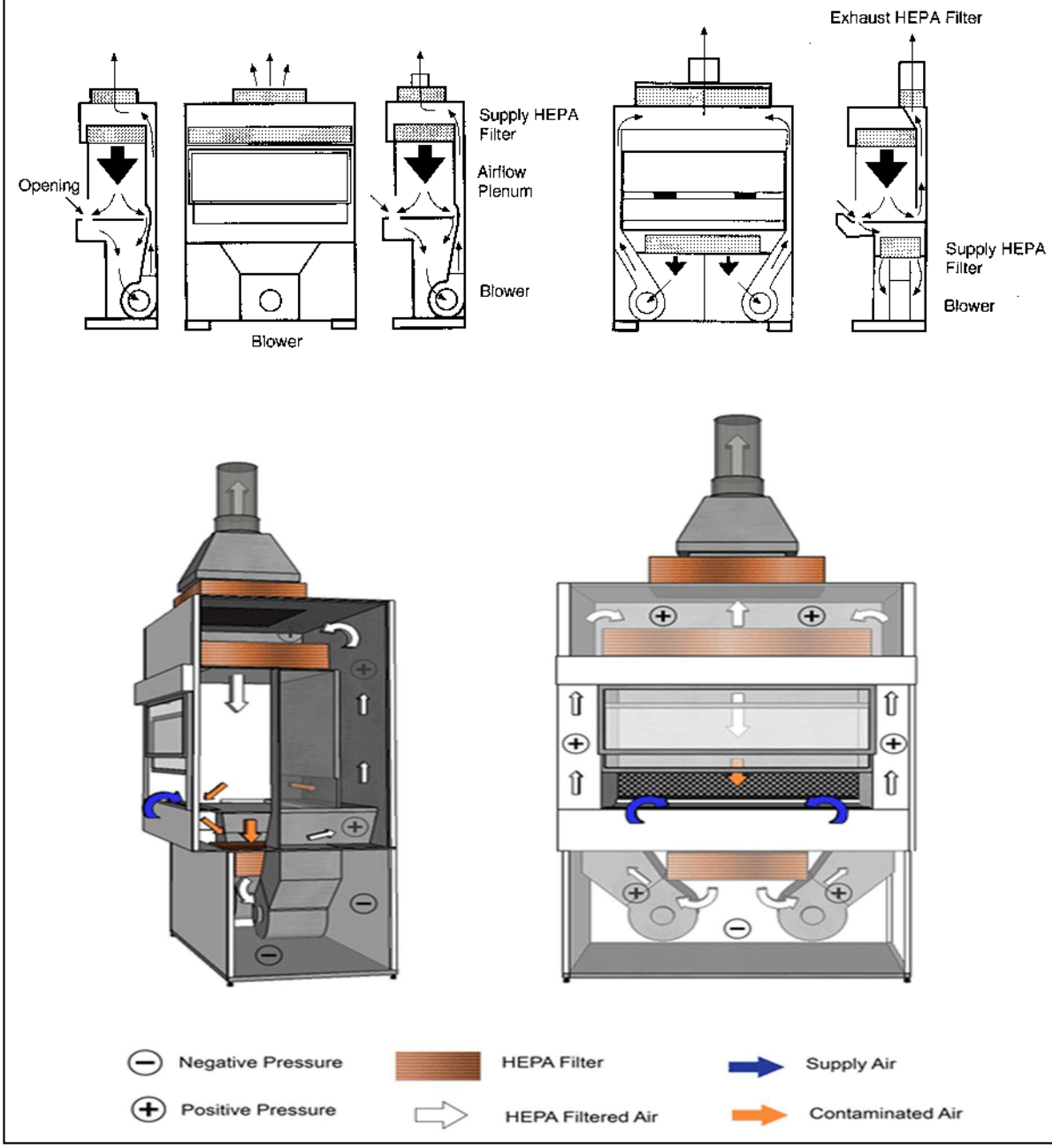
This type protects the worker, the environment, and the workspace. It is most used in microbiology labs and for tissue and virus culture work; it is not designed for use with hazardous chemicals. Inward air is HEPA filtered before it reaches the work surface and again before it exits the cabinet. In some models, most of the air (70%) is recirculated within the cabinet, with the remainder exhausted back into the laboratory. This type of cabinet is used at The Michener Institute.



Class II, Type B

This cabinet is similar to Type A, but the air is exhausted via ducting to the outside of the building. It has one exhaust fan in one dedicated duct to the outside.

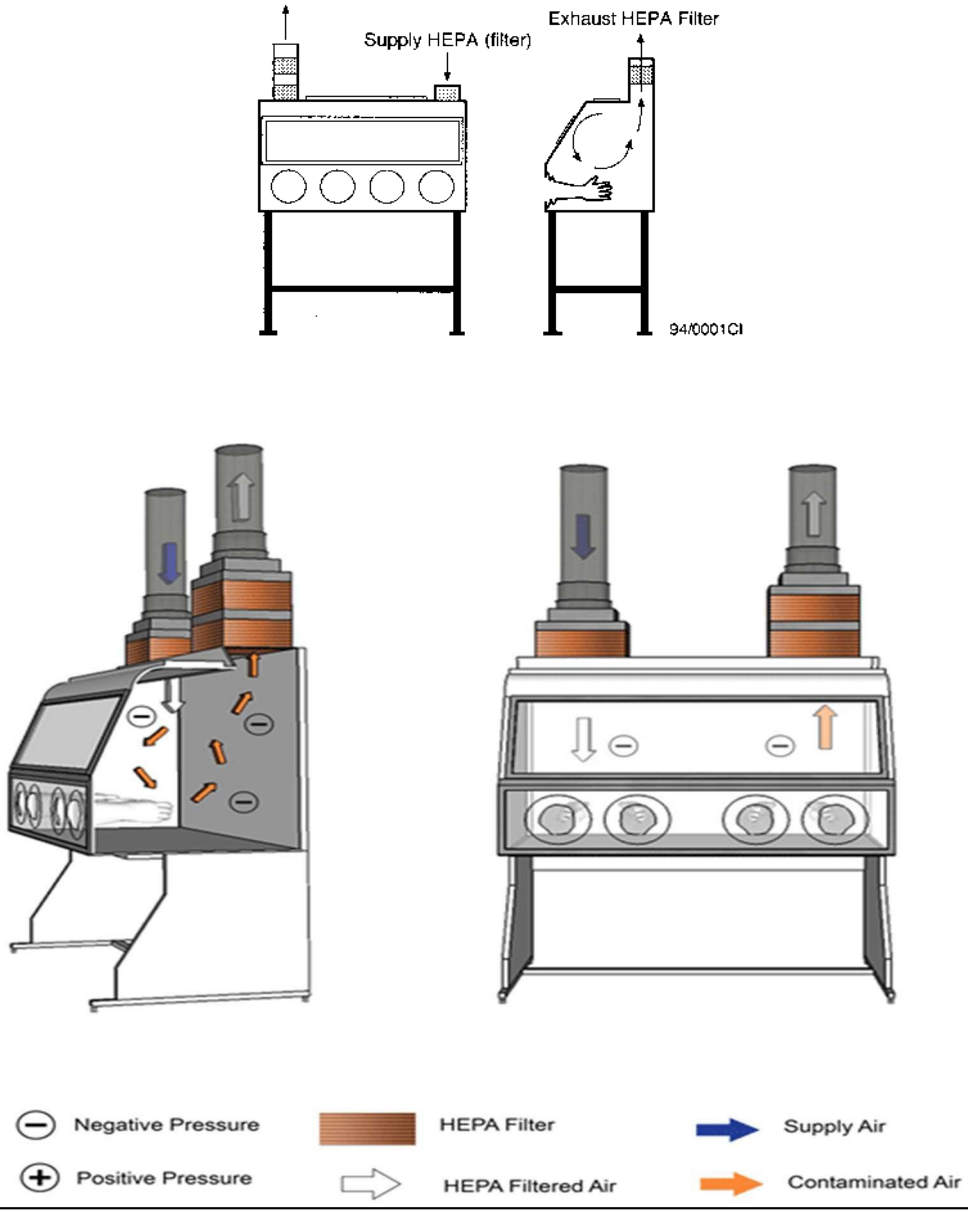
FIGURE 4.10A: CLASS II, TYPE A FIGURE 4.10B: CLASS II, TYPE B



Class III

These cabinets are enclosed and separate from the rest of the laboratory. They are used to handle highly infectious micro-organisms. The air pressure inside the hood is always lower than the room outside the cabinet (i.e., slight negative pressure). This class of hood is fitted with rubber gauntlets to protect the operator from infectious agents. The exhaust air is HEPA filtered twice before it is exhausted to the outside. (There are no Class III cabinets in THE MICHENER INSTITUTE.)

FIGURE 4.11: CLASS III



Guidelines for Use

- Turn on the airflow five minutes before using any biological containment cabinet; this will remove ambient air and replace it with clean air. Before beginning to work, wipe down the work surface with disinfectant suitable for metal surfaces (available from Laboratory Services).
- The "air curtain" between the operator and the interior of the cabinet must not be compromised by air turbulence, such as that created by an open flame, or moving objects into and out of the cabinet. Use of on demand open flames in a BSC to be strictly limited and avoided; sustained open flames to be prohibited in a BSC.
- Ensure that air grills are not obstructed, including those at the back of the cabinet.
- Keep the interior of the cabinet neat and orderly. Organize a clean area and a contaminated area. Clean up spills properly. See Section 7 for further instructions.
- Do not move contaminated items over clean ones. The downward flow of air in the cabinet may lead to the accidental spread of organisms. As a further precaution, use of back-closing, long-sleeved gowns with cuffs are preferable. Medical examination gloves are pulled over the cuffs.
- After the task is completed, decontaminate the work surface of the cabinet with disinfectant. Leave the airflow on for another five minutes to evacuate the contaminated air. Ultraviolet radiation may be used to decontaminate the work surface of the cabinet, but only when the lab is unoccupied because of risk to skin and eyes.

Maintenance

- HEPA filters are fragile and easily broken if moved. It is not possible to see defects in the filters. A qualified service agency should inspect the cabinet on an annual basis. Biological containment cabinets are installed and tested as recommended in the CSA Standard Z316.3 Biological Containment Cabinets: Installation and Field Testing. The Facilities Manager initiates annual certification and maintains the records. The BSC shall be decontaminated prior to any maintenance or certification.

SAFETY (DELUGE) SHOWERS

- Guidelines for the performance criteria, maintenance and installation for emergency eyewashes and showers are found in ANSI Z358-1, American National Standard for Emergency Eyewash and Shower Equipment.
- A safety (deluge) shower should be located within 30.5 meters (100 feet) or 10 seconds walking time of any workplace where spills may occur, so that immediate first aid can be administered. Clear access to the shower is essential. The shower may be located within the laboratory or in an adjacent hallway to serve several laboratories.
- The shower must be capable of delivering about 135 liters (30 gallons) of water per minute, with a water pressure of 20-50 psi. The water temperature should be between 15 and 35°C (60-95°F); colder water may discourage use or cause the casualty to go into shock.

- Ideally the shower should have a catch basin and a floor drain to collect runoff water. Where this is not structurally possible, care must be taken that the water will not reach any electrical wiring. Where water accumulates, be aware of the hazards of slipping on a wet tiled floor.
- Large push levers or pull chains provide the best mechanism for activation of the safety shower, given that the casualty may be visually impaired.
- Once activated, the water must flow continuously for a "hands free" operation.
- Wherever possible deluge showers and eyewash stations should be located close together in case both are needed for the same casualty.

Maintenance

- Flush the water lines weekly and verify proper operation. Collect water from the shower in a large drum or container to avoid unnecessary water on the floor.

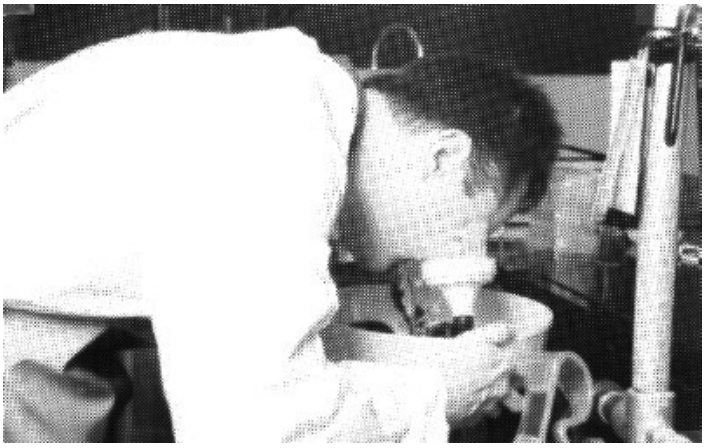
In the Absence of a Safety Shower

- Use the drench hose attached to the laboratory sink to flush away the bulk of the chemical before moving the casualty to a proper deluge shower. This is intended for immediate response until the victim can be transferred to a proper facility.

EYEWASH STATIONS

- Splashes of caustic or biohazardous materials onto the face and into the eyes must receive prompt first aid treatment in the form of immediate and prolonged irrigation of the eye(s) with copious amounts of low-pressure water. Prolonged irrigation is defined as at least 15 minutes.
- The location of the eyewash should always be labelled and kept free of obstruction at all times. Written instructions for the proper use of the eyewash station should be provided for each unit. The unit should be no more than 30.5 meters (100 feet) (10 seconds walking time) from the furthest work station.
- The water supply must be from a reliable and unlimited supply of potable water, capable of discharging 1.5 L (0.4 gallons) per minute. A slow and gentle stream of water should rise above the eyecup faucet to a height of 13 to 21 centimeters (five to eight inches). The temperature of the water should be comfortable to the eye (i.e., less than 44°C). Colder water causes no harm to the eye, but it may prevent prolonged irrigation.
- The eyewash is designed to irrigate and flush both eyes simultaneously and the face.
- If only a single stream of water is available and both eyes are contaminated, direct the stream at the bridge of the nose to split the stream and direct the water into both eyes simultaneously, flushing them in an outward manner.

FIGURE 4.12: EYEWASH STATION



- Eyewash stations may be plumbed in to the water supply at a sink or wall-mounted at a central location. Runoff water may present a hazard on tiled floors. Ensure that runoff water does not contact electrical wiring.

Guidelines for Use

- Whenever an eye splash injury occurs, dial 3333. Continue to flush the injured eye and contact the health Nurse immediately.
- An incident report must be completed whenever an eyewash station is used regardless of injury.

Maintenance

- Eyewashes should be properly maintained and tested periodically (e.g., weekly) to ensure that they are functional. The hoses or fountains of plumbed-in units should be flushed prior to each lab session. All Eyewash stations, Safety Showers and Drench Hoses are tested weekly by Michener Facilities. All inspection results are electronically entered within facilities' Angus database, records available upon request.

In the Absence of an Eyewash Station

- Emergency first aid may be accomplished using a drench hose or room temperature sterile water eye rinse bottle. Then move the casualty to one of the eyewash stations.
- Eye rinse bottles are replaced monthly by Facilities staff

DRENCH HOSES

- At Michener many laboratories have drench hoses at the sink. These provide first aid for skin and/or eye injury until the casualty can be taken to the appropriate facility.

Maintenance

- Drench hoses should be flushed daily by the users to ensure fresh water is available. Testing is performed and electronically documented by Facilities.

SECTION 5 - WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

Updated September 2023

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SECTION 5 - WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

INTRODUCTION

WHMIS is the Canada's **national hazard communication standard** for workplaces regulated both federally and provincially.

The purpose of WHMIS is to:

- Provide information about hazardous materials.
- Identify hazards in the workplace.
- Ensure consistency of information about hazardous material with in Canada and around the world

WHMIS is intended to reduce workplace injuries and illness related to such materials.

The main elements of WHMIS are:

- **Product classification**: based on their hazardous properties.
- **Product Labelling (supplier labels and workplace labels:** to provide basic information
- **Safety Data Sheets (SDS**), formerly referred to as Material Safety Data Sheets (MSDS): to provide more detailed information.
- **Worker education/training programs**: to ensure workers understand the information on labels and SDS and can apply this knowledge on the job.

WHMIS Training:

- WHMIS training is the law.

Training is required for anyone who:

- Handles, transports, stores, disposes, and works with or around hazardous materials.
- Supervises those who work with or around hazardous materials.
- Is involved with emergency response.

WHMIS Training includes:

- General training (Annually)
- Job specific training, reviewing product safety information and safe handling procedures (to be done with your supervisor/manager's direction or TDG: once every three years)

The Michener Institute's WHMIS Compliance Program covers these elements.

In February 2015, Health Canada introduced modifications to the Hazardous Product Act (HPA), referred to as WHMIS 2015 (http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/ghs-sgh/index-eng.php).

These changes align Health Canada WHMIS regulations with the Globally Harmonized System (GHS) which attempts to standardize the WHMIS protocols across multiple countries. Full implementation of the WHMIS 2015 (Global Harmonized System) was required by December 1, 2018.

WHMIS 2015 involves new harmonized criteria for hazard classification and requirements for labels and safety data sheets (SDS). The roles and responsibilities for suppliers, employers and workers have not changed.

By December 1, 2018, the Michener Institute has ensured all WHMIS labels and MSDS 's have transitioned to the Global Harmonized System (GHS/ WHMIS 2015) along with providing stakeholder education of what GHS is.

The Michener Institute has positioned itself in anticipation of the GHS/WHMIS 2015 changes by contracting an outside company (a velocity EHS solutions) to completely transition all Material Safety Data Sheets (MSDS) according to the new SDS standards.

The SDS's will continue to be accessible through my Michener – Health, Safety and Emergency – Go to SDS Site: https://msdsmanagement.msdsonline.com/f967d4d1-9816-4bc2-8c66-f0a4bbad9c6d/ebinder/?nas=True

HAZARDOUS MATERIALS RECOGNITION

Under the WHMIS regulations, hazardous materials are classified into six classes, A through F, with Class D having three divisions. Each class/division has a unique symbol to identify it (see Figure 5.1). While the symbol will alert you to a potential hazard, full information about safe handling, use, storage, and disposal of the material can be obtained from the SDS.

HAZARDOUS MIXTURES

Mixtures of chemicals (**i.e.,** reagents) are considered hazardous if they contain:

- Greater than 0.1 % — Carcinogenic ingredients
Respiratory toxic substances
Respiratory sensitizers
- Greater than 1 % — All other toxicological substances

EXEMPTIONS

There are several exemptions to the WHMIS regulations. Hazard information and training in the safe handling, use, storage, and disposal are provided if these products are used at the Institute, even though WHMIS labels and SDS are not required.

- Products covered by Explosives Act
- Products covered by Food and Drug Act
- Products covered by Pest Control Products Act
- Products covered by Nuclear Energy Control Act
- Hazardous wastes
- Consumer products
- Wood or wood products
- Tobacco or tobacco products
- Any manufactured products

WHMIS CLASSIFICATION:

Canada has aligned the Workplace Hazardous Materials Information System (WHMIS) with the Globally Harmonized System of Classifications and Labelling of Chemicals (GHS)

WHMIS classifies hazardous products using.

- Hazard groups
  - Physical (Gas under pressure, flammables, oxidizers, corrosive to metals, self- reactive substances and mixtures, organic peroxides and
  - Health (Acute toxicity, corrosive to skin and Eyes, biohazardous infectious materials, exclamation Mark and Health hazard pictogram, other health hazards)
- Hazard classes: Physical:19, Health:12
- Hazard categories: 1, 2, 3... (1=most severe)
- Hazard types: A, B, C… (A= more severe)

Hazard classes have the corresponding pictograms to convey the type of hazard. In general, the supplier label must include a pictogram of each WHMIS class/category that the hazardous product falls in to. See the following WHMIS 2015 pictograms.

WHMIS 2015 / GHS pictograms:

The **flame** pictogram- “fire Hazards” 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)
- 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)

The **flame over circle** pictogram- “oxidizing Hazards” is used for the following classes and categories:

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

The **gas cylinder** pictogram- “Gas under pressure” used for the following classes and categories:

- Compressed gas,
- Liquefied gas,
- Refrigerated liquefied gas, and
- Dissolved gas

The **corrosion** pictogram- “corrosive damage to metals as well as skin, eyes” 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)

The **exploding bomb** pictogram - “explosion or reactive hazards” is used for the following classes and categories:

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

The **skull and crossbones** pictogram- “cause death or toxicity with short exposure to small amount” is used for the following classes and categories:

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

The **health hazard** pictogram- “may cause or suspected of causing serious health effects” 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)

The **exclamation mark** pictogram - “may cause less serious health effects or damage the ozone layer” 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)

The **biohazardous infectious materials** pictogram- “for organisms or toxins that can cause disease in people or animals” used for the following classes and categories:

- Biohazardous Infectious Materials (Category 1)

The **environment** pictogram- “may cause damage to the aquatic environment.”

The GHS system also defines an Environmental hazards group. You may see the environmental classes listed on labels and safety data sheets (SDSs). Including information about environmental hazards allowed by WHMIS 2015.

LABELLING REQUIREMENTS

SUPPLIER LABELS

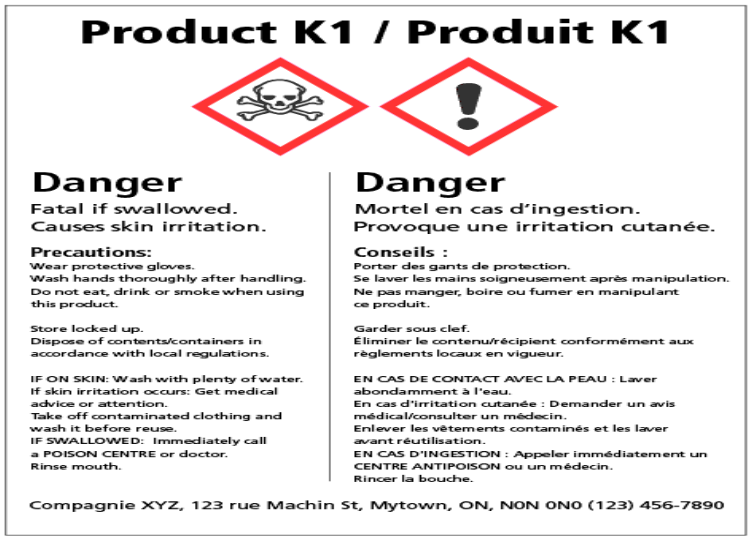
Products classified under WHMIS are controlled hazardous materials under both federal and provincial law must have a supplier label. The supplier WHMIS label must be bilingual (English and French), easy to read and durable. Requirements for supplier labels include signal words, standardized hazard statements and precautionary statements.

This label must contain the following information in accordance with WHMIS 2015 / GHS

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

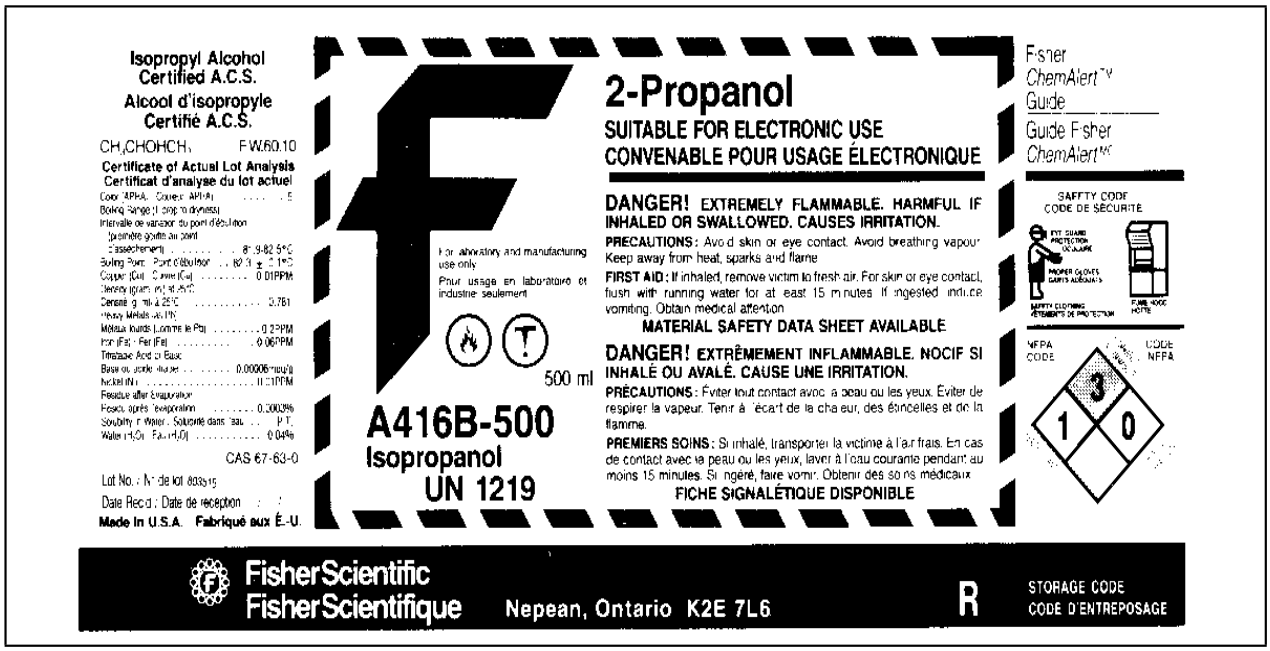
- Product identifier-The product name exactly it appears on the container and on the SDS (brand name, chemical name, common name, generic name, or trade name).
- Initial Supplier identification-the name, address, and telephone number of either the Canadian manufacturer or the Canadian importer.
    - Hazard Pictogram(s)-hazard symbol within a red "square set on one of its points."
- Signal word-a word used to alert the reader to a potential hazard and to indicate the severity of the hazard.
- Hazard statement-phrase that describes the nature of the hazard posed by a hazardous product based on their classification.
- Precautionary statement- phrase that describes the measure to be taken to minimize or prevent adverse effects resulting from exposure or resulting from improper handling or storage. First aid and protective equipment required must be included in precautionary statements.
- Supplemental label information - precautionary actions, hazards not yet included in the GHS, physical state, or route of exposure.

WHMIS 2015 / GHS SUPPLIER LABEL



The product must be relabeled with a new supplier label or a workplace label if the supplier label is lost, damaged, or no longer readable. The hatched border previously used by WHMIS is no longer required.

FIGURE 5.2: PRIOR WHMIS 2015/GHS SUPPLIER LABEL



WORKPLACE LABELS

Workplace labels are placed on containers of hazardous materials if:

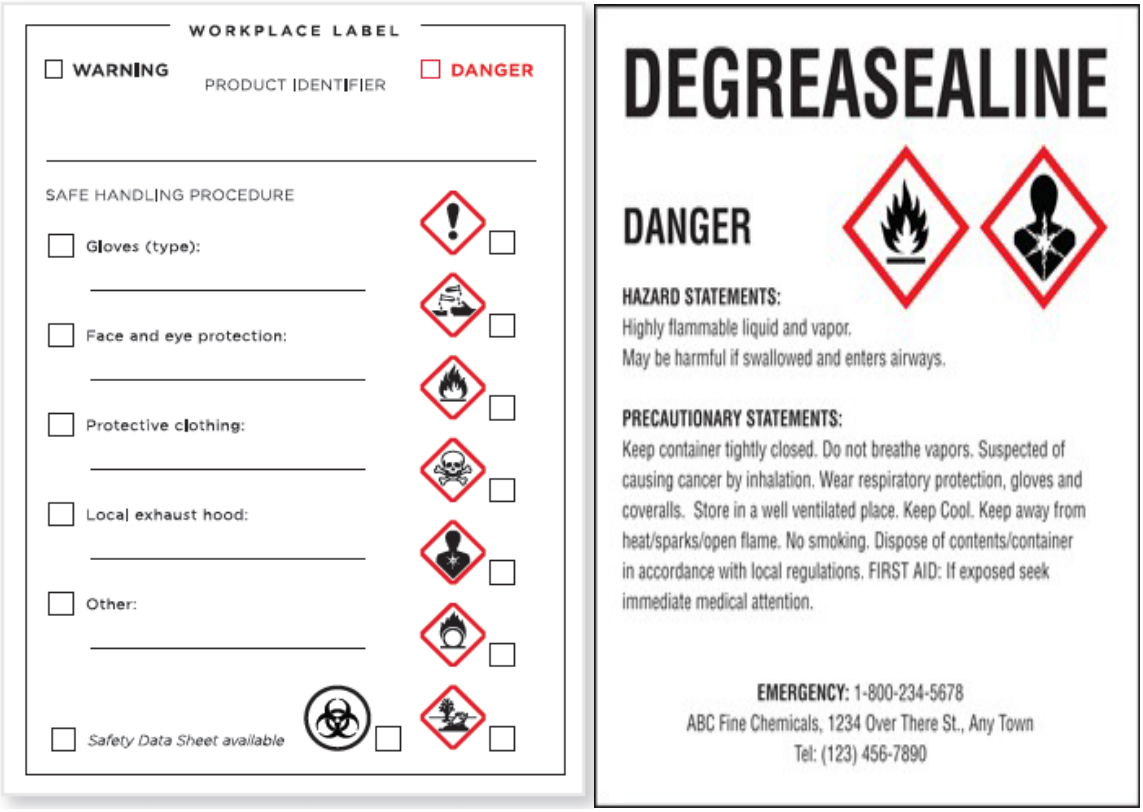
- The material is prepared/synthesized and used at the workplace. (SDS also required)
- The material is decanted from a supplier's container.
- The original supplier's label is unreadable or lost.

A workplace label must contain the following information:

- Product Name (matching the SDS product name).
- Information on the Safe Handling of Material (words or pictograms that show control measures, personal protective equipment to be used and necessary precautions that must be taken).
- Statement that an SDS is available.

The Michener Institute utilizes workplace labels in compliance with GHS WHMIS 2015 standards.

WHMIS 2015 / GHS WORKPLACE LABEL



Exception: A full workplace label is not required under the following conditions; however, a product name is still required on the container.

- If it is poured into a container which is going to be used immediately.
- If it is under the control of the person who decanted it.

Note: If the product is not used right away or if more than one person uses the product, a full workplace label is required.

SAFETY DATA SHEETS (SDS)

INTRODUCTION

Manufacturers, importers, and suppliers must supply SDS with their WHMIS controlled **hazardous products** (or they are not allowed to sell or import them). The SDS is a comprehensive source of information about the product.

Each department has ready access to the SDS for the hazardous materials in use. A Master set of SDS's is kept at the front reception desk. In addition, each area where hazardous materials are used may maintain a relevant SDS binder.

Alternatively, an electronic version of the primary set is available on my Michener available to all Laboratories or Classrooms.

https://msdsmanagement.msdsonline.com/f967d4d1-9816-4bc2-8c66-f0a4bbad9c6d/ebinder/?nas=True

The Michener Master SDS file is maintained up to date using an external provider and Laboratory Services. A current backup master SDS folder is found on the Y-Drive - SDS folder and may be accessed in the event of an internet outage.

If SDS for any hazardous material used in your department is required or needs to be removed from the database (material no longer in use), Lab Services shall be notified to add or remove the SDS from electronic version.

If you order a new chemical or controlled product, it's your responsibility to provide a copy of the SDS to Laboratory Services LaboratoryServices@Michener.ca for inclusion in the master file and posting to the electronic database.

Refer to the SDS for safe handling, use, storage, and disposal of hazardous material.

GENERAL INFORMATION

SDS:

- Must be supplied by manufacturer, importer, or distributor.
- Must be readily accessible to all workers who may be exposed to the hazardous material.
- Must be less than three years old or updated sooner if new information becomes available.

Review the SDS before you commence to work with any hazardous material.

A key feature of the SDS is the information it provides concerning routes of exposure and possible toxic effects. This is why eating, drinking, and smoking are forbidden in laboratories. However, with some chemicals, the risk of accidental exposure exists through inhalation, absorption, injection and/ or ingestion. Engineering controls and personal protective equipment (PPE) required to protect the worker are also included.

Every product that is classified as a hazardous product under WHMIS that is intended for use, handling, or storage in a workplace in Canada must have an SDS. The Hazardous Products Regulations specifies the sections and contents for the SDS, as follows:
http://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/sds.html

SDS Section and Heading		Specific Information Elements
1	Identification synonyms, etc.)	• Product identifier (e.g., Product name same as in SDS) • Other means of identification (e.g., product family, • Recommended use • Restrictions on use • Canadian supplier identifier+ o Name, full address, and phone number(s) • Emergency telephone number and any restrictions on the use of that number, if applicable

2	Hazard identification	• Hazard classification (class, category) of substance or mixture or a description of the identified hazard for Physical or Health Hazards Not Otherwise Classified
		• Label elements:
		  o Symbol (image) or the name of the symbol (e.g., flame, skull, and crossbones)
		  o Signal word
		  o Hazard statement(s)
		  o Precautionary statement(s)
		• Other hazards which do not result in classification (e.g., molten metal hazard)

3	Composition/Information on ingredients	• When a hazardous product is a material or substance:
		  o Chemical name.
		  o Common name and synonyms
		  o Chemical Abstract Service (CAS) registry number and any unique identifiers
		  o Chemical name of impurities, stabilizing solvents and/or additives*
		• For each material or substance in a mixture that is classified in a health hazard class**:
		  o Chemical name
		  o Common name and synonyms
		  o CAS registry number and any unique identifiers
		  o Concentration
		
		NOTE: Confidential business information rules can apply

4	First-aid measures	• First-aid measures by route of exposure:
		  o Inhalation
		  o Skin contact
		  o Eye contact

		○ Ingestion • Most important symptoms and effects (acute or delayed) • Immediate medical attention and special treatment, if necessary
5	Fire-fighting measures	• Suitable extinguishing media • Unsuitable extinguishing media • Specific hazards arising from the hazardous product (e.g., hazardous combustion products) • Special protective equipment and precautions for fire-fighters
6	Accidental release measures	• Personal precautions, protective equipment, and emergency procedures • Methods and materials for containment and cleaning up
7	Handling and storage	• Precautions for safe handling • Conditions for safe storage (including incompatible materials)
8	Exposure controls/ Personal protection	• Control parameters, including occupational exposure guidelines or biological exposure limits and the source of those values. • Appropriate engineering controls • Individual protection measures (e.g., personal protective equipment)
9	Physical and chemical properties	• Appearance (physical state, colour, etc.) • Odour • Odour threshold • pH • Melting point/Freezing point • Initial boiling point/boiling range • Flash point • Evaporation rate • Flammability (solid; gas) • Lower flammable/explosive limit • Upper flammable/explosive limit • Vapour pressure • Vapour density • Relative density • Solubility

		• Partition coefficient - n-octanol/water • Auto-ignition temperature • Decomposition temperature • Viscosity
10	Stability and reactivity	• Reactivity • Chemical stability • Possibility of hazardous reactions • Conditions to avoid (e.g., static discharge, shock, or vibration) • Incompatible materials • Hazardous decomposition products
11	Toxicological information	Concise but complete description of the various toxic health effects and the data used to identify those effects, including: • Information on the routes of exposure (inhalation, ingestion, skin, and eye contact) • Symptoms related to the physical, chemical, and toxicological characteristics. • Delayed and immediate effects, and chronic effects from short-term and long-term exposure • Numerical measures of toxicity
12	Ecological information***	• Eco toxicity • Persistence and degradability • Bio accumulative potential • Mobility in soil • Other adverse effects
13	Disposal considerations***	Information on safe handling for disposal and methods of disposal, including any contaminated packaging
14	Transport information***	• UN number • UN proper shipping name • Transport hazard class(es) • Packing group • Environmental hazards • Transport in bulk, if applicable • Special precautions
15	Regulatory information***	Safety, health, and environmental regulations specific to the product
16	Other information	Date of the latest revision of the SDS

CLASS SPECIFIC EXPOSURE RESPONSE

CAUTION: The following section is provided as general safety statements or best practices surrounding WHMIS controlled products and may not be suitable or complete actions for all risk situations. The Safety Data Sheet (SDS) for the specific controlled substance in question should always be consulted prior to handling and especially when seeking proper exposure responses.

COMPRESSED GAS

Report leaking cylinders to your supervisor or Faculty and the Compressed Gases Safety Officer immediately.

FLAMMABLE AND COMBUSTIBLE MATERIAL

The symptoms of overexposure due to inhalation or dermal absorption may include respiratory and central nervous system irritation and/or kidney and liver toxicity. In the event of fire or explosion:

1. Leave the fire area immediately.
2. Close all doors behind you.
3. Pull the fire alarm.
4. Leave the building via nearest exits.

OXIDIZING MATERIAL

NEVER TOUCH SPILLED MATERIAL; oxidizers may burn eyes or skin upon contact. Oxidizing material in the presence of flammable or combustible material enhances the risk of fire and/or explosion.

1. Exercise caution.
2. Alert fellow workers and evacuate the area immediately. Protect eyes, lungs, and skin.
3. Keep bystanders away.

POISONOUS AND INFECTIOUS MATERIAL

Division D1: Materials Causing Immediate and Serious Toxic Effects

1. To remove victims from hostile environment, wear all protective equipment, including eye, face, and hand protection.
2. Vacate the room and close the door.
3. For eye and skin contact with chemicals, flush for a minimum of 15-20 minutes with water.

The effect of exposure to divisions D1 is dependent on the length of exposure, the toxicity of the material, the amount of material the worker is exposed to, the route of entry and the age and health of the worker. Verify the respective SDS for proper guidance.

BIOHAZARDOUS AND INFECTIOUS MATERIALS

There are no "safe" limits established for exposure to biohazardous material.

CORROSIVE MATERIALS

1. Immediately drench affected areas with water. There is a drench hose at each sink in most laboratories. A safety shower and eyewash station are available in rooms 625 and in the 14th floor women's washroom. There are also eyewash stations outside the washroom of the Health Nurse's office (room 442), and in the Operations department.
2. For eye and skin contact, flush for a minimum of 15-20 minutes with water. Even small burns can be very serious.
3. If vapors are present, remove the victim from hostile environment. Wear protective equipment.
4. If chemical is ingested, do **not** induce vomiting in victim.

In all cases, verify the SDS for proper exposure response protocols.

DANGEROUSLY REACTIVE MATERIALS

1. Vacate the room and close the door.
2. Keep bystanders a safe distance away.
3. Call the Receptionist / Security (**dial: x0 / x3333**) to summon the Chemical Safety Officer.
4. Assume charge of the situation until assistance arrives.

ACUTE TOXICITY

- Hazardous products classified in this hazard class cause fatal, toxic, or harmful effects if swallowed, in contact with skin and/or if inhaled. Acute toxicity refers to adverse effects following:
- oral (swallowing) or dermal (skin) administration of a single dose, or multiple doses given within 24 hours, or
- An inhalation exposure of 4 hours or of a duration that is converted to four hours.
- Seek immediate medical Attention.

HEALTH HAZARD

Hazardous products classified in this hazard class have a health hazard that is different from any other health hazard addressed in the HPR. These hazards must have the characteristic of occurring following acute or repeated exposure and having an adverse effect on the health of a person exposed to it, including an injury, or resulting in the death of that person. If a product is classified in this hazard class, the hazard statement on the label and SDS will describe the nature of the hazard.

TRAINING

Before handling or using hazardous materials, workers must be trained and provide refresher training, to use and comprehend the labelling system and the Safety Data Sheets (SDS). Applying this information can reduce the risk of exposure to chemicals and minimize the potential for accidents. All employees and students working near hazardous materials must be protected - not just the user!

THE MICHENER INSTITUTE WHMIS COMPLIANCE PROGRAM

STORAGE AND LABELS

- Hazardous materials stored in the building are kept in the original containers with the WHMIS labels intact.
- Users must prepare workplace labels for the containers of hazardous materials transferred from original containers.
- If the containers/labels are damaged, corrective action should be taken to prevent a spill, contamination, or exposure.
- The users, in consultation with the Chemical Safety Officer or Faculty, ensure that:
- Hazardous materials are stored according to recommendations printed on Safety Data Sheets (SDS).
- Incompatible chemicals are not stored in proximity.
- The Chemical Safety Officer determines storage procedures and methods of disposal for hazardous materials.

SAFETY DATA SHEETS

- It is the responsibility of each individual/ department to notify Laboratory Services if any new WHMIS controlled products are introduced to the facility. Likewise, for controlled products no longer in use, Laboratory Services must also be advised.
- It is also the responsibility of each individual/ department to forward to Laboratory Services current hazard information sheets for materials of sufficient quantity that may fall under different hazardous classification systems such as Consumer Products (Hazardous Products Act), Drugs (Food & Drug Act), Radioactive Materials (Nuclear Safety & Control Act), etc.
- The Laboratory Services maintains the hard copy primary repository of MSDS which contains all data sheets accumulated for products used within the Institute. The primary set is kept at Reception for emergency purposes.
- A backup electronic version of the SDS database is made available through the Y-Drive – SDS folder for use during internet downtime.
- The Master electronic MSDS database is maintained using an external provider. All SDS may be obtained from the My Michener SDS link: https://msdsmanagement.msdsonline.com

In addition, all Michener students, staff, and faculty have access to 3.5 million additional SDS through the external providers search functions.

EDUCATION

The Michener Institute's WHMIS education program falls under the basic worker's right to know about hazards that they may be exposed to. All Michener employees and contract staff will be

required to complete the WHMIS education course available via the Blackboard website. It is the responsibility of each worker to complete this training on a yearly basis.

WHMIS training for students is prescribed through their respective program's curriculum.

RESPONSIBILITIES

Michener Joint Occupational Health and Safety Committee

- Reviews content of the Safety Manual.
- Approves the content of the Safety Manual.
- Performs workplace inspections.
- Receives and reviews Incident Reports.

People & Culture

- Communicates and monitors WHMIS review for all employees.
- Maintains a training record for each employee (annually).
- Receives and reviews Incident Reports.
- Performs the annual Safety Manual content review.

Laboratory Services

- Provides oversight of master SDS electronic database
- Ensures master SDS binder located at front reception is current.
- Receives requests to add or remove SDS from the database.

Supervisors

- Takes every precaution reasonable in the circumstances for the protection of a worker.
- Ensures that each staff member completes their required Blackboard training (annually)
- Provides the information, instruction, and supervision to a worker to protect their health or safety.
- Provides measures and procedures as well as equipment, materials, and protective devices as required.
- Ensures items are in good condition and being used as prescribed for the protection of the worker.

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SECTION 6 - CHEMICAL SAFETY

Reviewed September 2023

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SECTION 6 - CHEMICAL SAFETY

The goal of our safety program is to improve safety by increasing the awareness and level of safety knowledge of our staff and students. Setting a good example and providing education and training are two ways of fulfilling our goal.

GENERAL RULES OF CHEMICAL SAFETY

- Food, beverages, and smoking are prohibited in any laboratory or wherever chemicals are in use.
- If you do not get the expected results at each step of a laboratory experiment, stop, and consider what you may have done wrong. Proceeding may create an unstable, hazardous reaction.
- Hazardous (corrosive, flammable and combustible) chemicals must be transported by TDG trained facility personnel occasionally by laboratory services personnel, containers must be carried in rubber or neoprene carriers. Always transport on a trolley that has shelves with restraining sides. Always use recommended PPE.
- Do not use the fume hoods for storage.
- All WHMIS controlled products must have workplace or supplier labels, and those labels must be an accurate descriptor of the actual contents contained therein.
- Never inhale or taste the contents of unlabeled or poorly labelled containers to identify substances. Return the containers to room #625 for disposal.
- Equipment providing an open flame is not permitted.
- Be knowledgeable in the use and location of fire and other safety equipment.
- Wash your hands each time you leave the laboratory at the designated hand wash sinks.
- When pouring liquids, hold the bottle with the label up and against the palm so that the label does not get damage.
- To prevent contamination, do not return any excess solid or liquid chemical to the original container. Take only the amount that you need. Refer to the Decontamination and Disposal Chart or consult your supervising Faculty or the Chemical Safety Officer.
- Never hold glassware by the neck; use two hands to support the bottom and sides of the container.
- Do not use the sink to dispose of hazardous material. Refer to the Decontamination and Disposal Chart or consult the Chemical Safety Officer.
- Before use, check hazardous waste storage containers for integrity.
- Turn off all laboratory equipment at the end of the session.

FLAMMABLE and COMBUSTIBLE LIQUIDS

Flammable and combustible liquids themselves do not burn; it is the mixture of their vapors and air that burns. Flammable liquids at normal room temperatures and combustible liquids at temperatures above their flashpoint (the lowest temperature at which the liquid gives off enough Vapour to be ignited at the surface of liquid) can give off enough Vapour to form burnable mixtures with air.

Many solvents are both flammable and toxic. Poisoning by absorption through the skin can occur with even small amounts of solvent. Always refer to the Safety Data Sheet and follow recommendations to prevent exposure.

Flammable and combustible liquids must be stored in clearly marked, lockable flammable storage cabinet. Items not stored in a flammable storage cabinet must be contained in safety cans. A maximum of one safety can per flammable liquid may be stored on a bench in a laboratory. Safety cans not in use should be returned to the 6th floor, room #625 for transport to the bunker.

Do not use domestic refrigerators or cold storage rooms for storage of flammable liquids.

CORROSIVE MATERIAL

Corrosive vapors can assault skin, eyes, respiratory tract, and digestive tract and even destroys metal. Work in a fume hood to avoid vapor exposure and wear all personal protective equipment (PPE) recommended by the SDS.

Be knowledgeable in the compatibility properties for the material you are working with.

Corrosive spills or splashes onto skin should be rinsed for at least 15 minutes. Most laboratories have drench hoses at each sink.

Acids and bases are purchased in containers with a maximum volume of 1 litre. This provides inventory and spill management control.

Strong acids and bases are incompatible with each other and will strongly react with water. Always add acid and/or bases to water slowly to control exothermic reactions.

Corrosive liquids should be stored in approved cabinets or returned to the 6th floor, room #625 for transport to the bunker. They should always be stored below the shoulder height of the user.

A combination eyewash/shower station is available in room 625 and on the 14th floor beside the women's washroom. Eyewash bottles are also available in some labs.

Note: Inventory of all chemicals stored in the approved cabinets must be updated quarterly and affix the list on the front door of cabinet and filled electronically on Y share.

STORAGE OF HAZARDOUS MATERIAL

THE BUNKER

Michener has an isolated non-combustible building with one room each for the storage of flammable liquids, and corrosive material. This room is equipped with a carbon dioxide sprinkler system which is activated by excessive heat. Access is restricted to trained personnel.

DISPOSAL

Michener disposes of hazardous materials according to Waste Management Regulation 347 under the Ontario Environmental Protection Act and Metropolitan Toronto By-law 153-89 governing land, sewage, and drainage. Follow the Decontamination and Disposal Chart, included in Section 1. Waste generated in laboratories should be brought to the 6th floor, properly labelled for disposal, for transport to the bunker. Consult the Chemical Safety Officer if you have queries regarding appropriate disposal of hazardous materials.

SPILL RESPONSE PLAN

The following protocol has been drafted for action in spills of hazardous materials.

In all spills:
REMEMBER TO PROTECT YOURSELF DO
NOT BECOME A VICTIM

There are 2 types of hazardous spills:

Major Spills: Spills that require external assistance and cannot be safely handled by Michener Spill Response Team. For major spills follow Plan A.

Minor Spills: Spills that can be handled internally by trained Michener staff or Michener Spill Response Team. For minor spills follow Plan B.

IN THE EVENT OF A FIRE OR EXPLOSION

- Leave the area.
- Close all doors behind you.
- Pull fire alarm located at all fire exits.
- Leave building via nearest exit stairs.

Flammable and Combustible Spill Precautions:

- Minimize quantities of flammable /combustible liquids kept in the laboratory.
- Do not exceed the maximum container sizes for flammable liquids.
- Use and store flammables in well-ventilated areas.
- Conduct work involving the release of flammable vapors in a laboratory fume hood.
- Keep containers closed, including waste solvent containers.
- Keep flammable liquids away from heat, sparks, open flames, electrical motors, and direct sunlight.
- Clean up spills of flammable/combustible material promptly to minimize the surface area of the spilled material and to avoid the risk of vapor concentration exceeding the lower flammable limit.
- Ensure proper ventilation of flammable storage areas. Bunker location exhaust shall be always on and regularly inspected.
- Facilities shall actively monitor all building storage tanks, pumps and pipes containing flammable/combustible material to preventatively identify potential spill risks.

Important Points for Major or Minor Flammable/Combustible Spill Clean Ups:

- Use non sparking clean up tools (plastic scoops, shovel, or dust pans)
- Use excess absorbent to reduce the flashpoint.
- Use a Solvent spill absorbent with a low flash point to reduce vapor as well as absorb the spill.

- Turn off all potential spark producing items.
- Ensure affected area is properly ventilated by opening all nearby Fume Hoods and doors (doors are to be closed in the event of fire)
- Never use a vacuum or Shop Vac as part of the cleanup due to the risk of ignition of flammables or combustibles

PLAN A: MAJOR SPILLS

A spill is major if any one of the following conditions exists:

- potential for fire or explosion
- serious personal injury or if rescue is needed.
- life threatening situation
- potential for release into the environment
- Spills greater than 4 L

How to respond to a major spill:

Person at site.

1. Evacuate and seal off the area and assist any injured person.
2. Call emergency line 3333 representative and be prepared to give the following information.
    i. IDENTIFICATION: Full name of the caller
    ii. LOCATION: floor, room, etc.
    iii. INJURY: urgency, type of injury
    iv. CHEMICAL INVOLVED: Specific name if known and acid/base/solvent etc.
    v. SIZE OF SPILL: approximate volume
3. If safe to do so turn off sources of ignition and prevent release into the environment.
4. Collect SDS for chemical involved for outside responders.
   SDS(s) are available at the front desk.

Emergency Phone Representative

5. Representative is to relay information to the following personnel:
    - Spill Response Team Coordinator (Weekdays Only –Appendix C)
    - Security
    - Facilities Personnel (Building Operator) who will remain on standby.

The person at the scene of the spill will be required to complete an Internal Spill Reporting Form and an Employee / Student Incident Form. Submit to People & Culture (employees) and the health Nurse for student incidents.

Any spill released into the external environment that possess a safety risk to people , natural environment or habitat must immediately be reported to the Ministry of Environment, Spills Action Centre 1-800-268-6060(http://www.ontario.ca/environment-and-energy/report-spill) The Spill Response Team is responsible for reporting major spills to the proper outside agencies (Appendix C).

PLAN B: MINOR SPILLS

- Spill supply kits are in rooms: 1403, 1424, 1427, 1441, 1043,1025, 841/843, 803/805, 741, 725, 406, Bunker Storage, SB23 & SB26.
- The Main spill cart is in room 627.
- Spill Kit/Cart checklist audits conducted quarterly by laboratory services designated person to ensure proper inventory levels.
- It is the responsibility of any Faculty or staff members utilizing inventory to notify Laboratory Services to replenish used items.

A spill is minor if all the following conditions exist:

- Spill is less than 4 liters in volume.
- Does not spread rapidly.
- Does not endanger people.
- No danger of being released into the environment.
- Can be managed safely.

How to respond to minor bench top spill or spill of less than 300ml:

Person at site

1. Alert people in the area and assist any injured person.
2. If a flammable is involved turn off sources of ignition if safe to do so.
3. Wear proper personal protection equipment.
4. Contain using proper absorbent, spill sock or pad.
5. Contact Spill Response Team who will properly dispose of hazardous waste.
6. Complete an Internal Spill Reporting Form and an Employee Accident / Incident Form. Submit to Facility Manager and JHSC.

How to respond to minor spills of more than 300ml but less than 4 litres

Person at site

1. Evacuate and seal off the area and assist any injured person.
2. Report spill to Emergency phone 3333 representative noting the following information: See next page.
    i) IDENTIFICATION: Full name
    ii) LOCATION: floor, room etc.
    iii) INJURIES: urgency, type of injury

iv) CHEMICAL INVOLVED: acid/base/solvent etc. if known.
v) SIZE OF SPILL: approximate volume

3. Remain calm and go away from spill area.

Emergency Phone Representative: Representative is to relay information to the following personnel:

4. Spill Response Team Coordinator (Weekdays Only)
5. Security
6. Facilities Personnel (Building Operator) who will remain on standby.
7. Personnel from Spill Response Team and Facilities are to work together to evaluate and resolve spill response using the following steps:

Spill Response Team	Facilities Personnel
Immediately attend and assess spill	Facilities to place elevator on "service." Pick up the spill cart from room 627 and meet Spill response team at site of incident
Verify spill type, size, and associated hazards	Contact building operator to manage exhaust

Jointly a decision is made regarding possible actions:

1. Eliminate threats and clean up spills that can be safely handled Or,
2. Call for emergency code, Pull Fire Alarm, evacuate building, contact Facilities VP
3. All spill cleanups must involve the use of proper Personal Protective Equipment and absorbents.
4. Spill Response team cleans spill utilizing proper spill cleanup techniques and material (according to Spill Kit Training)
5. All collected waste material is to be taken to room B36 where it will be assessed for proper disposal, including representative SDS.
6. A Student or Employee Incident Form is to be completed by the person (Student or Staff) who created and/ or was affected by the spill.
7. Internal Spill Reporting Form is to be completed by both the Spill Response Team Coordinator and submitted to People & Culture.

AFTER HOURS SPILL RESPONSE
Weekend and Evenings

In all spills:
REMEMBER TO PROTECT YOURSELF DO NOT BECOME A VICTIM

In the evening and on weekends the Security Guard will bring the main spill cart to the scene if it is required.

There are 2 types of spills:

Major Spills: Spills that require external assistance and cannot be safely managed on site. For major spills follow Plan A as described in this section on page 6.

Minor Spills: Spills that can be safely managed internally. For minor spills follow Plan B in this section as described on page 7.

IN THE EVENT OF A FIRE OR EXPLOSION

- Leave the area.
- Close all doors behind you.
- Pull fire alarm located at all fire exits.
- Call for the emergency code
- Leave building via nearest exit stairs.

If necessary, telephone Hazard Spill Assistance is available 24hrs from CANUTEC.
@ 1-888-CANUTEC (226-8832) North
American use and/or
1-613-996-666

The person at the scene of the spill will be required to complete an Internal Spill Reporting Form and an Employee / Student Incident Form, inform CSO and BSO, Submit incident reports to People & Culture (employees) and the health Nurse for student incidents. JHSC be reported/communicated as well just in case need to do incident investigation.

APPENDICES

Appendix A: Spill Cart Inventory Checklist

Rm # 627	Year_____Quarterly Sign Off_____				
Inventory	Jan	Apr	July	Oct	Comments
P.P.E □ Goggles □ Nitrile rubber gloves □ Respirators □ Surgical masks □ Safety aprons □ Disposable Coveralls					
BARRIERS □ Absorbent pillows □ Absorbent socks □ Absorbent pads					*Vermiculite replaced with fragrance free cat litter 2023
NEUTRALIZERS □ Mercury spill kit □ Caustic neutralizer □ Acid neutralizer □ Acid handler (for glacial acetic acid) □ Polyform –F □ Formalex					Grey colored universal absorbent added 2023
MISC ITEMS □ Scissors □ Sharps container □ Caution tape □ pH indicator strips □ Hazardous area sign □ Cavicide □ Hypochlorite (Javex) □ Clear bags (for caustic spills) □ Large biohazard bags □ Garbage bags □ Brush/dustpans □ Control solves					Added; rubber boots,tongs, shoe covers 2023

Appendix B: Spill kit Inventory Checklist

Rm #	Year _____Quarterly Sign Off_____				
Inventory	Jan	Apr	Jul	Oct	Comments
PPE: □ Gloves □ Mask □ Apron □ Goggles					
Spill Control: □ Socks □ Pillows					
Absorbents: □ Absorbent pads					
Neutralizing Agents: □ Acid □ Base (caustic) □ Solvent (Soursob) □ Biological					
Misc. □ biohazard disposal bags □ plastic dustpan and brush					

Appendix C: Emergency Contacts

Internal Emergency Contacts

Yasmin Halley	Spill Response Coordinator	X3200
Arlene Diesta	Spill Response Team	X3493
Myla Estandian	Spill Response Team	X2007
Emergency Phone	Facilities	X3333

External Emergency Contacts

Spills Action Centre EPA. Government of Ontario Spill Centre	All spills falling under definition. Mandatory	(800) 268-6060 or (416) 325-3000
Canutec: 24 hours telephone assistance	Hazardous materials consultation	(613) 996-6666

Appendix D: Internal Spill Reporting Form

Date/ Time of Spill: _____ Location of Spill: _____

Person at site:_____Telephone # _____

Spill Response Coordinator:_____Telephone #_____

Description of spill (volume, material)

Describe Containment and Cleanup

Spill Reported Externally? Yes No If not reported externally explain why.

MOEE Notification: Name:_____Telephone #_____Time: _____
Municipal Notification: Name:_____Telephone #_____Time:_____
Other Notification: Name:_____Telephone #_____Time:_____

Summarize Investigation/action/orders by external agencies.

Follow-up Actions Taken or Recommended

You are also required to submit an Employee Accident/Incident Form
Form Completed By: _____ Date: _____

Submit to Health Nurse for student incidents, and to People & Culture for employees.

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SECTION 7 - BIOLOGICAL SAFETY

Updated September 2023

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INTRODUCTION

All health care workers are at risk from biological materials. The danger of contamination arises from both direct and indirect contact with infected patients, materials, or biological specimens. This section of the manual provides guidance for avoiding infection using prudent practices and procedures. By treating every patient and every sample as potentially infectious, the health care worker can avoid contracting an unnecessary and potentially fatal infection. Risk of exposure to infectious agents are reduced by good working practices, proper use of appropriate personal protective equipment (PPE) and compliance with an approved immunization program (see Appendix-II).

BIOLOGICAL HAZARDS

FIGURE 7.1: BIOHAZARD SYMBOL

- Biohazardous agents include microorganisms (viruses, bacteria, fungi, rickettsia, and parasites), nucleic acid, or protein capable of causing infection. The primary portals of entry are inhalation, ingestion, absorption, and injections. They gain access to an individual via cuts or scrapes on the skin or through the mucous membranes (**e.g.,** the eyes, nose, and mouth).
- Contamination may occur when blood or body fluids are spilled or splashed, when these liquids are present on sharp objects (**e.g.,** needles, scalpels) penetrating the skin, or exposure to infectious material through aerosols or fomites.
- The contributing factors to this hazard are PEMEP (People, Equipment, Materials, Environment, and process).
- Biohazardous agents are not present in all specimens. Some agents are blood borne and only spread through contact with blood and body fluids; some agents are primarily in the respiratory tract; some are on the skin.
- It is impossible to identify patients/specimen that are carrying pathogens, the health care worker must treat every patient and all specimen as if they are potentially infectious.
- All health care workers must use the appropriate PPE and barrier precautions for the work being performed where there is a risk of contact with blood or other body fluids.

ROUTINE PRACTICES AND ADDITIONAL PRECAUTIONS

Routine practices and additional precautions combine the basic requirements of Universal.

Precautions and those of Body Substance Isolation Procedures. They do not take place of other.
Precautions (droplet, airborne, or contact) when the patient is known to have disease such as those which present respiratory exposure (e.g. tuberculosis) or other specific infectious diseases; but they do attempt to ensure that carriers of blood-born and other pathogens who may or may not be known positives are treated in a way as to prevent occupationally acquired
infection.

Routine practices include risk assessment, hand hygiene, personal protective equipment, environmental and administrative controls.

At the Michener we have adopted Routine Practices and Additional Precautions, the following should be provided to laboratory workers:

- Assistance in evaluating work procedures and developing safe working procedures.
- Pre-placement medical assessments and immunizations
- Safety equipment in the laboratory consistent with prescribed precautions
- Training in the proper use of safety equipment
- Training in the risks associated with blood borne pathogens.
- Emergency procedures/preparedness after an accidental exposure, which should include the awareness of a "known infective" status of source patient.
- Post-accident follow-up and counselling.

HAND HYGIENE

Hand hygiene refers to removing or killing microorganisms from the hands as well as maintaining good skin integrity. Frequent and appropriate hand hygiene is the most important way of preventing the spread of infections.

Hand hygiene is the responsibility of all individuals involved in healthcare.

Alcohol-based hand sanitizer (ABHS) is the preferred method for decontaminating hands and is recommended for use when hands are not visibly soiled, or hand wash stations are not accessible.

Hand washing with soap and warm water must be performed before and after donning and doffing PPE, after any procedures, laboratory work or encountered contact with any contaminated surfaces. Hand washing should be performed at a dedicated hand hygiene sink, and not be conducted at any other sink to avoid re-contamination.

HAND HYGIENE MUST BE PERFORMED IN THE FOLLOWING CIRCUMSTANCES:

- Before contact with the patient or patient's environment
- After contact with the patient or patient's environment
- After biohazardous material exposure
- Before an aseptic procedure
- If visibly soiled
- Before donning gloves
- After doffing gloves
- After touching environmental surfaces or objects (e.g., after touching reusable patient equipment, surfaces in patient rooms and laboratories, and frequently touched surfaces e.g., door handles, etc.)
- After using the toilet
- Any other circumstances were deemed appropriate.

STANDARD PRECAUTIONS

Evolved from universal precautions and intended to protect the patient as well as the health care worker.

- Combines the features of the guidelines above and applies them to all patients, regardless of diagnosis or presumed infection status. More comprehensive guidelines are necessary because:
    - not all patients disclose their infection status, or
    - patients may not be aware that they are infected, or
    - it cannot be demonstrated that patients are infected (markers of infection are not yet detectable)

- Apply to
    1. Blood.
    2. All body fluids, secretions, and excretions except sweat, regardless of whether they contain visible blood.
    3. Non-intact skin.
    4. Mucous membranes

- Designed to reduce exposure to micro-organisms from both recognized and unrecognized sources of infection.

- Three areas of practice have recently been added to the standard precautions and are:
    - Respiratory hygiene/ cough etiquette
    - Safe injection practices
    - Use of masks for insertion of catheters or injection of material via lumbar puncture procedures

DEFINITIONS

- **Sterilization**: a process to destroy completely all microorganisms (bacteria, fungi, parasites, viruses, prions) and spores on an inanimate object.

- **Disinfection**: a process to destroy or irreversibly inactivate bacteria, fungi, and viruses, but not necessarily spores, on an inanimate object. Disinfectants are chemical agents such as aldehydes, chlorine compounds, phenols, alcohols or iodophors.

- **Decontamination**: is the process of eliminating or reducing bacterial contamination, so that a surface, substance, or material is no longer capable of transmitting an infectious agent (biohazard). This procedure may involve sterilization, disinfection, or a combination of both.

- **Sanitization**: a process of removing visible contamination and lowering the number of microorganisms on the surface.

- **Biosecurity:** Security measures that are designed to prevent the loss, theft, misuse, diversion, or intentional release of biological agents.

- **Controlled activities:** Any of the activities referred to in Section 7(1) of the HPTA: possessing, handling or using, producing, storing, permitting any person access to, transferring, importing, or exporting, releasing or otherwise abandoning, or disposing of biological agents.

- **Biological agents:** Includes non-hazardous biological agents or materials, biohazardous agents and infectious biological agents.

1) **Biohazardous agents**: Materials, naturally or synthetically derived, known to contain or suspected to contain human pathogens and toxins, including Security Sensitive Biological Agents (SSBAs) as specified in the Human Pathogens and Toxins Act and Human Pathogens and Toxins Regulations, infectious biological agents, microbial toxins or toxins of other organisms, proteins, recombinant DNA/RNA, human organs, tissues, cells, blood and body fluids, animal organs, tissues, cells, blood and body fluids. Biohazardous agents are potentially harmful to humans and/or other living systems.

2) **Non-hazardous biological agents** are unlikely to cause disease in a healthy person or other living systems or communities and include micro-organisms and materials from higher organisms, naturally or synthetically derived.

3) **Infectious biological agents**: Human pathogens as specified in the Human Pathogens and Toxins Act and Human Pathogens and Toxins Regulations, viruses, bacteria, fungi, parasites, prions and other micro-organisms or genetic systems, that, by virtue of their replicative properties, are potentially harmful to humans and/or other living systems but excludes hazardous agents, which are chemical or radioactive.

DISINFECTANTS IN USE AT THE MICHENER INSTITUTE

a) For equipment, glassware, and benches:

- Sodium hypochlorite (chlorine compound)
- Working solution: 1% solution must freshly prepare daily for maximum effectiveness. Use industrial strength hypochlorite (10-12%) as the stock solution.
    - A 1.0% solution contains 1000 ppm free chlorine; is a 1/100 dilution of the stock solution used for bench cleaning.
    - A 10% solution contains 10,000 ppm free chlorine; is a 1/10 dilution of the stock solution used for glassware's and plastic lab wares.
    - Intermediate activity; used to inactivate viruses.
    - Effectiveness decreased by presence of organic material.

Conflict: Stable solution of dual quaternary ammonium active ingredients is effective against viruses, fungi and bacteria including highly resistant pathogens, TB. It is used to clean and disinfect hard surfaces in labs, specially bench tops.

Note: use liquid (preferably in a spray bottle), Canadian Biosafety Std. does not recommend disinfectant wipe especially for CL2 zones.

b) For metal surfaces:

- Sodium Hypochlorite solutions are known to oxidize and corrode metal surfaces. Potentially adverse health effects must be considered associated with Phenolic and aldehyde compounds even though it may be suitable for metal surfaces.
- Occasionally, 70% alcohol is used to disinfect external surfaces of equipment (avoid alcohol contact on rubber e.g., belts, gaskets especially in chemistry equipment). Alcohol is not recommended due to its property (flammable).

Note: Neither is suitable for disinfecting equipment

- Contact Laboratory Services to obtain the Conflict for disinfecting metal surfaces.

c) For skin:

- 70% alcohol and iodine

PLEASE SEE ATTACHED DOCUMENT IN APPENDIX F GUIDE TO VARIOUS DISINFECTANT USED AT THE MICHENER SINCE 2020: LIQUID AND WIPE

AEROSOLS

- Aerosols are minute droplets of solid or liquid suspended in the air. Aerosols pose a hazard if they contain infectious microorganisms, and the primary concern is the transmission of *Mycobacterium tuberculosis*. Some aerosols are created by patients (**e.g.,** cough, sneeze) or by invasive procedures (**e.g.,** arterial puncture, surgery, capillary blood collection). Others are created when liquids are splashed, spilled, pipetted, or manipulated in automatic analyzers, sonicators, blenders, pipettes, or syringes. In microbiology laboratories, placing a hot loop in a liquid suspension (e.g., pure culture broth or culture media) or into an open flame may cause aerosols. In other areas, opening specimens of blood or lyophilized material may create aerosol droplets.

- A surgical mask will provide protection only from gross contamination. N95 masks and respirators ~~are recommended~~ used depending on task being done.

- Where there is risk of inhaling potentially infectious aerosols,

a) Users must performed tasks using containment such as a biological safety cabinet e.g., centrifuge safety trunnion cups unloaded within the Biological Safety Cabinet.
b) Pour liquid specimens slowly and carefully.

SPECIMEN HANDLING

The observance of all safety practices is MANDATORY. Patient specimens and human blood products used in practical/laboratory sessions are usually obtained from volunteer staff, student donations, procured from hospitals and other clinical settings.

- Collect Patient specimens into leak proof containers with leak proof lids. Transport samples from site to site in the appropriate secondary transport containers.

- Avoid contamination of the outside of the container when collecting the sample. Wipe the container with disinfectant to remove minimal contamination.

- Discard Specimens that have leaked because of breakage or inadequate closure. Place it in a biohazard waste container, be taken by Laboratory Services staff and transported to Room B39. Where there is a small volume of liquid in a container, use double.

bags to prevent leaks. Where a large volume of specimens is involved (**e.g.,** several liters), contact the Biological Safety Officer for proper guidance.

- Keep requisitions separate from the specimen container to avoid contamination in the event of a leak. Replace any requisition that is obviously contaminated. Discard the contaminated requisition into biohazard waste.

- Clearly label Refrigerators and freezers used for specimen storage with a biohazard symbol. **Never use these units for storage of food or drink.**

- Cover the cap with a plastic backed wipe or a gauze square while uncapping the sample. When opening the tube ensure the cap is facing **away** from you. Specimen uncapping and any manipulation must be done in Bio safety cabinet.

- Do not "park" Pasteur pipettes in specimen containers. A sudden glancing blow is enough to break the pipette and knock over a rack of tubes.

- Use plastic transfer pipettes, or automatic pipettors with disposable plastic tips to transfer or measure serum or other fluids.

- At the beginning and at the end of each workday, clean and disinfect all workbenches with 1% hypochlorite/conflict. Allow the air dry.

- Use the appropriate disinfectant to clean and decontaminate laboratory instruments such as automated analyzers, centrifuges, and biological containment cabinets regularly. This is for the safety of operators and service personnel.

- Keep Telephones, computer keypads or keyboards and other fomites in the workplace clean. Decontaminate fomites if they are accidentally contaminated.

CENTRIFUGATION REQUIREMENTS AND RECOMMENDATIONS FOR CENTRIFUGE USE:

- Keep all centrifuge cups or rotors sealed to prevent the release of aerosols during centrifugation and inspect regularly for the integrity of the cup or rotor seal (CBS Matrix 4.6).

- Decontaminate the outside surface of cups and rotors as a part of routine maintenance.
- Equipment should be used in accordance with the manufacturer's instructions, which includes the balancing of rotors to prevent rotor damage or explosion.
- Ensure all centrifuges have a safety interlock, to prevent them from being accidentally opened while the rotor is still in motion.
- Do not operate a centrifuge in a fume hood or BSC; the centrifuge will interfere with the airflow in the hood.
- Cups and rotors with samples to be unloaded inside a biosafety cabinet to protect against the release of infectious aerosols.
- Cap or covered with Para film all tubes to be centrifuged. Many centrifuges are equipped with covered safety buckets intended to contain any spills or breakage, which may occur.
- Plastic tubes, thick-walled external thread with screw caps that are suitable for centrifuge should be used.
- Select new unetched tubes with no visible cracks where glass tubes are used. Use rubber cushions (bungs) when centrifuging materials in glass containers.
- Do not overfill tubes to be centrifuged.
- Ensure the centrifuge is perfectly balanced before operation.

IN THE EVENT OF BREAKAGE IN A CENTRIFUGE

1. Turn off centrifuge.
2. Inform others in vicinity and do not open the centrifuge for 30 minutes to allow aerosols to disperse or settle.
3. Wear the proper protective clothing: gown or lab coat, mask, glasses/goggles, and puncture-resistant gloves. Use of a N95 or (high-efficiency particulate air) HEPA mask may be indicated.
4. Transfer the bucket to a biological safety cabinet.

A) <u>Without covered safety bucket</u>

1. Slowly open centrifuge lid, remove all broken tubes, buckets, rotors, etc. to a basin, soak in disinfectant which is non-corrosive; let stand for time recommended for

selected disinfectant. Alternatively, these items may be autoclaved.

2. Place any unbroken capped specimens in disinfectant for the time recommended and then remove, rinse, and process.
3. Use tongs or forceps to collect broken contaminated glass and deposit in a biohazard sharps container.
4. Use a cloth wipe down the bowl of the centrifuge twice with disinfectant and rinse with water; dry.
5. Dispose of wipe-down cloths in biohazard waste.

B) With covered safety bucket

1. Remove sealed buckets and take it to biological safety cabinet.
2. Place any unbroken capped specimens in disinfectant for the time recommended and then remove specimen, rinse, and process.
3. If any tubes are broken, leave in bucket, replace lid of bucket loosely and place entire contents in disinfectant for the time recommended. Alternatively, these items may be autoclaved.
4. Use tongs or forceps to collect broken contaminated glass and deposit in a biohazard sharp container.
5. Follow the same A.4 and A.5 steps as above.

MICROINCINERATOR (BACTI-CINERATOR)

Micro incinerators can be used as an alternative to Bunsen burners, especially for use in a BSC. They are often equipped with shields to minimize the dispersal of infectious aerosols. When used in the Bio Safety Cabinet, the micro incinerator should be placed at the rear of working area inside the Cabinet to help minimize disruption of the air at the front of the cabinet.

GLOVES

Remember, always wash your hands before and after wearing gloves. Discard used gloves properly in biohazard waste containers.

When handling potentially infectious materials, everyone must wear gloves.

WHEN GLOVES MUST BE WORN

Wear gloves when there is a risk of exposure to:

- Biohazard material (Microorganisms and toxins, blood/body fluids/tissues)
- Non-intact skin
- mucous membranes
- chemicals, hazardous drugs, hazardous substances
- extreme temperatures
- sharp objects/item

All health care workers are at risk from biological materials. The danger of contamination arises from both direct and indirect contact with infected patients, materials, or biological specimens. By treating every patient and every sample of body fluid from a patient as potentially infectious (biohazardous), the health care worker can avoid contracting an unnecessary and potentially fatal infection. Risk of exposure to infectious agents is reduced by good working practices, the availability and proper use of appropriate personal protective equipment (PPE) and compliance with an approved immunization program.

- Medical examination gloves should be worn for any patient contact where body fluids are involved. Protective gloves do not provide absolute protection from exposure to infectious materials.

Direct contact: examples include venipuncture, collection of specimens for bacterial culture, injection of contrast media or radiopharmaceutical, suctioning, insertion of airway.

Indirect contact: examples include specimen handling, disposal of garbage, cleaning of lab benches.

If you have a reaction to the gloves provided, fill in the incident report and contact the health Nurse on site for assistance.

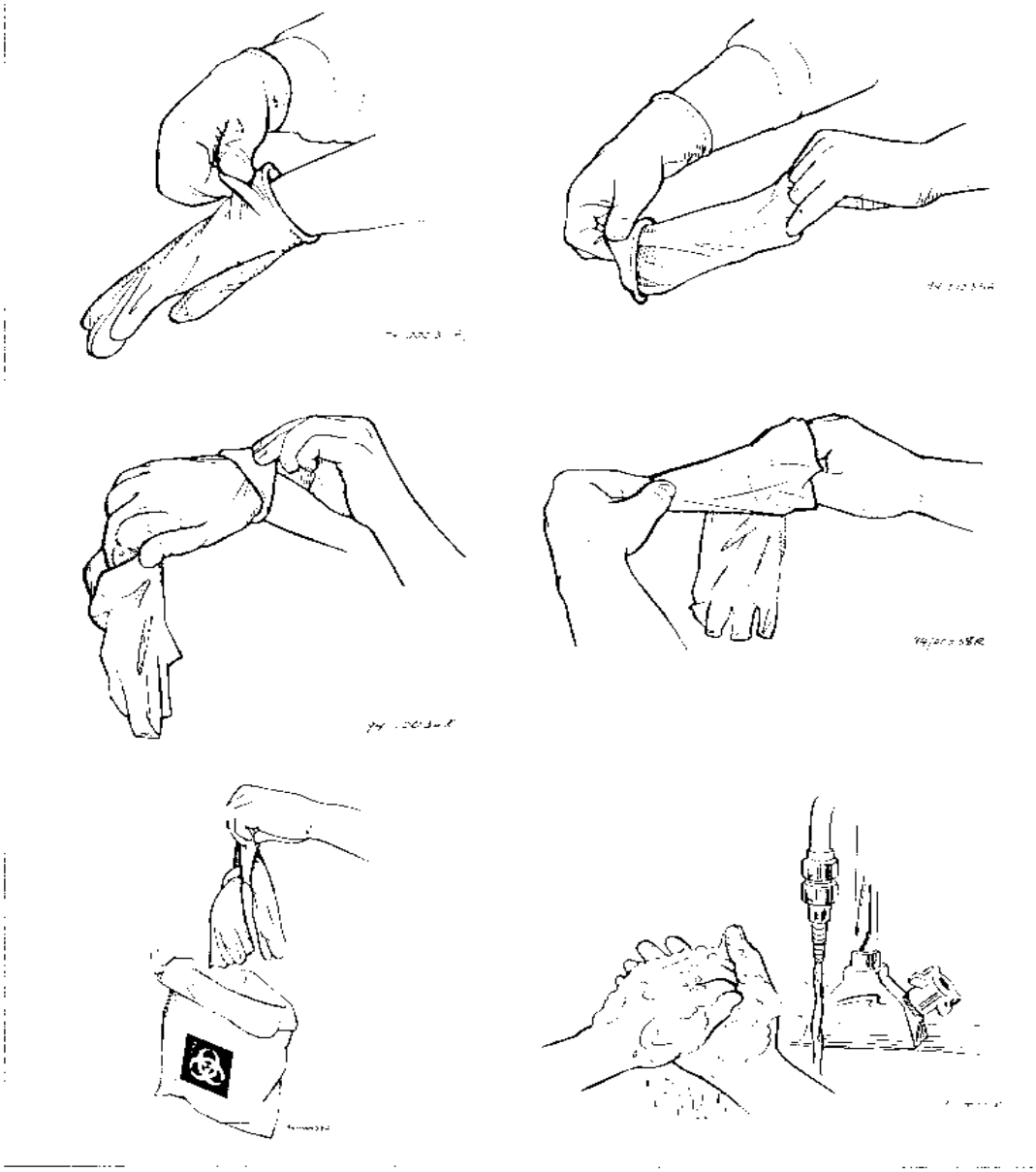
PRECAUTIONS

- Keep fingernails short and avoid wearing rings or wrist jewelry or accessories, to reduce the risk of punctures and to prevent infection,
- Protect raw or open scares or weeping lesions on your hands. A small cut may be covered by a water-impervious bandage.
- Immediately wash your hands and other exposed skin surfaces if they become contaminated by blood or another biohazardous specimen. Wash your hands **before** and **after** you wear gloves.
- Replace worn, torn or grossly contaminated gloves immediately. **Always change gloves between patients.**
- Do not wash or disinfect gloved hands between patients or specimens. Discard the gloves in biohazard bags, wash your hands and then wear new gloves.
- Do not touch your mouth or nose, or clean areas (**e.g.,** the pockets in street clothes worn under a lab coat or gown) when wearing gloves.
- Remove gloves before handling the telephone or a computer keyboard. Such devices should be covered by a surface which can easily be disinfected at frequent intervals.
- Remove gloves before smothering a cough or sneeze, or before exiting the laboratory or patient care area.

PROCEDURE FOR REMOVING GLOVES PROPERLY

1. Take hold of the **outside** of the cuff of one glove with the fingers of the other (gloved) hand.
2. Pull the glove down over the fingers. Continue to hold the glove after it is removed.
3. Grasp the **inside** of the glove on the other hand with the index and middle fingers of the ungloved hand.
4. Pull the glove down over the fingers **without** touching the outside of the glove. One glove will now be inside the other.
5. Drop both gloves into a biohazard waste container.
6. Wash your hands, using the procedure given in Section 1. See Figure 7.2.

FIGURE 7.2: PROCEDURE FOR REMOVING GLOVES



Note: Use appropriate secondary container to transport biohazardous material, DO NOT WEAR GLOVES and LAB COAT during transportation (from one room to another or one floor to another floor).

SHARPS SAFETY

- "Sharps "include needles as well as items such as scalpels, lancets, razor blades, scissors, metal wire, retractors, clamps, pins, staples, cutters, and glass items. Any object that can cut the skin can be consider as a sharp
- Follow sharp safety practices be prepared, be aware and dispose with care.
- Discard used needles, sharp objects into a properly designated puncture resistant sharps container. See Section 4.
- **Never recapped (**as per PHAC**), bend or break needles before disposal.** Such actions serve to create aerosols and increase the risk of needle stick injury.
- Use only "Safety engineered needles" (**a hollow bore needle**-that is designed to eliminate or minimize the risk of a skin puncture injury to the worker and **a needle less device**-that replaces a hollow-bore needle) as per OHSA (O. Reg 474/07, s.3(1)
- Workers who use sharps require education and training as a part of a sharp's injury prevention program, to educate how to protect themselves and others during or after use.

PATIENT CONTACT

Before working with patient Locate sharps disposal container

1. Assess patient's ability to cooperate.
2. Get help if necessary.
3. Ask the patient to avoid sudden movement.
4. Maintain visual contact with sharps during use, maintain focus on the task being performed.
5. Control the location of sharps to avoid injury to yourself and patients.
6. Activate safety feature of devices with engineered sharps and injury prevention features as soon as procedure is completed.
7. Observe audible or visual cues that confirm the feature is locked in place.

NON-PATIENT CONTACT

When drawing up liquid from a vial or inoculating the contents of a capped bottle or tube, or transferring body fluids, do not hold the vial/bottle/tube in your hand while puncturing the stopper.

1. Ensure that the container to be entered held securely in a rack or other device.
2. Keep the second hand away from the needle to avoid unnecessary needle stick injuries.
3. Do not try to force air or excess liquid into a vial if you feel any resistance.

CLEAN UP and DISPOSE WITH CARE

1. Be accountable of sharps you used.
2. Check all materials used, including patient-side for any exposed sharps.
3. Look for sharps and other equipment left behind inadvertently.
4. While disposing of sharps visually inspect sharp container for overfilling
5. Never put hands or fingers in to sharps container.
6. Visually confirm that the sharps are places entirely in to the container.
7. Replace the containers before they become overfilled if unsure of operation contact your course lead or Laboratory services staff.

IN THE EVENT OF ANY INJURY WITH SHARPS

1. Encourage bleeding at the site of the puncture by running cool water over the area for a few minutes.
2. Wash the wound with soap and warm water to eliminate viruses and bacteria apply disinfectant.
3. Do not scrub the wound or suck on the wound.
4. Dry and cover the wound.
5. Report to your immediate supervisor or manager and Michener's Occupational Health Nurse immediately, fill up the incident report.
6. If injury occurs off site at the clinical location, notify your immediate supervisor and their health and safety department/follow clinical site's protocol and report to the Michener Health Nurse immediately.
7. If necessary, do baseline blood testing by visiting the emergency department or by family doctor.
8. If any pathogen exposure suspected report to the Biosafety officer or designated personnel for report/follow up to the PHAC

PREVENTIVE SAFETY

- All technical procedures must performed in a manner that minimizes the hazardous aerosols.
- Procedures must be performed using suitable protective equipment such as use of centrifuge safety rotors, biological safety cabinet for biohazardous agents or fume hood for chemicals as determined by risk assessment.
- All (incidents) spills, accidents, and overt or potential exposures must be reported to the laboratory manager/supervisor or acting alternate as soon as circumstances permit.
- Appropriate medical evaluation, surveillance, and treatment must be sought and provided as required.
- Actions taken to prevent future occurrences are to be documented. A Michener Employee/students/visitor Incident Report (is to be completed and forwarded to the responsible personnel within 24 hours of an incident.
- All persons working in a laboratory must be protected by appropriate immunization where possible. Levels of antibody considered protective will be documented.
- Particular attention must be given to individuals who are or may become immunocompromised, as vaccine administration may be different for immunologically competent adults.
- Work surfaces must be cleaned and decontaminated with a suitable disinfectant, before starting and upon completion of work and documented.
- Loose or cracked work surfaces must be replaced or repaired.
- A current laboratory specific emergency response plan, including emergency spill procedures, must be developed by the laboratory director/BSO, or manager/ supervisor/acting alternate and posted in the laboratory.
- All staff and trainees must receive instruction on the laboratory-specific emergency response plan and be aware of its posting location.

- All persons working in a laboratory must be oriented on location of emergency exits, locations and operating procedures for all safety equipment including emergency eyewash stations and showers, fire extinguishers, hazardous material spill kits, biological safety cabinets and fume hoods.

- The laboratory must be kept clutter free (neat, orderly, and clean.

TO CLEAN UP A SPILL OF BIOLOGICAL MATERIALS

1. Warn others in the room that a spill has occurred and keep the traffic away from the spill area.
2. Allow aerosol to settle.
3. Wear appropriate PPE.
4. Cover the spill with paper towels.
5. Flood the area with appropriate disinfectant (conflict/10 % sodium hypochlorite/70% alcohol or organization approved disinfectants) starting at perimeter & working towards the center.
6. Let it stand for 3-30 minutes (before cleaning up) as per disinfectant surface contact time specification. See Appendix F
7. After 3- 30 minutes (depending on disinfectant used), wipe up the area with disinfectant followed by the water and allow it to air dry.
8. All material used for cleanup should be disposed of in biohazard waste container.

NOTE:

1. If broken glass is present, use a disposable foam brush or tongs to pick up the disinfected glass and discard it into the glass disposal box.
2. The spill kits are stored in every lab at designated area and spill cart stored in room 627 which contains all the supplies required to clean up biological material spills.
3. Follow the instructions provided in the spill kit.

DISPOSAL

There are several simple "rules of thumb" to follow when discarding waste which has been in contact with a **biological** material:

- Discard test tubes and medical examination gloves into Biohazard containers lined with colour coded bags.

- Discard needles, scalpels, other stainless-steel sharps, and contaminated glass into a sharp container.
- Discard broken non-contaminated objects into a glass disposal box.
- Place all other disposable items into a biohazard container. Do not fill tabletop biohazard waste containers and secondary transport containers more than two-thirds full to avoid any spill/accidents.
- Place the liner in the secondary biohazard waste transport container.
- The external surfaces of Biohazardous waste transport containers must be closed and disinfect before taken out of the Lab/ CL2 zones and transported to the B39.
- The internal and external surfaces of the biohazard waste transport containers must be disinfected upon biohazardous waste disposal before transporting back to 1441.
- Soak reusable glassware in a solution of 10% sodium hypochlorite minimum 2 hrs. to maximum overnight; send to Laboratory Services then to Room B39 for washing and packaging for sterilization (UHN Central)
- Return animal dissection materials to the sixth floor in the totes provided or in a rigid yellow plastic waste holding bag and alert Laboratory Services. Label containers with contents.
- Decant urine down the drain with running tap water. Do not add hypochlorite to acidified urine. Take care to avoid producing aerosols.
- For specific guidance, refer to the Decontamination and Disposal Chart. See Section 1; post a copy of this chart in all laboratories.
- For any biological material not covered by the Decontamination and Disposal Chart, Contact the Biological Safety Officer

NOTE: At the Michener Institute, a registered biological waste management company removes all potentially infectious (biohazard) laboratory waste.

BIOLOGICAL SAFETY AND SECURITY PROGRAM

OVERVIEW

The Biosafety and security programs include:

1. Introduction
2. Applicable Legislation and standards
3. Responsibilities
    a) Bio Safety officer
    b) All individual working with biological agent
4. Program requirements
    a) Biosafety Certificate
    b) Physical and operational requirements
        i. Physical containment
        ii. Biosafety training and training needs assessment
        iii. PPE
        iv. Storage
        v. House keeping
    c) Biosecurity
        i. Entry and Exit
        ii. Pathogen Inventory tracking
    d) Internal safety inspection
        i. Workplace inspection
    e) Relevant risk assessment
        i) Local and
        j) Overarching risk assessment
    f) Performance verification and testing
        i. HEPA Certification for BSC and Chemical fume hood
    g) Medical surveillance
    h) Governing the export and import of biological agent.
    i) Accident/incident reporting
    j) Emergency Preparedness
    k) Records
5. Appendix

    A: Michener Biological Risk Assessment Worksheet

    B: Biological Safety and Security Acknowledgement Form

    C: Direct Observation Competency Assessment

    D: New Faculty Training Checklist

    E: Authorized CL2 Personnel List

INTRODUCTION

Biosafety involves the consistent application of safety measures to minimize or prevent harm to laboratory personnel, building occupants, the public at large, the animal population, and the environment resulting from **exposure** to the **infectious material**, infected animals, or toxins managed in a **containment zone**. A biosafety program includes institutional plans and policies that facilitate the safe handling and storing of infectious material and toxins and prevent the **release** of infectious material or toxins from the containment zone.

APPLICABLE LEGISLATION AND STANDARDS

The Michener Institute adheres to requirements set forth within the:

a) Human Pathogens and Toxins Act (HPTA) (S.C. 2009, c.24). (2009) http://laws.justice.gc.ca/eng/acts/H-5.67/

b) The Human Pathogens and Toxins Regulations (HPTR) (SOR/2015-44).(2015) http://gazette.gc.ca/rp-pr/p2/2015/2015-03-11/html/sor-dors44-eng.php

c) The Canadian Biosafety Standard (CBS), 2ND Edition, 2015 http://canadianbiosafetystandards.collaboration.gc.ca/cbs-ncb/index-eng.php

d) The Canadian Biosafety Handbook (CBH) 2nd Edition, May 26, 2016, is a national guidance document for the safe handling and storing human pathogens or toxins. https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/handbook-second-edition.html

In accordance with good microbiological practices, a number of physical and operational requirements are to be followed within laboratories at the Michener Institute. All reasonable precautions are to protect the health and safety of the public, students, faculty, staff, and the environment. Standard Operating Procedures on Microbiology and Safety are available in addition to the Michener Safety Manual. New or returning employees (absence > 6 months) must review the contents of these manuals prior to commencing regular microbiology bench duties. In addition, completion of direct observation assessments and training checklist completed prior to commencement of full work functions.

The intent of the following content is to outline the Michener Institutes compliance with regulated requirements and to establish a high-level overarching Risk Assessment.

RESPONSIBILITIES

Bio Safety officer: The Biosafety Officer (BSO) meets the relevant qualifications, has powers, and performs functions as legislated under the Human Pathogens and Toxins Act (HPTA 35(5)) and Human Pathogens and Toxins Regulations (HPTR 8, 9(1), 9(2)).

The BSO is responsible for ensuring that all controlled activities involving biological.

agents are conducted in a safe and secure manner and in compliance with all applicable legislation, regulations, standards, guidelines, and Michener policies.

The designation of a Biological Safety Officer (BSO) is a mandatory regulated requirement for any organization utilizing or storing microorganisms. Among the responsibilities outlined within the second edition of the CBS, the designated Michener BSO's primary functions are:

- Verifying and submitting required License applications to the Public Health Agency of Canada (PHAC) or any other required applications/submissions
- Communicating all pertinent matters to PHAC via submission of exposure notification report submitted without delay (within 30 days for direct exposure incident)
- Monitoring facility wide compliance to HPTR, HPTA and CBS regulated requirements through periodic internal audits. The Local Biosafety Risk Assessment Template shall be used as a Quarterly Internal Inspection and Biosafety Audit by the BSO
- Oversight of the Michener Institute Biological Safety and Security Program and any associated documents or manuals

The Michener Bio Safety program is designed to prevent illness among personnel, students, and any release of pathogens to the community or environment. Oversight of the Bio Safety program is the primary responsibility of the designated Biological Safety Officer; however, all staff, faculty and students are involved with compliance of the regulated standards.

All individuals working with biological agent: All people conducting work with biological agents at the Michener Institute must review and comply with the biological safety and security program, policy and procedures found in institutional safety manual. Every lab member should have access to the electronic version, any saved or printed copies of the document are not considered up to date but can be used for reference.

Failure to adhere to this policy may result in corrective measures, up to and including access to, or suspension of Institutional Authorization.

PROGRAM REQUIRMENTS

Biosafety Certificate

A Biosafety Certificate is required for all laboratory activities that involve the use or manipulation of biological agents. This also includes external authority using the Michener laboratories with biological agents at the Michener.

While the Permit Holder or BSO are responsible for obtaining and maintaining the Biosafety Certificate, Biosafety Lab Designates can be assigned to help manage the process.

Follow the steps below to obtain and responsibly manage your certificate:

- 1. Setup a Michener Biosafety Account and Assign Designate(s)
- 2. Complete the Online Application
- 3. Update/Amend your Records as Required
- 4. Renew your Biosafety Certificate(Pathogen and Toxin Licence) Before It Expires

Physical and Operational Requirements

PHYSICAL CONTAINMENT

The microbiology Laboratories located within **Rooms 624 and 1441** (637 storage freezer: sixth & 14th floor walk in refrigerator), are classified as Risk Group 2 (Containment Level 2:CL2) based on the Human Pathogens stored or utilized for educational purposes. The pathogens utilized include microorganisms such as bacteria, fungi, viruses, spores, and Parasites. These rooms referred to as Containment level2 Zones, which are the physical area of the microbiology laboratory.

A Risk Group 2 Pathogen poses a moderate risk to the health of individuals working in the lab and a low public health risk. These pathogens can cause serious disease in humans, however, are unlikely to do so due to effective treatment and preventative measures. The risk of disease spread for RG2 pathogens is low. An up-to-date inventory of stored Microorganisms, which are utilized in Michener maintained on regular basis/at least once a year by Laboratory Services trained and designated personnel.

The Michener Institute Microbiology Laboratories comply with all RG2 containment Level 2 requirements set forth within Chapter 3 of the (Canadian Biosafety STD.) CBS 2nd Ed 2015. The physical design of the RG2 laboratories located within rooms 624, 1441 and 637(storage only) include:

- Laboratory rooms with Key Lock doors, accessible to authorized personnel only.
- Locked -70 Storage freezer.
- Locked 6th & 14th floor Walk in Refrigerators.
- Materials comprised of non-porous, easily be disinfected: counter tops, loop holders, non-cloth chairs, slip resistant flooring, sinks and faucets.

Communication external to the RG2 containment zone is accomplished through the use of telephones or dedicated computer terminals with e-mail access (room 1441 has dedicated printer). Paper purchasing requisitions are completed within Rm 624 (at computer workstations) and forwarded to Laboratory Science administration for approval. The Medical Laboratory Admin Assistant provides additional clerical support upon request and to print.

requested items. Hand wash sinks, eyewash stations and emergence showers are available to staff along with all necessary Personal Protective Equipment (PPE). Michener Facilities performs **Weekly Preventative Maintenance Tests of all Eyewash and Safety showers** to ensure proper operation. All weekly test results are electronically documented within the Facilities Angus database. Laboratory staff are trained and certified in Transportation of Dangerous Goods. Certified Biological Safety Cabinets (BSC) are present within RG2 laboratories along with alarm monitored -70 freezers, temperature, and CO2 incubators. The BSC are inspected and certified annually or upon installation, relocation, modifications or following any repairs. **The Class II Type A BSC's located within Containment Zones are certified to NSF STD 49 standards.**

BIOSAFETY TRAINING

The appropriate level of training for all personnel and students involved with RG2 laboratories is a core element of the Michener Institute Biosafety and Security program. Awareness of the hazards associated with the Human Pathogens and the required practices to keep each person and their surroundings safe is always required. Microbiology personnel are trained in the content within the Microbiology Standard Operating Procedures Manual and the Michener Safety Manual which outlines safe handling and usage of Microbiology equipment and procedures. Review and sign off these manuals are required for all new Microbiology Laboratory personnel or any employee removed from practicing Microbiology Laboratory procedures in excess of 6 months. In addition to document review, assessment of Microbiology competency through direct observation prior to any new or returning employee obtaining clearance to perform Microbiology bench work is required. In addition, all new Faculty are required to complete the Microbiology Training Checklist.

All Laboratory services staff and microbiology faculty are taking initial WET LAB training online and 4 hrs. In class and online refresher training once per year through UHN in co-ordination with BSO.

TRAINING NEEDS ASSESMENT

The purpose is to determine individual and organizational knowledge, skills and abilities thus allowing any gaps to be identified between performance and department/organization procedure/policy objectives. The objective of the assessment is to ensure fundamental aspects of the Biosafety program are performed in accordance with the established Policies and Procedures. The training standards will be assessed and signed off through Direct Observation by an existing senior Microbiology Staff/Faculty member for all new or returning (> 6 months) Microbiology staff/faculty. Refresher/Remedial training will be conducted for any staff identified through the direct observation process as lacking the required skills and techniques. New Faculty are further required to complete the Microbiology Training Checklist

prior to obtaining full clearance. Appendices B, C & D shall be completed and provided to the BSO for record retention purposes.

- Biological Safety Practices
    - PPE utilization, Glove use, handwashing, and waste disposal
- Microbiology Techniques
    - Utilization of Aseptic Techniques, Transfer of Cultures, Inoculation of Culture Media
- Proper Equipment Utilization
    - Incubation and storage of Media, Refrigeration/Freezer usage, Biological Safety Cabinet use

PERSONAL PROTECTIVE EQUIPMENT (PPE)

In addition to the Michener Institute Safety Manual Sections 4 and 7 (Protective Equipment and Biological Safety, respectively) all individuals shall also comply with section 4.4 of the CBS Guidelines.

- PPE specific to containment zone to be worn and stored within containment zone.
- Face protection to be used where aerosol, splash or Flying object risks exists.
- Gloves to be worn when handling infectious materials or toxins.
- Laboratory Coats to be worn in all containment zones.
- Open wounds, cuts, scratches, and grazes to be covered with waterproof dressings.

STORAGE

Stock Pathogen Level 2 microorganisms are stored within a -70 C freezer (access by security code/locked) located within room 637, accessible by authorized personnel via tap card reader. The storage freezer containing stock inventory is temperature monitored via an onboard alarm, monitored by Laboratory Services staff during regular hours and Security Services after hours. Security personnel perform a walk-through inspection outside of regular Department hours including evenings and weekends. A back up -70 C freezer is available should relocation of stock inventory be required. Propagated bacteria cultures prepared and utilized during student laboratory sessions are held within rooms 624, 1441 or within the 6^{th} and 14^{th} floor walk in refrigerators. The 6^{th} and 14^{th} floor walk in refrigerators function as temporary storage for cultured media during (or between) student labs. The walk-in refrigerators are secured via pad locks, accessible to authorized staff only. All material is properly disposed of upon completion of student learning objectives.

HOUSEKEEPING

Disposal of biohazard material is in accordance with Section 7 of the Michener Institute Safety Manual. Laboratory Services staff are responsible for proper collection of biohazard.

waste/materials and transport to the designated B1 level Biohazard holding room. An external waste management company performs weekly pick up or as requested. If the external pick, up is unable to occur within 4 days, the biohazard material is placed within the designated freezer within B1 (Rm B39). Routine cleaning of Laboratories (floors and regular recycling and waste removal) is performed by housekeeping services contracted to the Michener Institute. The Facilities department coordinates an effective rodent and insect control program through the hiring of an external pest control company which performs monthly inspections.

BIOSECURITY

The Michener Institute is monitored 24/7 by contracted onsite security using closed-circuit cameras and patrols of all floors outside of normal work hours, evenings, and weekends. Badge identification cards or keys required to gain entrance to the facility and all rooms. Only authorized personnel are issued keys or ID badges to RG2 laboratories. All visitors or contractors are to sign in with security at the main floor reception desk and sign out once exiting the facility. All on site Contractors are required to adhere to Michener's Contractor Health and Safety Policy Handbook which always stipulates safe operations.

ENTRY and EXIT

In addition to the established Biosecurity plan, Entry and Exit of personnel shall adhere to section 4.5 of the Canadian Biosafety Standards Guidelines, the Michener Safety Manual and Contractor Health and Safety Policy Handbook.

- Only trained and authorized individuals shall access the containment zone.
- Doors of containment zone to remain closed.
- Access to Mechanical, Electrical or HVAC will be limited to authorized Facilities staff or contractors.
- Biohazard and Authorized Personnel signage shall be present on all containment doors.
- Personal clothing to be stored separately from resolute PPE.
- Personal belongings to be kept out of the containment zones.
- PPE to be worn to minimize contamination to skin, Mucous membrane and hair while working in containment zone.
- PPE to be removed and hands washed when exiting containment zone.

PATHOGEN INVENTORY TRACKING

Laboratory Services maintains a current Microorganism inventory list and performs full audits of the stored inventory to ensure control (once per year). The inventory list identifies the

room number, Freezer (with shelf number), Organism, Risk Group, Source, Date Received, Box Number, Position within the box and Storage Matrix (Bead or Broth) along with any special comments. The storage room and freezer are accessible by authorized personnel only, under lock and key. The Public Health Agency of Canada Pathogen Safety Datasheets PSDS Link is embedded within the Michener Safety Manual for quick access to specific Pathogen information.

INTERNAL SAFETY INSPECTION

The Michener Institute Joint Occupational Health and Safety Committee (JHSC) perform yearly/monthly (or as required), visual inspections of containment zones as a part of the overall facilities inspections. Inspectors identify and report on any observable faults or deteriorations potentially causing harm. Corrective actions are taken in accordance with JHSC practice. The BSO also enters the CL2 areas regularly to ensure control of the established protocols. Any deficiencies are reported, and corrective actions taken. Faculty and staff are also responsible for promptly reporting to the BSO any deficiencies as a part of IRS.

PERFORMANCE VERIFICATION AND TESTING

HEPA Certification for BSC and Chemical fume hood is done annually by the external contractor, initiated by facility manager and reports are provided to the facility manager and BSO.

MEDICAL SURVEILLANCE PROGRAM

The Michener Institute adheres to the surveillance recommendations outlined within section. 4.2 of the Canadian Biosafety Standard 2nd Ed based on Containment Level 2 standards.

- Containment Zone personnel are aware that in an emergency, students, faculty, and staff must seek medical assistance immediately at a local walk-in clinic or nearest emergency department.
- Personnel are to immediately notify the appropriate level of internal authority (Faculty, BSO, PC or Academic Chair) of the incident. The BSO must always be informed of any incidents regardless of severity. The PHAC is to be notified of any incident involving a human pathogen that has or may have caused disease in an individual.
- Health Services at Michener is staffed by an Occupational Health Nurse M-F 10 am – 2pm, who is also available for consultation and advice regarding referral to appropriate medical services following incidents.
- Student Incident Reporting Policy AC-SN-001 and Student Incident Reporting Procedure AC-SN-005/Student Incident Reporting Form shall be followed and completed.
- Employee incident Reporting Form and Policy shall be followed and completed.

- All first year Medical Laboratory students must comply with Michener's entry Health requirements, wherein they must submit a completed immunization requirement form by Aug 31st prior to commencing their program (in adherence to Student Communicable Disease Policy and Procedure).
- Immune-surveillance or incident treatment is the responsibility of the medical professionals sought to administer the initial incident care.

GOVERNING THE IMPORT AND EXPORT OF BIOLOGICAL AGENT

The designated Biological Safety Officer (BSO) for the Michener Institute shall be notified before arrangements are made to import, receive, or transfer a Human Pathogen to or from another facility. Every effort will be made to locate an expected delivery of a Human Pathogen in addition to informing the BSO of the delay.

Should a Human Pathogen above Level 2 Risk Group ever be located within the facility, that pathogen must be properly disposed of within 30 days of the discovery. The BSO will notify the Public Health Agency of Canada (PHAC) without delay of any expected but not received Human Pathogen delivery or discovered pathogen above Michener's licensing level. The BSO shall be notified of any urgent circumstance and/or security contacted for any reason requiring escalation. Personnel or students should seek medical attention if accidental direct contact (without PPE) with a pathogen has occurred.

EMERGENCY RESPONSE PLAN

https://my.michener.ca/health-and-safety/

In addition to adhering to the Michener Emergency Preparedness Plan, personnel and staff shall also adhere to the Biological Emergency Response Plan which is specific to the containment zones level 2 of Rooms 624, 637, 1441 and walk in refrigerators located on 6th and 14th floors. The Michener Emergency Response Plan specific to the containment zone, promotes personnel safety and the containment of pathogens in the event of an emergency. In alignment with the Michener Safety Fact sheet, the following actions should be followed in the event of an emergency:

Accidents/Incidents and Hazards: Safely remove any PPE, notify supervisor or BSO immediately and seek medical attention as required through the nearest walk-in clinic or hospital emergency department. An accident/injury report form (available at front reception or on My Michener) should be completed as timely as possible following the event. The BSO or Supervisor shall conduct an incident investigation to determine the root cause.

The supervisor should assess the accident area to ensure any pathogens are properly contained or disposed of along with initiating any decontamination procedures.

Medical Emergency: Dial 9-911 for emergency response services. Dial Ext 0 and provide your location and details of the emergency. A supervisor should be notified as quickly as possible.

Containment Area Spills: Biological or Chemical spills within containment labs or Biological Safety Cabinets (BSC) should be addressed according to section 7 of the Michener Safety Manual, Biological Safety.

Equipment Failure: In the event of equipment malfunction which poses a risk of injury or release of pathogens, personnel must cease and notify their Supervisor and /or Facilities Department of the situation and follow your departmental protocol (e.g. trouble shoot, place equipment out of service sign, if applicable relocate the contents, send request for repair and maintenance, fill up corrective action work sheet and temperature monitoring if applicable, etc.). The malfunctioning equipment will be removed from service until repairs have been completed or cleared for operations. Biological Safety Cabinets must be powered to properly operate as designed. BSC should not be utilized under power failure conditions.

RISK MANAGEMENT

According to the Canadian Biosafety Handbook 2nd Ed May 26, 2016 Section 4.4 (https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/handbook-second-edition.html#s44), assessing risks involves understanding the legislative requirements along with the abilities of the individuals involved within the program and the limitations of the facility and equipment in use. The Canadian Biosafety Handbook further indicates that a local Risk Assessment (LRA) must be performed, specific to the facility containment zones and the related processes.

The following controls will be incorporated wherever possible:

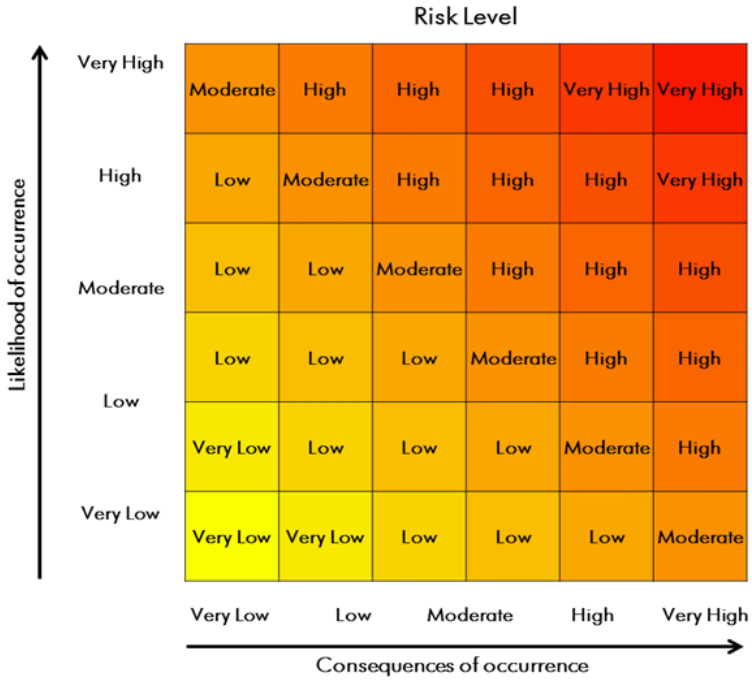
- Elimination (including Substitution) of a Pathogen with another that has less risk, where possible. The Michener Institute is a teaching organization educating Laboratory Technologist MLT's thus learning the characteristics of Pathogens (CL2) is a requirement of the program.
- Engineering Controls – selection and utilization of appropriate facility equipment such as Biological Safety Cabinets (certified annually) along with all HVAC systems.
- Administrative Controls – includes Policies and Procedures incorporated within the Michener Institute Microbiology Standard Operating Procedures utilized by staff, students, and faculty.
- Personal Protective Equipment (PPE)- worn by individuals to reduce or minimize exposure to infectious material or toxins, as outlined with the Michener Institute Safety Manual.

The above identified controls should be considered as they have been presented, in decreasing order of control.

LOCAL RISK ASSESSMENT

The Local Risk Assessment's (LRA) scope, conducted at the Michener Institute (Appendix A: Biological Risk Assessment Worksheet) along with the Local Biosafety Risk Assessment, is to identify hazards based on the pathogens or infectious material used and the activities performed. Michener staff who work within the containment zones are in the best position to identify hazards in the day-to-day activities, in collaboration with the BSO. The LRA's will require review and revisions should any of the standard operating procedures they are based on, be changed or if any new Pathogens (CL2) introduced.
The following procedures conducted at the Michener Institute have been assessed according to biological risk assessment worksheet (appendix: A)

1. Identify Tasks and Procedures: Potential for infectious material/toxin to cause harm to personnel, the community, and the environment (include all known and potential risk associated with the work)
2. Breakdown of Tasks into Steps: Description of all infectious material activities, broken down into steps ensuring to indicate the concentration or quantity of infectious agent used.
3. Identify Potential Exposure Risks for Each Step: Assigning risk probabilities and consequences in accordance to Figure 4-1 Risk Assessment Matrix (CBH 2nd Ed section 4.4)



4. Determining Appropriate Mitigation Strategies for each Risk: Implement Biosafety practices to minimize identified Risks according to the listed control measures previously outlined, for example utilization of BSC, adherence to established SOP's, decontamination practices and use of PPE. In certain instances, acceptable risk may be deemed appropriate according to the task and desired outcome. Alternatively, if a risk is determined to be high, altering that activity should be considered.

RECORDS

A principal element of any Biosafety Program is recording retention, which serves as evidence that the program is properly functioning. The Microbiology Labs at the Michener Institute will complete and retain all required records according to section 4.10 of the BSG 2nd ed.
Laboratory Services along with the BSO will complete and retain the following records for a minimum of 2 years unless otherwise stated:

- Personnel training (new and returning)
- Inventory of stored Pathogens (including location and Risk Group). The stored inventory will also be audited to assess control of the process.
- Records of the regular inspections of containment zone and any corrective actions taken. These records may involve JHSC-WORKPLACE SAFETY inspection reports.
- Any maintenance, repairs, or certification records.
- The HPTA License will be retained for five years.
- Records of any incidents involving Pathogens or loss of containment will be kept on file for a minimum of ten years.

APPENDICES
APPENDIX A

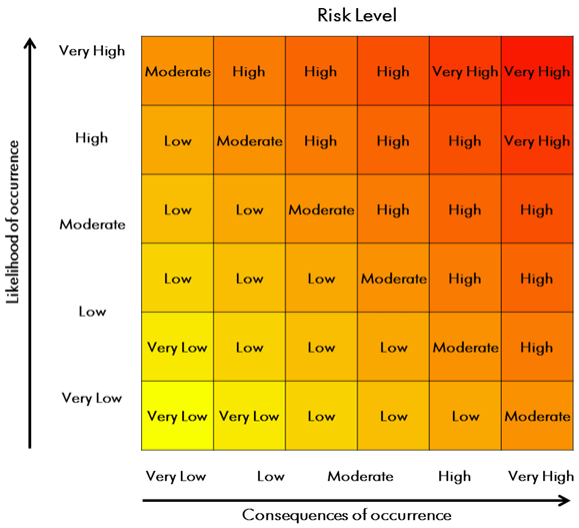
Biological Risk Assessment Worksheet
Assessment #_____Lab Room #/BSL_____
PI Name_____
Several Laboratory standard operating procedures are in use at the Michener Institute, as such each relevant procedure requires a specific Biological Risk Assessment (as indicated within the **Canadian Biosafety Handbook Section 4.4 2nd Ed May 26,2016** https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/handbook-second-edition.html#s44). Upon completion, the Biological Risk Assessment may be referenced using the Assessment # for further protocols. The procedures may be performed with additional precautions, with no less than precautions identified herein.
Section 1
Agent Used_____
Is Vaccine Available Yes,___No____ Risk Group of Agent (PHAC)_____Pathogen Data Sheet Available____
Procedure_____
Is there a Splash Potential? Yes_____No_____
Does Procedure Generate Aerosols / Large Concentrations (Vortex, Centrifuge, Cell Culture) Yes___No_____
Section 2
Containment Zone Level _____ Work Practices BSL_____ Bio Safety Levels Align Yes____No_____
Biological Safety Cabinet Available Yes,_____No_____Class _____
Potential Routes of contact with Bio agent

- ❑ Sharps /puncture wounds /inoculation
- ❑ Ingestion f r o m indirect contact
- ❑ Mucous membranes –eyes, mouth, nose,
- ❑ Broken skin, including facial blemishes.
- ❑ Respiratory f r o m aerosols

Personal Protective Equipment Needed for Procedure (CL2 – standard – lab coat, gloves, close-toed shoes, covered legs, Face shield, Mask N95/respirator, safety glasses – as per procedure)

Gloves_____ latex/nitrile required Mask/Respirator: N95_____
Eye Protection: Safety Glasses _____ Goggles + Face Shield _____
Lab Coat: White_____ Disposable _____ Isolation Gown_____

Disinfection and Waste Removal Procedures
Surface Disinfectant_____ Concentration Required_____Contact Time_____
Biohazard Waste Disposal (in accordance with Michener Safety Manual Waste Disposal)
Yes_____ No_____
Medical Protection and Surveillance
Respiratory Protection Training _____ Vaccine Recommended_____Medical Monitoring_____
Comments/Perceived Risk (CBH Figure 4.1 Risk Assessment Matrix)_____
Biological Safety Officer Signature/Date_____



References

Canadian Biosafety Handbook
Section 4.4 2nd Ed May 26,2016
https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/handbook-second-edition.html#s44

Centers for Disease Control
https://www.cdc.gov/biosafety/publications/biologicalriskassessmentworksheet.pdf

APPENDIX B

THE MICHENER INSTITUTE OF EDUCATION AT UHN
BIOLOGICAL SAFETY AND SECURITY PROGRAM ACKNOWLEDGMENT FORM
New or Returning Staff/Faculty (greater than 6-month Microbiology absence)
I have read and understood the requirements set forth within the Michener Institute Biological Safety and Security Program document; the Microbiology Laboratory Standard Operating Procedures and Section 7 of the Michener Institute Safety Manual.

Staff/Faculty Member Date Administration Sign Off

_____
_____
_____
_____
_____
_____
_____
_____

APPENDIX C

THE MICHENER INSTITUTE OF EDUCATION AT UHN
BIOLOGICAL SAFETY AND SECURITY PROGRAM DIRECT OBSERVATION COMPETENCY ASSESSMENT

(For new or returning staff > 6 months absence)
Competency Assessment is aligned with practices outlined within the Microbiology Standard Operating Procedure (SOP) and Section 7 of the Michener Safety Manual - Biological Safety.
NAME (new/returning Micro staff member) _____
Biological Safety Practices:
Personal protection utilization, Glove use, Handwashing, Proper Disposal
Meets Requirement/Date _____

Microbiology Techniques:
Aseptic Techniques, Transfer of Cultures, Inoculation of Culture Media
Meets Requirement/Date _____

Proper Equipment Utilization:
Incubation/ Storage of Media, Refrigeration/Freezer use, BSC use
Meets Requirement/Date _____

APPENDIX D

Training Checklist for Microbiology New Faculty

PURPOSE:

This document provides an outline of the schedule for training new faculty in the microbiology discipline of the Medical Laboratory Sciences program. This training will provide sufficient information, support, and time to the new hire to ensure competence in their job.
The main room for the microbiology laboratory is room 1441. The lecture room is at 1325.
The new faculty would have at least 5 years' experience working in the clinical microbiology lab. The expectation is that they are already competent with the skills associated with the teachings in microbiology.
The course team lead will be shadowing the new hire until training requirements are fulfilled. Refer to the ON-THE-JOB TRAINING CHECKLIST. The checklist must be signed and dated by the course team lead.

PROCEDURE:

Follow the ON-THE-JOB TRAINING CHECKLIST outlined in the table below.

On the Job Training Checklist	Location, Action
Orientation	
Introduction to faculty members, Lab Services staff, and administrative assistant.	Faculty members on 14th floor
Show Laboratory Services area	Room 624,637
Show where to obtain clean lab coat	Room 625
Safety	
Read Laboratory Safety Manual including the following sections – online. • **Concepts of Safe Practice: Section 1** • **Use of eyewash and safety shower stations: Section 4** • **Decontamination and Disposal procedures: Section 7** • **Spills: Section 1 + Section 7**	• Go to https://my.michener.ca/health-and-safety/ • Select Safety Manual menu
Incident reporting procedure + forms	• Go to https://my.michener.ca/health-and-safety/ • Select Incident Report Forms
Know the procedure to take when the compressed gas needs to be changed or transferred	• Go to https://my.michener.ca/health-and-safety/
Sign and Date: Biosafety (READ, UNDERSTOOD &	
Course Preparation	

Obtain course outline and materials for the course you are teaching.	Located on Y drive by Course Number
Read course outline and materials for the course you are teaching	Blackboard website. SOPs in the lab.
Communicate with Team Lead(s) and set up a general meeting	• Request for a meeting. • Find out when Team Lead is available. • Set up the meeting via Outlook.
Meet with the team lead on a weekly basis prior to the lab to confirm the objectives and what needs to be done in the lab	Set up meeting dates on a mutually convenient regular day and time
Try and go to the first lecture where the course outline, curriculum and assessments are discussed.	
Read and review documents prior to the lab	Located on Y drive by Course Number
Ask questions at any point to clarify the lab exercise	As needed
1441	
Know where supplies are kept	Check the cupboards
Know who to notify when supplies are low	Laboratory Services
Be familiar with supplies/media in the lab fridge	
Show Safety Data Sheet station + fire extinguisher/blanket	1441
Show Spill Kit and Instructions	1441
Show eye wash station	1441 and 1403 (if 1441 is in use)

Course Team Lead: _____

New Faculty: _____

Goals and Expectations	Expectation Met	Date Completed
Orientation		
Introduction to faculty members, Lab Services staff, and administrative assistant.		
Show Laboratory Services area		
Show where to obtain clean lab coat		
Safety		
Read Laboratory Safety Manual including the following sections – online. • Concepts of Safe Practice: Section 1 • Use of eyewash and safety shower stations: Section 4 • Decontamination and Disposal procedures: Section 7 • Spills: Section 1 + Section 7		
Incident reporting procedure + forms		
Know the procedure to take when the compressed gas needs to be changed or transferred		
Sign and Date Biosafety		
Course Preparation		
Obtain course outline and materials for the course you are teaching.		
Read course outline and materials for the course you are teaching		
Communicate with Team Lead(s) and set up a general meeting		
Meet with the team lead on a weekly basis prior to the lab to confirm the objectives and what needs to be done in the lab		
Try and go to the first lecture where the course outline, curriculum and assessments are discussed.		
Read and review documents prior to the lab		
Ask questions at any point to clarify the lab exercise		
1441		
Know where supplies are kept		
Know who to notify when supplies are low		
Be familiar with supplies/media in the lab fridge		
Be familiar with supplies/media in the walk-in fridge		
Show Safety Data Sheet station + fire extinguisher/blanket		
Show Spill Kit and Instructions		
Show eye wash station		

Course Team Lead Signature: _____

Comments and Feedback (Attach)

APPENDIX E

AUTHORIZED CL2 PERSONNEL LIST: REVIEWED September 2022

LABORATORY SERVICES STAFF

- Estrella Salas
- Myla Estandian
- Arlene Diesta
- Aaron Truong
- Suleyma Maldonado
- Purvika Murawala
- Emmylous Fua
- Yasmin Halley (Manager, PHAC LICENCE HOLDER and BSO)

MEDICAL LABORATORY SCIENCE FACULTY

- Gina Pinkowski
- Erica Gulli
- Kayla Anderson
- Cindy Cheung
- Ryan Wybenga
- Dora Tsang
- Annreka Boodoo
- Meghan Nicholls
- Rose Belcastro

FACILITIES and MAINTENANCE

- Roger Webb
- Dominick Myers
- Mimi Yacob
- Jesse Go
- Erica Tong (Facilities Director)

MEDICAL LABORATORY SCIENCE YEAR 1 & 2 STUDENTS

List Available through Med Lab Admin Assistant: Adriana Balgrove abalgrove@Michener.ca

CONTRACTORS

All contractors to follow established Contractor Health and Safety Policy Handbook

VISITORS

All visitors to sign in, go through COVID-19 Screening and COVID-19 safety protocol at main floor Security / Reception upon arrival. Reception or Security will then contact the appropriate Michener Staff.

APPENDIX F

Disinfectants-Liquids_Oct02_2020.docx

Disinfectants-wipes_Oct02_2020.docx

SECTION 8 - COMPRESSED GASES

Reviewed September 2023

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SECTION 8
COMPRESSED GASES

INTRODUCTION

Compressed gases are required by many programs and external educational partners at Michener. Respiratory Therapy, Anesthesia Assistant, Chiropody, Medical Laboratory Sciences, Radiological Technology and Cardiovascular Perfusion are the main program users of medical gases in our facility. The Health Nurse also has a supply of cylinder oxygen for medical emergencies and Laboratory Services uses gas for preparation of specimens.

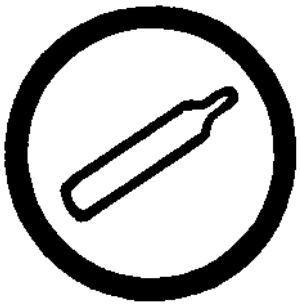
The inventory of compressed gases is maintained primarily by Facilities. Ordering cylinders should be done by e-mailing Facilities directly. Every effort is made to deliver the gases within 24 hours. The inventory of gases provided is available on the intranet.

Generally, two cylinder sizes are used at the Institute:

- large, identified as H or K size cylinders
- small, identified as E size cylinders

Cylinders should be handled with respect; not only because their contents are under pressure but also because the gases contained are potentially harmful if misused. For these reasons, only trained personnel should handle compressed gases.

FIGURE 8.1: HAZARD IDENTIFICATION LABEL



STORAGE

The LRC can arrange for a copy of the CSA standard, Oil and Gas Pipeline Systems, Z662-15, which serves as a reference to information found below.

GENERAL

- Cylinders must not be stored near flammable substances or corrosives.
- Cylinders must be grouped by content.
- Full and empty cylinders must be stored separately.
- Empty cylinders must have their valves closed at all times.
- Large cylinders must be stored upright. Small cylinders may be stored on their side provided they are secured, e.g. in an appropriate rack.
- NOTE: Acetylene cylinders must be stored in an upright position.
- Use only CSA approved hose and connectors.

SPECIFIC

- Unused or empty cylinders at Michener are stored in the basement near the receiving docks.
- Access to the cylinders is by authorized personnel only.
- Cylinders in use must be stored in a safe and well ventilated room. Storage areas include:
    - 3rd floor – Chiropody clinic
    - 4th floor - CASE
    - 6th floor – Laboratory Services
    - 7th floor - Chiropody
    - 8th floor - Respiratory Therapy & Anesthesia Assistant
    - 8th floor – CVP
    - 12th floor
    - 13th floor - Health Nurse
    - 14th floor - Med. Lab Sciences
    - Room 1427 (Genetics lab)
- Cap all large cylinders while in storage.
- Cylinder "cracking" (see Valves Regulator) should be done by authorized personnel away from all student and simulated patient areas. (unless this is a teaching point in a lab)

TRANSPORT

- Safety boots, or at the minimum, safety toe guards (these are strap ons and easily removed from most footwear) should be worn when transport cylinders from receiving to the floors.
- Use only cylinders which meet Transport of Dangerous Goods (TDG)/Compressed Gas Association (CGA) regulations for the transportation of compressed gases.
- Empty cylinders will still be under pressure. Handle with the same precautions as full cylinders.
- Protective caps are supplied for large cylinders and should be used whenever cylinders are transported or stored.
- Do not lift a cylinder by its cap.
- Handle cylinders carefully: do not roll, slide or drop.
- Transport cylinders on an appropriate cart, secured by a chain or strap. For small cylinders, a proper holder ring around the cylinder should be present.
- Inspect nylon straps periodically for wear and tear and replace as required.
- Use the shoulder of the cylinder to guide it on the handcart. Do not use the cap for this purpose.
- Always fasten cylinders securely, whether in storage, transit or use.

GUIDELINES FOR USE

- Only experienced and properly trained individuals should handle or use gas cylinders.
- Use cylinders and gases only for their intended purpose.
- Cylinder labels and tags identify the content and indicate the safety precautions specific for that cylinder. If the label is defaced or missing, do not use the cylinder; it should be returned to the manufacturer for relabeling.

IF A CYLINDER LEAKS

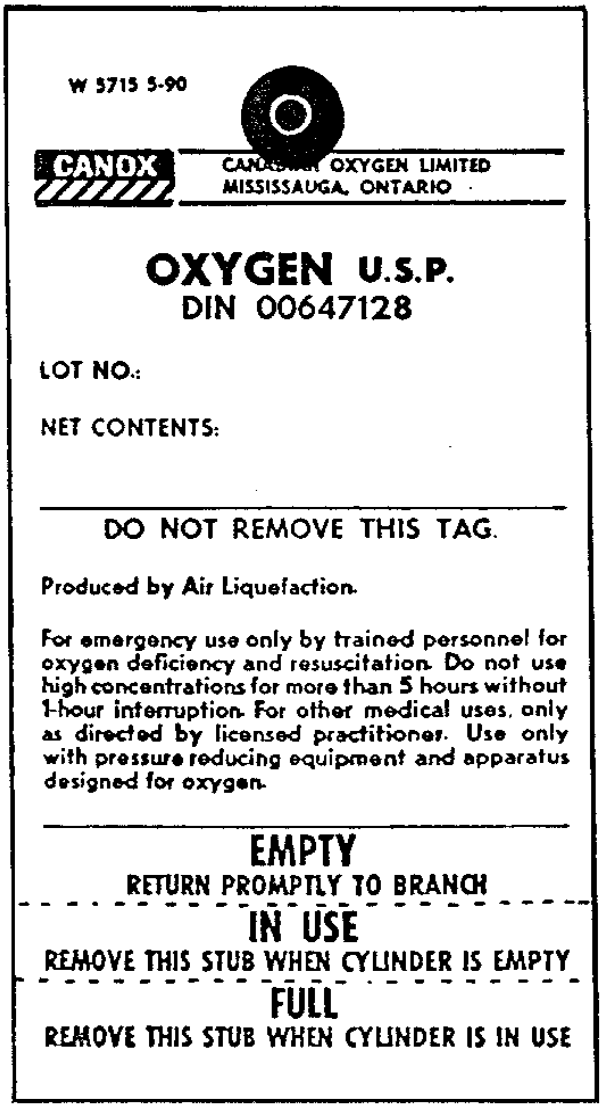
1. Identify whether the leak is in the cylinder itself or in the connection between the cylinder and the regulator.
2. To identify this, turn off the flowmeter device on the regulator and listen. Hear a leak? You should. Next close the cylinder valve by tightening the handle clockwise for a large cylinder and using a cylinder key for a small one.
3. Still leaking? Then the cylinder is the concern and it needs to be removed from service and tagged as "UNUSABLE AND HAZARDOUS".
4. Remove the cylinder to a well-ventilated area. Store the cylinder away from possible sources of ignition.
5. Report any leaks immediately to your respective faculty or supervisor who will contact the Compressed Gases Safety Officer.
6. If the cylinder stops leaking when you closed it in step 2, the cylinder/regulator connection is probably loose. Tighten the cylinder onto the regulator.

NOTE: Cylinder leaks are characterized by a hissing sound near the valve.

VALVES/REGULATORS

- Never tamper with the cylinder valve. Do not force connections or use homemade adapters.
- Use only approved equipment. Never repair or alter cylinders, valves or safety pressure relief devices. (These devices are built in valves that allow a cylinder to be depressurized if the cylinder pressure increases to a dangerous level.)

FIGURE 8.2: EXAMPLE OF A COMPRESSED GAS CYLINDER TAG



- Compressed gas cylinders should only be used with a regulator that is specific for the gas/liquid in the cylinder. Close the cylinder valve (at the cylinder) when the compressed gas/liquid is not being used.

- Before connecting the regulator to the cylinder, be certain that the connections are free of foreign material.

- "Crack" the cylinder valve safely in order to remove any dust or debris from the cylinder valve outlet.

  1. Remove cap from H or K size cylinders or remove tab from outlet of E size cylinders.
  2. Ensure that cylinder is secured.

3. Ensure that the outlet of the cylinder is not pointed towards anybody.
4. Clearly and loudly inform any people in the immediate area of your intentions to "crack" the cylinder by saying "cracking."
5. Quickly open and close the cylinder valve.

NOTE: Nitrous Oxide, Carbon Dioxide & Hydrogen cylinders should not be "cracked" as these gases may be harmful to the operator and/or may cause an explosion.

- Never lubricate valves, regulators, gauges or fittings with oil or grease, as many of the gases have enhanced support of combustion in the presence of oil or grease.
- Never force cylinders onto connections. Tighten outlets and connections using appropriate wrenches only.
- Ensure the regulator is off when attaching to the cylinder.
- Open the cylinder valve slowly.
- When putting a cylinder into use, remove the first portion of the tag that will identify that the cylinder is in use.
- Before disconnecting the equipment from a cylinder, close the cylinder valve and depressurize ("bleed") the regulator.
- When a compressed gas cylinder is empty, close the cylinder valve, remove the contents label and mark the cylinder as empty. Remove the 2nd portion of the tag that identifies that the cylinder is now empty.

SECTION 9 - RADIATION SAFETY

Updated September 2023

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SECTION 9 RADIATION SAFETY

INTRODUCTION

There are many different sources of radiation, including:

- X-radiation
- γ-radiation (emitted by decay of radionuclides)
- Particulate radiation (α and β; emitted by decay of radionuclides)
- Laser light
- Microwaves
- Ultraviolet light

This section of the Safety Manual deals specifically with the safety hazards and the precautions to be taken with ionizing radiation that originates from X-ray machines and radionuclides.

LEGISLATION AND GUIDELINES

Nuclear Safety and Control Act (Canada), and the Canadian Nuclear Safety Commission (CNSC)
CNSC is the federal regulator of nuclear power and materials in Canada. In addition to nuclear power plants and nuclear research facilities, the CNSC regulates machines capable of producing radiation beams > 1 MeV, and numerous other uses of nuclear material including radionuclides used in diagnostic imaging and treatment of cancer. CNSC's mandate under the Nuclear Safety and Control Act is intended to protect people and the environment from human-made radiation resulting from the use of nuclear energy and materials at licensed sites. These sites are required to adhere to regulatory standards.

Occupational Health and Safety Act (OHSA) and Reg.861 X-ray Safety Code
The Ministry of Labour of Ontario is responsible for administering the OHSA and Regulation 861 X-ray Safety. The Act and corresponding X-ray safety regulations apply to every owner, employer, supervisor and worker at a workplace where an X-ray machine is present or used. The X-ray Safety Code defines responsibilities, establish maximum exposure limits for radiation workers, and describe required safety features on X-ray equipment. The emphasis of Ontario Ministry of Labour's Occupational Health and Safety Act is the protection of ***workers****. This regulation does not apply to an X-ray source that is licensable under the Nuclear Safety and Control Act (Canada).*

Healing Arts Radiation Protection Act and Reg.543 X-ray Safety Code
The Healing Arts Radiation Protection (HARP) Act and corresponding X-ray Safety Code (Regulation 543), define responsibilities, and outline safe limits and restrictions on the operation and function of X-ray machines pertaining to their use in medical radiology, chiropractic, dentistry, chiropody, and radiation therapy facilities. Although the intent of this Ontario's Ministry of Health and Long Term Care legislation is to promote and ensure the safety of all persons involved in the use of X-rays, the emphasis of the HARP Act is to protect the ***patient****. The Michener Institute of Education at UHN do not use the X-ray machines present in their facility for the purpose of imaging patients, however this legislation is part of the curriculum of the Radiological Technology and Radiation Therapy Programs.*

Safety Code 35: Radiation Protection in Radiology
Published by Health Canada, Safety Code 35 outlines safety procedures for the installation, use and control of X-ray equipment. This provides specific guidance to medical radiological facilities where diagnostic and interventional radiological procedures are routinely performed using radiographic, radioscopic or computed tomography equipment. Principal objectives of this code include minimizing radiation exposure to patients while providing optimum diagnostic information, protection of the personnel operating the X-ray equipment, and protection of others in the vicinity of operating medical radiology equipment. These Health Canada guidelines outline responsibilities, specifies standards of construction and performance for X-ray equipment, presents practices and procedures to provide radiation protection to the patient, operator and the general public. Safety Code 35 are national guidelines, however, they are superseded by the Ontario legislation. The content of this safety code will be tested on the national certification exam for graduates of the Radiological Technology program.

AT THE MICHENER INSTITUTE – ST. PATRICK CAMPUS

At *The Michener Institute of Education at UHN*® – St. Patrick Campus, X-radiation is only used on non-human radiographic phantoms for the purpose of teaching, learning, and research. Therefore, the equipment in the Radiological Technology and Radiation Therapy programs is licensed with the Radiation Protection Service at the Ontario Ministry of Labour. It is each program's Equipment Resource Officer's responsibility to ensure quality assurance and preventive maintenance is performed to maintain safety of equipment and radiation protection guidelines are strictly adhered to in accordance with the Occupational Health and Safety Act and Ont. Reg. 861.

THE NATURE OF IONIZING RADIATION

Ionizing radiation arises from both natural and man-made sources. It has the ability, as a consequence of its interactions with matter, to affect the function of various tissues and organs of the body. Ionizing radiation damages human tissue by depositing energy within the cells, thereby inhibiting cell division. This may lead to cell death or to mutations during mitotic divisions and can therefore result in cancers. For this reason, the amount of radiation to which an individual is exposed must be carefully controlled and monitored.

Ionizing radiation can be classified as either particulate or electromagnetic radiation. Particulate radiation includes high-energy electrons, neutrons and protons which produce ionization in chemically stable molecules via direct atomic collision. In the electromagnetic spectrum, X-rays and gamma rays produce an energy transfer from the photon to matter through the process of Photoelectric absorption, Compton scattering and Pair Production.

RADIONUCLIDE SAFETY

Nuclear medicine facilities and the radioactive materials used and stored within them are subject to the Nuclear Safety and Control Act and to its supporting regulations, regulatory documents, notices, and information guides. The Canadian Nuclear Safety Commission (CNSC) administers the Act and develops and enforces the supporting documents through a process of licensing and regular inspection.

Each nuclear medicine facility must be licensed. Under this radioisotope license, the department must have a Radiation Safety Officer (RSO), whose duties are to ensure compliance with the regulations and other license conditions as well as to manage the radiation safety program through the Institute.

Each room in which radioactive materials are used or stored must be appropriately placarded with a sign having the radiation warning symbol which implies that access to the area is restricted. The Canadian Nuclear Safety Commission requires that this sign have wording in English and French as follows: "Rayonnement/Danger/Radiation" Also posted on the door is a sign with the name of the RSO, Emergency Contact Information and safety rules.

FIGURE 9.1: RADIATION WARNING SYMBOL

AS LOW AS REASONABLY ACHIEVABLE (ALARA) PROGRAM

ALARA an acronym for *As Low As Reasonably Achievable*, means making every reasonable effort to maintain exposure as far below the regulated dose limits as practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

ALARA principle is based in three criteria:

i. ***Justification*** **-** the need to justify any activity which involves radiation exposure on the basis that the expected benefits to society exceed the overall societal detriments.
ii. ***Optimization*** – the need to ensure that the benefits of such justifiable activities or practices are maximized for the minimum associated societal detriment, with economic and social factors being taken into account.
iii. ***Dose and Risk Limitation*** – the need to apply dose limits to ensure that individuals or groups of individuals do not exceed acceptable levels of exposure risk.

MANAGEMENT AND CONTROL OF WORK PRACTICES

Exposure: The Application of Time, Distance & Shielding

The basic theory of exposure versus distance states that the intensity of radiation decreases the further away one is from the source. When working with radiation, standard practice requires that the worker distance themselves from the source. In addition to using distance, the worker is aided by the use of shielding walls and protection devices, such as lead shields, lead aprons and gloves, and lead glass. Exposure may also be reduced by limiting the time spent working with the radiation.

These three factors emphasize the need to work safely and efficiently.

Safety Procedures for Handling Radionuclides

- Wear a buttoned-up laboratory coat and a pair of disposable gloves when working with solid or liquid preparations of radionuclides. Shoes should be constructed of an absorbent resistant material.
- Students/Technologists must wear an optically stimulated luminescence (OSL) dosimeter when working with radionuclides to measure the radiation dose absorbed over their careers. The maximum permissible dose for whole body irradiation is currently set at 1 mSv/yr; except any person designated as a Nuclear Energy Worker (NEW).
- Use appropriate radiation safety equipment such as plastic-backed absorbent paper, lead containers, lead glass work stations, and lead syringe shields.
- Keep vials of radionuclide preparations tightly capped at all times. Whenever possible, open vials in a fume hood. When removing rubber stoppers, pull the further lip of the stopper towards you, so that any aerosols created are vented away from you.
- When drawing up liquids from a capped vial using a needle and syringe, take care to avoid needle stick injuries.
- Perform the procedure inside a fume hood using shields for both the syringe and the vial.
- When it is necessary to recap a needle, use a passive risk reduction product.
- Dispose the radioactive contaminated needles into a sharps container surrounded by lead shielding.
- The use of Non-Bound Radioiodines are highly discouraged at the Institute, but when handling radioiodines, work in a fume hood which has an air flow velocity of 0.50 - 0.75 meter per second (100-150 linear feet per minute).
- All personnel working with radioiodines above 2 MBq in an open room, or 200 MBq in a fume hood must participate in a thyroid monitoring program. Thyroid screening is also necessary if there is a spill of the aforementioned levels of volatile radioactive iodine.
- When not actually handling the radionuclides, store them in the appropriate lead brick area.
- Maximize the distance and minimize the time spent around unshielded radionuclides.
- Change gloves whenever contamination is suspected.
- Wash hands and monitor skin and clothing immediately after working with radionuclides using a sodium iodide detector or a Berthold monitor.
- Check for contamination of benches, countertops, fume hoods, floors and frequently handled objects such as pipettes, telephone handsets, doorknobs, sink taps, etc., using the above-mentioned detection equipment.
- Store waste radioactive materials in an appropriate location until they decay to levels at which they can be properly disposed of. For example, radioiodine must be stored in a fume hood.
- Radionuclide preparations shall not be used in or on human beings.

PERSONAL RADIATION MONITORING

In order to provide an estimate of radiation exposure received, all individuals who regularly work with X-ray or radionuclide sources are required to wear an OSL (optically stimulated luminescence) dosimeter. The OSL monitors contain sensitive elements that absorb radiation and store some of the energy in the form of excited electrons. The dosimeter is read by stimulating the sensitive elements using Light Emitting Diodes (LED), which releases some of the stored energy as light. The amount of released light is measured and used to determine the radiation exposure received by the dosimeter's user during the wearing period.

Each individual so monitored has a permanent lifetime record of the dose he or she has received. These records are updated four times per year, and are kept at the National Dosimetry Services of Radiation Protection Bureau, a division of Health Canada in Ottawa. A copy of the quarterly report is sent to the Radiation Safety Officer, and Nuclear Energy Workers (NEWs) are informed of their dose confidentially in writing.

All personnel must wear their OSL monitor whenever they are working with radiation, and wear only the OSL assigned to them to ensure accurate records.

OVEREXPOSURE

In cases of overexposure to any kind of radiation, the most responsible person for the monitoring of personal exposures in each area i.e. Nuclear Medicine (RSO) will notify in writing the Joint Occupational Health and Safety Committee (JOHSC). The Nuclear Medicine RSO must also immediately notify The Canadian Nuclear Safety Commission (CNSC) in cases of overexposure and appropriate steps must be taken to comply with Section 16 of The Radiation Protection Regulations (SOR/2000-203). *An inspector of X-ray Safety under the Ministry of Labour must be informed of any dose equivalent obtained from X-rays that does not seem reasonable and appropriate.*

LEAKAGE/SPILLS

Besides the RSO and program chair, the JOHSC must be involved in investigations and corrective actions. In Radiological Technology, an example of this situation is leakage of X-rays from the faulty housing of a cathode ray tube. In Nuclear Medicine, this rule applies to major spills only.

JOB CATEGORIES FOR WORKERS USING OR WORKING IN THE VICINITY OF UNSEALED NUCLEAR SUBSTANCES

Radiation Users:

These include individuals that have received radiation safety training and will be in direct contact with both sealed and unsealed nuclear substances. These individuals are all included on the *Authorized User List*.

i. Nuclear Medicine Year 1 Students
ii. Nuclear Medicine Year 2 Students
iii. Nuclear Medicine Faculty

These include individuals that have received radiation safety training and will be involved in using X-ray equipment to produce radiation in the laboratory under supervision:

i. Radiological Technology Year 1 Students
ii. Radiological Technology Year 2 Students
iii. Radiological Technology Faculty

These include individuals that have received radiation safety training and will be involved in using equipment to produce x-radiation in the laboratory under supervision:

i. Radiation Therapy Year 1 Students
ii. Radiation Therapy Year 2 Students
iii. Radiation Therapy Faculty

Non-Radiation Users:

These include individuals that may or may not have received radiation safety training depending on their job responsibility at The Michener Institute. These individuals are not in direct contact with any nuclear substances but may at times be in the vicinity of nuclear substances. These individuals who need access to classified labs at certain times are included in the *Authorized Non-User List*.

i. Distribution and Receiving Centre (DRC) Staff
ii. Facilities Personnel
iii. Managers
iv. Non-Nuclear Medicine Faculty
v. Security

RADIOISOTOPE LABORATORIES AT THE MICHENER INSTITUTE

Below is a list of the authorized areas for radioactive materials. If a room other than these is required to be commissioned to be an intermediate laboratory or above, a room design proposal, including a room layout and its usage, must be submitted prior to use to the CNSC. Appropriate signage is also required and may only be allowed if the CNSC proposal is accepted.

Radioisotope Laboratories:

Room 1043A	Intermediate Level	For radiopharmaceutical preparation and phantom preparation
Room 1043B	Intermediate Level	For radiopharmaceutical preparation
Room 1003	Basic Level	Imaging of radioactive phantoms using gamma cameras
Room 1040	Storage Room	Storage of radioactivity to allow for decay
Room 1045	LTI Multi-well Counter Room	Sealed/rod sources intermittently present

CONTAMINATION CHECKS

To check instruments/equipment or surfaces for contamination, survey the object or area with a Geiger-Muller "pancake" probe or a Berthold (proportional counter) monitor set on counts per second (cps). Also, take a background reading away from any radioactive sources. If the area of interest exceeds twice the background reading, there is a good possibility that contamination has occurred.

To assess the levels of loose or non-fixed contamination, wipe the object or area with a slightly moistened piece of filter paper or a cotton tipped swab. Place the filter paper or swab in a test tube and count it in a well counter that has a sodium iodide crystal. Compare the results in counts per minute (cpm) to the results of a dry clean filter paper or swab (background). Steps to decontaminate the instrument/equipment or surface must be implemented if the net count rate for β or γ-emitting nuclides exceeds criteria and limits stated in the following tables.

Areas, rooms or enclosures where unsealed nuclear substances are used or stored (i.e. Bench top, fume hoods, working station)	**Radionuclides used @ Michener**	**Class**
300 Bq/cm^2	**^{99m}Tc, ^{201}Tl, ^{57}Co**	**C**
30 Bq/cm^2	**^{131}I, ^{67}Ga, ^{111}In**	**B**

All other areas/surfaces	**Radionuclides used @ Michener**	**Class**
30 Bq/cm^2	**^{99m}Tc, ^{201}Tl, ^{57}Co**	**C**
3 Bq/cm^2	**^{131}I, ^{67}Ga, ^{111}In**	**B**

Note: One needs to know the efficiency of the well counter in order to convert from units of counts per minute to becquerels (Bq).

The radioactive object or area should be cleaned thoroughly with a detergent and water or with a commercial decontamination solution. Then the wipe test and cleaning steps are repeated until the count rate is reduced to an acceptable level, preferably to background levels.

IF AN INSTRUMENT OR PIECE OF EQUIPMENT CANNOT BE DECONTAMINATED, IT IS TAKEN OUT OF SERVICE UNTIL THE RADIOACTIVITY DECAYS TO BACKGROUND LEVELS. IF A SURFACE CANNOT BE DECONTAMINATED BELOW AN EXPOSURE LEVEL OF 0.5 μSV/H, IT IS SHIELDED WITH LEAD AND LABELED WITH THE DATE, TIME, ISOTOPE AND COUNT RATE.

Record the results of all contamination checks and wipe tests.

CLEANING UP RADIONUCLIDE SPILLS

The following general procedures are presented for guidance only. The specific procedures for spill clean-up are posted in the designated laboratories where radionuclides are used or stored. Consult the RSO for advice on cleaning up a spill of a given radionuclide.
Spills of radioactive material are classified as either minor or major. A spill is deemed to be a major spill if it meets one of the following criteria:

- Contamination of personnel has occurred.
- An amount of activity equal to or greater than 100 exemption quantities (100 EQ) has been spilled.
- A radioactive gas (**e.g.** ^{133}Xe) or volatile material (**e.g.** $Na^{125}I$ or $Na^{133}I$) has been released or spilled.

All major spills must be reported immediately to the Radiation Safety Officer who will direct decontamination procedures and will file a written report with the JOHSC and the CNSC.

PROCEDURES

MINOR SPILL (<100 EQ; No Personnel Contamination)

- Notify all persons in the room and evacuate everyone except those who will decontaminate the spill.
- Immediately confine the spill by covering it with absorbent paper.
- Fetch one of the decontamination kits kept in the Nuclear Medicine department. The spill kits are located in 1) laboratory 1043A 2) laboratory/camera room 1003. Outline the perimeter of the spill with chalk or tape.
- Wearing disposable gloves and a disposable lab coat clean up the spill using absorbent paper and place the paper in a plastic garbage bag for transfer to remote radioactive storage room 1040.
- Decontaminate the spill area; work inward towards the centre, being careful not to spread the contamination outside the marked spill area.
- Wipe the contaminated surface or instrument/equipment as per the procedure under Contamination Checks. Repeat until the count rate is within limits established previously.
- Survey the area for any fixed contamination greater than 0.5 μSv/h. Inform the RSO if such an area is found.
- Monitor skin and clothing of the clean-up persons.
- Submit a written report to the RSO and to the program coordinator. If the spill involves radioiodine, the RSO will determine if a bioassay of the thyroid gland is required.

MAJOR SPILL (>100 EQ or Personnel Contamination or Volatile Radionuclides)

- Immediately confine the spill if you can do so without hazard to yourself.
- Evacuate all persons not involved in the spill to a nearby area until they have been monitored (**e.g.** shoes, lab coats, skin, etc.).
- If there is a fume hood in the room, leave it running.
- As soon as reasonably possible, notify the RSO who will supervise clean-up operations.
- Post radiation warning signs on the door of the spill area and prevent entry.
- Decontaminate radioactive skin by flushing it with copious quantities of tepid water, then washing with a mild soap and water. Take care not to abrade the skin excessively.
- Remove contaminated items of clothing and place them in a labelled garbage bag for transfer to a radioactive storage area (remote storage room 1040).
- Decontaminate surfaces and instruments/equipment according to the steps outlined in the procedure guidelines for minor spills.
- Survey the area for any fixed contamination greater than 0.5 μSv/h. Inform the RSO if such an area is found.
- Record the names of all persons involved in the spill. Note the details of any personal contamination
- If radioiodine is spilled, everyone who is present in the laboratory and/or participates in the decontamination/clean-up procedure must have a bioassay of the thyroid gland. This bioassay must be carried out as soon as possible following the suspected exposure.
- The RSO must contact the CNSC immediately of the spill if there is a possibility of an over exposure to a worker.
- A written report of the incident is prepared by the RSO to be submitted to the CNSC. A copy is filed with the JOHSC.

THE MICHENER INSTITUTE
SAFETY MANUAL
920-026

CLASSIFICATION OF WORKERS AS NUCLEAR ENERGY WORKERS

Designation: Students and faculty that have a reasonable probability of receiving an effective dose greater than 1 mSv in a one-year dosimetry period get classified as Nuclear Energy Worker (NEW).

DECLARATION OF NUCLEAR ENERGY WORKER (NEW) STATUS

EMPLOYEE/STUDENT NAME: _____
(please print)

In accordance with the Nuclear Safety and Control Act and Regulations this is to inform you that you are a Nuclear Energy Worker within the meaning of the Regulations.

NUCLEAR ENERGY WORKER (NEW): A Nuclear Energy Worker is defined as any person who is required, in the course of the person's work, business or occupation to perform duties in such circumstances that there is a reasonable probability that the person may receive a dose of radiation that is greater than the prescribed limit for the public.

Dose Limits		
Person	**Period of Time**	**Effective Dose (mSv)**
Nuclear energy worker (NEW), including a nuclear energy worker that is breastfeeding or pregnant	One-year dosimetry period	50
	Five-year dosimetry period	100
Pregnant NEW	The balance of the pregnancy	4
Any other person	One calendar year	1

Organ or Tissue	**Person**	**Period of Time**	**Equivalent Dose (mSv)**
Lens of an eye	NEW	One year dosimetry period	50
	Any other person	One calendar year	15
Skin	NEW	One year dosimetry period	500
	Any other person	One calendar year	50
Hands and feet	NEW	One year dosimetry period	500
	Any other person	One calendar year	50

Health effects caused by exposure to ionizing radiation can be grouped into two general categories; prompt and long term effects. Prompt effects result when large doses of radiation are absorbed over a short period of time and include radiation burns, radiation sickness, possible death, and genetic defects in embryos, fetuses. Radioactive materials may be excreted in breastmilk and infants and young children are more sensitive to the effects of ionizing radiation stated above.

PREGNANT NEWS

Every NEW who becomes aware that they are pregnant shall immediately inform the licensee in writing. The permissible dose limits for a pregnant NEW are detailed above and apply once the pregnancy is declared. The licensee will make those accommodations that will not occasion costs or business inconvenience constituting undue hardship to the licensee.

BREASTFEEDING NEWS

Every NEW who is breastfeeding shall immediately inform the licensee in writing. The permissible dose limits for breastfeeding NEWs are detailed above. The licensee will make those accommodations that will not occasion costs or business inconvenience constituting undue hardship to the licensee.

I have read and understood this information.

Name: _____ Name: _____
(Student/Employee) (Radiation Safety Officer)

Signature: _____ Signature: _____
(Student/Employee) (Radiation Safety Officer)

Date:

OCCUPATIONAL HEALTH AND SAFETY ACT REGULATION 861
SCHEDULE
(Dose equivalent annual limits)

Column 1 *Part of body irradiated*	*Column 2* *Exposure conditions and comments*	*Column 3* *Dose equivalent annual limit (in mSv) for X-ray workers*	*Column 4* *Dose equivalent annual limit (in mSv) for other workers*
Whole body or trunk of body	Uniform radiation	50	5

The employer shall take every precaution reasonable in the circumstances to ensure that the mean dose equivalent received by the abdomen of a pregnant X-ray worker does not exceed 5 mSv during the pregnancy.

WORKER TRAINING AND AUTHORIZATION

At *The Michener Institute of Education at UHN*® there are two different Radiation Safety Training Programs for individuals working with or working within the vicinity of unsealed radioactive sources, and the training is delivered based on the individual(s) job description and potential interaction with nuclear substances. The training programs are:

i. Radiation Safety Training for Auxiliary Personnel (Authorized Non-Users)
ii. Radiation Safety Training for Nuclear Medicine Students and Faculty *(Authorized Users)*

The Radiation Safety Officer ensures that only individuals trained in the use of nuclear substances will be allowed to use nuclear substances under the supervision of Nuclear Medicine Faculty. Students and faculty must complete the training program for their specific job category to be allowed in the commissioned laboratories. Students and faculty are required to sign an attendance sheet which is kept in the RSO files. Training programs tailored to specific job categories will be offered by the RSO, with refresher courses provided every 3 years.

ASCERTAINING AND RECORDING DOSES TO WORKERS

All personnel considered to be NEWs or radiation workers (students and faculty) must wear their dosimeter whenever they are working with radiation and wear only the dosimeter assigned to them to ensure accurate records. Dosimeter badges when not being worn are kept on a centralized dosimeter badge board dedicated to each of the MRS programs. The use of TLD or OSL dosimeters direct measurements are obtained quarterly from the National Dosimetry Service. The results of the dosimeter readings are sent individually to each wearer by e-mail from the RSO; this process ensures privacy of readings and allows for electronic confirmation of receipt of results by the wearer.

Pregnant / Breastfeeding NEW(s) or Radiation workers

Every NEW or radiation worker who becomes aware that she is pregnant or is breastfeeding shall immediately inform the licensee (RSO) in writing. The permissible dose limits for a pregnant or breastfeeding NEW, or radiation worker are detailed above and apply once the pregnancy is declared. The licensee will make those accommodations that will not occasion costs or business inconvenience constituting undue hardship to the licensee.

After worker declares their pregnancy, a second badge will be provided which would be monitored on a ***monthly*** basis for the remaining of the pregnancy, this second badge is to be worn on the abdomen to better estimate a fetal dose and not to exceed the 4mSv limit for a pregnant NEW *or 5 mSv in the case of a radiation worker*. The regular quarterly badge is worn on the chest pocket as usual.

ACTION LEVELS

As part of Michener's Radiation Safety Program, Internal Action Levels are followed.

Activity	Michener Action Level when exceeding	Action/Response
Exposure Report – Quarterly – NEW *or Radiation Worker* Non-NEW *or non-Radiation Worker*	0.75 mSv 0.25 mSv	RSO conduct investigation
Survey rate meter	Readings levels 2-3 times background	Decontaminate, shield or remote storage
Loose contamination Class B & C in control area	5 Bq/cm^2	Decontaminate, re-wipe, re-count. Notify instructor. If above 300 Bq/cm^2 for class C or 30 Bq/cm^2 for class B notify RSO.

ACTION VALUES for Rate Survey Reading $\geq$ 2 x
Background (contamination)
Reading $\geq$ 2.5 μSv/h (storage)

CONTROL OF RADIOACTIVE CONTAMINATION (UNSEALED SOURCES)

All rooms in which open sources of radioactive materials are used or stored are surveyed at least weekly. Indirect monitoring involves wipes of 100 cm square are performed at designated locations and counted using the LTI multi-well counter. Direct monitoring is also performed weekly at designated areas with the Innovision Ion Chamber detectors.
Radiation Safety Program Duties are scheduled weekly throughout the Academic Year.

Since inexperienced student technologist are prone to contamination themselves and their work areas within the laboratories, a contamination check of their hands, clothing, shoes, equipment and work space is rigorously performed after each lab session. Personnel monitoring is done with the Berthold detectors and documented electronically using NMIS .

All monitoring and wipe measurements are recorded in various log-books and these records are kept on file for 1 year after the expiry of license. Any reading that is above the contamination limit for that class of nuclide is considered unacceptable. If contamination is discovered, appropriate decontamination measures are taken. Decontamination kits are available in each of the commissioned rooms where open sources of radioactivity are used.

Wipe Testing Methodology for Laboratories

1) RadPro Log-books do contain a plan of each of the commissioned laboratories, locations to be tested are already marked, but add a few random location to be tested. Ten locations should be adequate for most laboratories.*
2) Using a swab lightly moistened with alcohol or water, wipe a representative area (100 cm^2) in each of the designated locations. Use one swab per location and make sure the wipe is identified.
3) Place the swab into individual plastic test tubes that will fit in the counter.
4) Measure the radioactivity on each wipe using appropriate detection equipment (Liquid Scintillation Counter, Gamma Counter (LTI))
5) Do a background count using an uncontaminated wipe.
6) If there is significant radioactivity (above background) ** on any of the wipes you can identify the contaminated location and decontaminate***. Repeat wipe testing the location and decontaminating to acceptable levels (below the contamination limit for that class of nuclide, see Action Levels).
7) Keep records of results.
8) Wipe test on a regular basis. At least weekly when open radioactive sources are being used.

* When you set up a wipe-testing program, aim to test locations where radioisotopes are used and include unlikely locations such as door handles, telephone receivers, pipettor handles and taps.
** The best way to use wipe-testing is as a qualitative check for contamination. If a wipe indicates any contamination above background, clean the location and check it again.
*** Decontaminate with detergent and water or a commercial decontamination solution. Take care not to spread the contamination over a larger area.
LTI Multiwell Gamma Counter Efficiencies for the isotopes to be counted must be known prior to its use.

Personnel Decontamination

A contamination check of hands, clothing, shoes, equipment and workspace is routinely performed during and after each lab session. Personnel monitoring is done in cps with the Berthold handheld detectors and documented by students in the lab software NMIS, with electronic copies of the summary retained and verified by lab instructor(s).

If a reading is found to be approximately twice background, approximately 40 cps, the individual must inform the instructor. If the clothing or equipment is contaminated, they are to be labeled and put in radioactive storage until they decay to background levels. If the contamination is on the skin, tepid water and soap should be used to wash the affected area at the designated radioactive sinks. If iodine-125 or iodine-131 was used, a thyroid bioassay may need to be performed as well.

The RSO must contact the CNSC immediately of the spill if there is a possibility of an over exposure to a worker. A written report of the incident is prepared by the RSO to be submitted to the CNSC. A copy is filed with the JOHSC.

CALIBRATION OF RADIATION DETECTION AND MEASURING INSTRUMENTS/CALIBRATION SERVICES

In keeping with the *CNSC Regulatory Expectations for Calibration of Survey Meters*, all survey meters are sent for annual calibration during the month of August when there are no students present or unsealed radioactive sources on-site. The annual calibration is performed by an agency certified to do so by the CNSC, the Michener Institute currently uses *Stuart Hunt & Associates Ltd*. located at 5949 Ambler Driver, Mississauga, ON L4W 2K2. The equipment resource officer (ERO) at the Michener is responsible for arranging the calibration of the handheld detectors and their shipment and return to the Michener. Once completed the calibration certificates are to be filed and the RSO is to also be notified of the completion of annual calibration.

THYROID MONITORING POLICY

The CNSC requires following the REGDOC-2.7.2 Section E.2 for Thyroid screening for Radioiodine

1. Every person shall undergo thyroid screening from one to five days after use of iodine-125 or iodine-131 who:

uses in a 24-hour period a quantity of Iodine-125 or Iodine-131 exceeding;

- (i) 2 MBq in an open room;
- (ii) 200 MBq in a fume hood;
- 20 000 MBq in a glove box;
- any other quantity in other containment approved in writing by the Commission or a person authorized by the Commission; or

2. The thyroid should be monitored immediately or as soon as possible if the person is:

   (a) is involved in a spill of greater than 2 MBq of Iodine-125 or Iodine-131; or

   (b) on whom Iodine-125 or Iodine-131 external contamination is detected

3. Screening for internal iodine-125 and iodine-131 shall be performed using:

   (a) Direct measurement of the thyroid with an instrument that can detect <1 kBq of iodine-125 or iodine-131; or

   (b) A bioassay procedure approved by the Commission or a person authorized by the Commission.

4. i. If thyroid screening detects more than 10 kBq of iodine-125 or iodine-131 in the thyroid, this equates to an effective dose of 1 mSv. The licensee shall immediately inform the CNSC if the measurement was made on a non-NEW. A radioiodine bioassay must be performed by an organization that has passed the relevant Health Canada intercomparison test in the previous 12 months or contact the CNSC if they are unavailable. An internal investigation should also be done to determine the cause of the results. The event should be recorded in the annual compliance report. All results should be

maintained in a thyroid screening log.

ii. If the results of the bioassay are between 1 kBq and less than 10 kBq, there also must be an internal investigation to determine the cause of the screening results. Screen all persons who worked in proximity to the person who had the results equal or greater to 1 kBq. The problems must be corrected, and the event must be included in the annual compliance report.

SCREENING MEASUREMENT

To conduct a screening measurement, the Captus 3000 must be used as it is able to measure activities below 1 kBq. Ensure the probe has daily quality control performed. The Equipment Resource Officer (ERO) of the probe ensures it has been calibrated and working properly. If it is not available, an organization that has passed the relevant Health Canada intercomparison test in the past 12 months or the CNSC to permit someone else to perform the radioiodine bioassay.

1. The person's background count rate must be done by taking the measurement of the person's lower thigh. If there is suspected contamination of the clothes or skin, the clothes should be removed or the skin decontaminated prior.

2. Measure the person's count rate from the thyroid using the probe.

3. The results will be automatically logged. Compare to the reporting levels and report to the RSO if the results are above 1 kBq for further actions required.

Equipment used: Probe Captus 3000

Minimum Detectable Activity (MDA) for probes must be < 1 KBq for I-131 or I-125 Method:

In-vivo Bioassay - Direct measurement of the thyroid

Record retention: Record shall be kept for each individual screened, and this record shall clearly identify the employee by name and job category. Records should also include instrument quality control, and calibration results.

LEAK TESTING OF SEALED SOURCES

Leak testing of sealed sources occurs for any sealed source in excess of 50 MBq every six months as per

CNSC REGDOC 1.6.1 - License Application Guide: Nuclear Substances and Radiation Devices - Appendix AA.

The sample obtained will be tested for leakage by an agency certified to do so by the CNSC, the Michener Institute currently uses *Stuart Hunt & Associates Ltd*. located at 5949 Ambler Driver, Mississauga, ON L4W 2K2.

In the event of a positive leak test, activity measured in excess of 200 Bq, a report must be submitted to CNSC immediately after becoming aware of failed test, and the source must be immediately removed from service, all faculty must be notified and any contamination remediated.

Leak Testing Procedure (SWIPE)

The swipe of sealed sources to detect a leaking substance is performed by the RSO. RSO identifies the sealed sources above 50MBq that needs to be swiped.

Leak test swipe kit is ordered from Stuart Hunt & Associates. Wearing gloves, and using the moistened cotton tip applicator provided by the company, swipe the sealed sources making sure to swipe areas that are more likely to contain a leak (i.e. seams, lid, bottom of source, etc.).

Place the applicator in the test tube provided and return the swipe with a filled form containing information about the source (i.e. serial number, isotope, procedure Stuart & Hunt & Associates for testing.

Positive Leak Test

A positive leak test (activity measured in excess of 200 Bq). A report must be submitted to CNSC immediately after becoming aware of failed test – source must be immediately removed from service and any contamination remediated.

ACCESS CONTROL AND SECURITY

The Control of Nuclear Substances

Nuclear substances are used and/or stored in rooms (1043, 1040 & 1003) all are kept locked and only Nuclear Medicine faculty have access to these rooms. Warning signs at the entrance of these rooms have reminders to keep doors closed when the laboratories are not in use.
Commissioned rooms are supervised by Nuclear Medicine Faculty when in use.

During Non-business hours night-security guards patrol all floors of the Institute, making sure all doors are locked and there are no unauthorized personnel around. The Michener Facilities department get notification of unusual circumstances.

Alerting of loss or theft of nuclear substances

Internal audits conducted by the RSO would identify any loss or theft of nuclear substances. Also all Nuclear Medicine Faculty verifies at the end of all lab session that all sealed/unsealed sources have been in use are returned to their proper storage locations during the end of lab contamination survey process. In the event of the discovery of loss or theft, it is the responsibility of the Radiation Safety Officer, to notify the CNSC immediately by calling 613-995-0479 or 1-844-879-0805. The RSO would involve Michener security in order to locate missing nuclear substances, contacting local authorities and RCMP would be the next step to locate the missing material.

An immediate preliminary report must be made to CNSC followed by a full written report within 21 days of occurrence.

TRANSFER OF NUCLEAR SUBSTANCES

Occasionally, the Michener Institute may need to transfer nuclear substances to another licensed location. Historically this has been for either the disposal of nuclear substances no longer in use or for the return of sealed nuclear substances that were incorrectly purchased (incorrect activity). Such transfers are allowed by the CNSC under the Michener's license, and before any transfer is performed authorization of the RSO is needed. All transfers are carried out in accordance with transportation of dangerous goods provision and CNSC *Nuclear Substances and Radiation Devices Regulations* (SOR/2000-207) and recorded in the logbooks of both permit holders involved. A *Nuclear Substance Transfer* document must be completed by the RSO. Under no circumstances may one transfer nuclear substances to non-licensed facilities into or out of, the Michener Institute without formal approval of the RSO. The Michener Institute must be able to provide accurate inventories of all radioactive materials in emergency situations or upon request of the CNSC. For transfers involving a sealed source or nuclear substance used as shielding, the transferor shall provide the transferee with a record of the most recent leak test conducted.

<u>Transfer Procedure:</u>

i) RSO notified of transfer request by Nuclear Medicine Faculty.
ii) RSO validates if the transfer is permitted.

iii) Transfers from another Licensee
   a. For a radiation device or sealed source the RSO is to request an excerpt of previous years ACR from the other licensee indicating the reported radiation device or sealed source.
   b. RSO to verify and request amendment of CNSC as necessary (if applicable).

iv) Transfer to another Licensee
   a. RSO to request a copy of CNSC license of external organization
   b. For a radiation device or sealed source, RSO to provide excerpt of pervious years ACR to the other licensee indicating the report radiation device or sealed source.
   c. RSO to verify and amend CNSC License as necessary (if applicable)

v) RSO to complete transfer document with appropriate signatures, in triplicate (RSO copy, Transferee copy, Transferor copy) at the time of transfer. The record of any transfer must include the date of the transfer, the name and address of the recipient, the licence number, the name, quantity, and form of the substance transferred, the model and serial number if a sealed source

vi) Transfer is completed internally by the RSO and/or responsible users.

vii) Transfer is completed with external organization (IN or OUT) in accordance with PTNSR, TDGR and IAEA.

viii) RSO to update inventory.

Packaging, Transporting and Receipt of Nuclear Substances

Packages of radioactive material are received only between the hours of 0800 and 1700h Monday to Friday and not during weekends or Institute holidays.

Incoming packages of radioactive materials are checked for damage and or leakage by personnel in the Distribution and Receiving department (DRC) of the Michener Institute who have undergone radiation safety training as well as transport of dangerous goods class 7 training. If there is a problem or concern with a particular package, it is not handled by DRC staff but, the DRC staff notifies the Radiation Safety Officer immediately and they will assess and remediate any issues.

If the received package is intact, it is brought up to the Nuclear Medicine lab (Room 1043-A) where it is officially received by RSO as per *INFO-0744: Guidelines for Handling Packages Containing Nuclear Substances.* All pertinent information is logged on an inventory control form.

Under normal circumstances ONLY excepted packages are packaged for shipment. Packaging

Excepted packages need to follow these criteria:

- Survey monitoring of package surface and wipe tests are performed on all INCOMING and OUTGOING Class 7 packages
- Packages must fall within acceptable limits
- The results of these tests are documented
- Verification of nuclear substance, quantity
- Ensure radiation levels correct as per package classification, correct Transport Index
- Check for contamination/leakage

- Ensure correct shipment information (consignor/consignee)
- Required by the Canadian Nuclear Safety Commission PTNS regulations
- Report any anomalies to the Radiation Safety Officer
- Record all of the information above in the Shipment Log book

Controlling possession of nuclear substances

Acquisition of nuclear substances are placed or approved by the RSO. Nuclear substances are officially received by RSO following CNSC *INFO-0744: Guidelines for Handling Packages Containing Nuclear Substances.*

Each nuclear substance acquired by the Michener Institute is logged upon receipt in a Master Control Inventory Book and these records are kept which include:

- The name, quantity and form of the nuclear substance
- The date the substance is received
- Package monitoring/wipes information
- The activity of the substance upon receipt
- The original serial number of the substance as well as a designated Michener Institute serial number
- The date the substance is transferred or disposed of
- The initials of the personnel acquiring and/or disposing of the substance.

Records are kept in order to be able to track nuclear substances throughout their time at the Michener Institute, to keep a tally of the amount of nuclear substances in possession and to be able to determine the history of each substance from acquisition to disposal.

Unsealed sources are used and decayed for disposal following Radioactive Waste: Handling and Disposal. Mo-99/Tc-99m generators are transferred to *Isologic Innovative Radiopharmaceuticals* following policy for transfer of nuclear substances.

MANAGEMENT OF RADIOACTIVE WASTE

Radioactive Waste: Handling and Disposal

The Michener Institute follows specific guidelines for disposing its radioactive waste products.

i) For Solids: The institute generally uses short half-life radionuclides. They are stored until they have decayed to background readings (approximately ten half-lives).
Individual lots of solid radioactive waste are stored until they measure background readings. When they reach this limit, they are discarded into a designated radioactive garbage can. The garbage is monitored with a Berthold (proportional) detector before it is discarded along with the rest of the building's solid garbage. Radioactive garbage is not removed from the remote storage room (1040) until it is reading less than 2.5 uSv/hr.

ii) For Liquids: Most of the radioactive waste produced by the Michener Institute is in liquid form. Individual lots of liquid radioactive waste are stored until they measure background readings (approximately ten half-lives). When they reach this level, they are flushed down the drain of the designated radioactive sink in room 1043A, 1003 or 1427 (when commissioned), followed by plenty of water. If the liquid being disposed of is still radioactive, the disposal MUST be recorded in the Liquid Waste disposal Log Binder, where amount of disposal is tracked by radionuclide.

iii) For vapours and gasses:
No radioactive vapours or gasses are currently used at the Michener Institute. All volatile sodium iodide is handled strictly in the fume hood.

EMERGENCY AND REPORTING PROCEDURES FOR INCIDENCES, ACCIDENTS OR OTHER EVENTS INVOLVING NUCLEAR SUBSTANCES/DEVICES

Overexposure to Radiation

In cases of overexposure to any kind of radiation, the respective individual responsible for the monitoring of personal exposures the Radiation Safety Officer (RSO) in Nuclear Medicine should notify in writing the Joint Occupational Health and Safety Committee (JOHSC). The nuclear medicine RSO must also **immediately** notify The Canadian Nuclear Safety Commission (CNSC) in cases of overexposure, or a major spill and appropriate steps must be taken to comply with Section 16 of The Radiation Protection Regulations (SOR/2000-203). *The Radiation Therapy and Radiological Technology RSOs shall investigate and provide a report in writing of the findings and corrective action to a Director (Ministry of Labour X-ray Safety) and JOHSC.*

Accidents involving Nuclear Substances

In any incident of an emergency nature (including all which involve significant personal injury) the RSO must be contacted who will assist in the further management of the emergency. No person shall resume work at the site of an emergency until authorized to do so by the RSO.

Any radiation incident which qualifies as an emergency, need to be reported immediately to the CNSC. They may be contacted by calling their 24/7 Duty Officer at 613-995-0479 or call toll free at 1-844-879-0805.

A formal report submitted to the Joint Occupational Health and Safety Committee (JOHSC) through the Radiation Safety Officer, and an immediate preliminary report must be made to CNSC followed by a full written report within 21 days of occurrence

No set of guidelines can anticipate all potential emergency situations. The need for good judgment and prompt correct action is crucial. It follows, that specific procedures for meeting emergencies should be worked out in advance for the particular circumstances in each laboratory. These must be known and understood by all workers, students and faculty involved.

In the event of personal injury, the treatment of the injury must take precedence, even with contaminated personnel. It may, however, be possible to "contain" any contamination by confining all such persons to the same area. Standard (universal) precautions should be incorporated.

Minor injuries, should be treated at, or near, the scene of the incident. Wash any wound under tap water with copious amounts of tepid water and encourage bleeding. If the wound is on the face take care not to contaminate the eyes, mouth or nostrils. Wash the wound with soap and tepid water and apply a clean first aid dressing. The injured area should be monitored to establish the level of residual activity, if any.

The treatment of serious injuries must take precedence over all other considerations.

Fire/Emergency Responders

In the event of fire, personnel must follow Michener's fire procedures for the area. (See Michener Safety Manual). RSO and/or Nuclear Medicine faculty should see that the door to the commissioned rooms are closed and take all reasonable steps to prevent the combustion of nuclear substances.
Security should be contacted immediately. A Floor plan of commissioned rooms, indicating location of nuclear substances are regularly provided to the Fire department through Michener Facilities department.

DECOMMISSIONING AND/OR REMEDIATION OF LICENSED LOCATIONS

1. Decommissioning:

Decommissioning refers to the complete removal of nuclear substances and/or contamination from a room previously designated as a radioactive materials laboratory. The laboratory must be left in a condition that is safe for the next occupant. This process includes removing radioactive contamination from equipment and structures that are to be reused and disposing of all radioactive materials. For the decommissioning of any lab/room, a date/time will be scheduled with the RSO to ensure the following;

i) Non-fixed contamination conforms to the prescribed limits (specified below)
ii) All nuclear substances and radiation devices have been appropriately transferred to licensed facilities
iii) All radiation warning signage has been removed

2. Decommissioning Procedure:

2.1.1 Steps for Decommission

i. Stop all work using nuclear substances in location and remove any nuclear substances from the area to be stored for decay or transfer
ii. Survey for contamination using an appropriate detector based on the isotopes used in the location. The limits are found in the following section. If limits are exceeded, perform decontamination and survey until acceptable limits are not exceeded
iii. Remove all radiation warning signs
iv. Submit decommissioning report to CNSC staff for review including nuclear substances and radiation devices used, survey results, contamination criteria, diagrams, date, proof of sign removal, and detection efficiencies of instruments used.

2.1.2 Contamination Limits

Radionuclide Class	Non-Fixed Contamination Limits for Public/Decommissioned areas (as per CNSC License) over an area not exceeding 100cm2	Michener Institute Contamination Limit
A	0.3 Bq/cm^2	N/A
B	3 Bq/cm^2	N/A
C	30 Bq/cm^2	5 Bq/cm^2

The Michener Institute typically uses Class C substances only. In keeping with ALARA principles, the

Michener Institute sets an internal contamination limit well below the CNSC contamination limits as indicated in the above table.

The Radiation Safety Officer will complete wipe tests and area surveys to ensure the above Michener Contamination Limit is not exceeded. Wipe tests and survey monitoring will be conducted on all locations where radioisotopes were used or stored as well as other locations where accidental contamination may have occurred.

The amount of non-fixed/removable contamination is calculated using the following equation:

$$\text{Non-fixed/removable contamination} = \frac{N - Nb}{E(60)(A)(F)} \quad \text{Bq/cm}^2$$

Where:

N= cpm of wipe
NB= background
E= well counter efficiency
A= area wiped ($100 cm^2$)
f= fraction removed by wipe (10% = 0.1)

Decontamination records (wipe test and surveys) must be retained. Items and pieces of equipment that are found to be contaminated can be placed in remote storage room 1040 for decay if decontamination is not successful or if the item cannot be decontaminated. If areas/surfaces of the lab are found to be contaminated, a decontamination procedure will occur. If the areas/surfaces cannot be adequately decontaminated to meet the above contamination criteria, laboratory 1427 cannot be decommissioned *(License Condition 2571-4; V) Conditions 11. Decommissioning)*. If contamination criteria are met (less than 5 Bq/cm2) the decommissioning procedure can proceed.

RECORD AND REPORTING SYSTEM

In accordance with the *Nuclear Safety and Control Act* (the Act) the RSO will notify the CNSC immediately any of the following situations, will provide location and circumstances of the situation and of any action that the Institute has taken or proposes to take with respect to:

- A lost or stolen nuclear substance;
- an event that is likely to result in the exposure of persons to radiation in excess of the applicable radiation dose limits prescribed by the *Radiation Protection Regulations*;
- a release, not authorized by the license, of a quantity of radioactive nuclear substance into the environment;
- an attempted or actual breach of security or an attempted or actual act of sabotage at the site of the licensed activity;
- A radioactive spill in which

  (i) An unsealed radioactive nuclear substance that is set out in column 1 of Schedule 1, that has produced in excess of 100 times the activity set out in column 3, and
  (ii) An unsealed radioactive nuclear substance that is not set out in column 1.

A full report of the situation needs to be filed with the Commission within 21 days after the day on which the licensee becomes aware of it or within the period specified in the license, and the report shall contain the following information:

a) A description of the situation, the circumstances and the problem,
b) The probable cause of the situation;
c) The nuclear substance, and if applicable, the brand name, model number and serial number of the radiation device involved;
d) The date, time and location where the situation occurred or, if unknown, the approximate date, time and location, and the date and time of becoming aware of the situation;
e) The actions that the licensee has taken to re-establish normal operations;
f) The actions that the licensee has taken or proposes to take to prevent a recurrence of the situation;
g) The effective dose and equivalent dose — as those terms are defined in subsection 1(1) of the *Radiation Protection Regulations* — received by any person as a result of the situation; and
h) The effects on the environment, the health and safety of persons and the maintenance of security that have resulted or may result from the situation.

Retention of Records

Record keeping is one of the simplest and most useful tools in maintaining a safe and accountable Radiation Safety Program. Records of information regarding the use of radioactive material are to be kept for different amount of time depending on the record. The following table shows the retention period:

Record	Retention Period	Regulatory Document
License application	1 year after the expiry of license	GNSC 28(1)
Names of authorized users	1 year after the expiry of License	GNSC 28(1)
NEWs name/job category	1 year after the expiry of License	GNSC 28(1)
Location of use	1 year after the expiry of License	GNSC 28(1)
Storage locations	1 year after the expiry of License	GNSC 28(1)
Dosimetry results (all personnel)	1 year after the expiry of License	GNSC 28(1)
Inventory of Nuclear substances	1 year after the expiry of License	GNSC 28(1)
Details of incidents involving nuclear substances	1 year after the expiry of License	GNSC 28(1)
Purchases and transfer of nuclear substances	1 year after the expiry of License	GNSC 28(1)
List of radiation detectors	1 year after the expiry of License	GNSC 28(1)
Calibration certificate of detectors	1 year after the expiry of License	GNSC 28(1)
Decommissioning results	1 year after the expiry of License	GNSC 28(1)
Contamination monitoring results (unsealed sources)	1 year after the expiry of License	GNSC 28(1)
Records and operating procedures	1 year after the expiry of License	GNSC 28(1)
Authorizations for sealed source removal	1 year after the expiry of License	GNSC 28(1)
Internal audits/inspections	1 year after the expiry of License	GNSC 28(1)
Training for workers handling nuclear substances (certificates)	3 years after end of employment	NSRD 36(2)
Leak test monitoring results	3 years	NSRD 36(4)
Transport documents Receiver	1 year after the expiry of License	GNSC 28(1)
Transport documents Shipper	2 years after the documents were prepared or given to a carrier	TDG 3.11
TDG training certificate	2 years after expiry of the certificate	TDG 6.6

Disposal of records

It is required that the CNSC gets notified ***PRIOR*** to the disposal of any record required by the License 90 days in advance.

VERIFICATION OF DOSE RATES SURROUNDING STORAGE LOCATIONS

At the Michener Institute there is one remote storage location (room 1040) which is used to store sealed sources as well as radioactive garbage (sharps and non-sharps) until decayed and acceptable for disposal. A room map and area monitoring description can be found in room 1045. The room is monitored on a weekly basis through the radiation protection program, whereby both direct and indirect monitoring of the room and surrounding rooms is performed, and direct monitoring values are not to exceed 2.5uSv/hr and indirect measurements are not to exceed more than 2xbackground. If any of these measurements fall outside of acceptance the RSO is to be notified.

The storage room (1040) is kept locked and only Nuclear Medicine faculty have access. If any other person requires access to these rooms (i.e., security, maintenance, facilities staff etc.) a member of the Nuclear Medicine Faculty is notified in advance and is present. Warning signs are at the entrance of this room and there are reminders to keep doors closed when the laboratories are not in use, which is also verified by Nuclear Medicine Faculty.

POSTING OF RADIATION WARNING SIGNS AND LICENSE

Signage is one of the most basic and effective ways to provide protection against an area where radiation is present. Durable and legible radioactive signs are required at the boundary of, and at every point of access to an area where a person could receive a dose of ionizing radiation at a rate exceeding 25 μSv/hr, or a room that contains 100 times the exemption quantity of a radioisotope.

On the sign posted outside an area for use and/or storage, the name or job title and 24 hour telephone number of a person who can initiate the accident procedure in the License must also be posted.
All commissioned rooms must have clear radioactive signs, contact information, classification, laboratory rules, and close door reminders. A copy of the License need to be posted in all commissioned rooms.
It is also unacceptable to have a Radiation sign present when there is no radiation present in an area.

CLASSIFICATION OF ROOMS (FOR UNSEALED NUCLEAR SUBSTANCES)

The Conditions of the Michener Institute's License state that each room, area or enclosure where more than one Exemption Quantity (EQ) of an unsealed nuclear substance is used at a single time shall be classified as:

Basic-Level:: A room where more than one Exemption Quantity (EQ) of an unsealed nuclear substance is used, and where the total quantity of each unsealed nuclear substance which is used does not exceed five (5) times its corresponding Annual Limit on Intake (ALI);

Intermediate-Level: A room where the total quantity of an unsealed nuclear substance which is used does not exceed 50 times its corresponding ALI;

Annual Limit on Intake (ALI) The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by reference man that would result in a committed effective dose equivalent of 50 mSv or a committed dose equivalent of 500 mSv to any individual organ or tissue.

Copy of the License must be posted in every commissioned room

INTERNAL REVIEW

COMPLIANCE AUDIT

The Radiation Safety Officer will conduct self-audits semi-annually (prior to the preparation of the annual compliance report (ACR) and at the end of the winter semester) to ensure compliance, monitoring, enforcement and verification of all Licensed activities. An electronic check list form will be kept in our files. Audits should address radiation safety issues pertinent to the Institute's licensed operations and may include:

- A review of all dosimeter records
- An inventory review of radioactive materials to ensure that only authorized radionuclides are present in allowable quantities
- An examination of signs, posting and labeling in applicable locations
- Presence of the proper number of staff to safely perform duties
- A review of contamination survey records to ensure that surveys are conducted in accordance with proper procedures and results are appropriate
- Assessment of any potential contamination
- A review of compliances with the Thyroid Screening program and calculation of the MDA value for the probe.
- Leak testing compliance

Any deficiencies in a Radiation Safety Program should be focused on and resolved. Incidents of non-compliance would be documented, corrected and verified; management, faculty and students are notified immediately via e-mail of these concerns. Personnel in noncompliance should be notified of their shortcomings, advised of remedial action, and observed to ensure future compliance. Major offences are reported to Joint Occupational Health Committee and CNSC.

NUCLEAR MEDICINE LAB SAFETY

- Always wear your OSL (optically stimulated luminescence) dosimeter device during labs and return it to the storage location when not in use.
- A faculty member must be supervising at the time of all manipulation of radiative materials in the imaging and radio-pharmacy labs
- Supervision in the Nuclear Medicine labs must be provided by qualified technologists or instructors when manipulating radioactive materials regardless of the amount of radioactivity being handled
- Any equipment malfunctions or problems must be immediately reported to an instructor.

DUTIES OF THE RADIATION SAFETY OFFICER (RSO)

RSOs are specialists who provide day-to-day administration and control of radiation protection programs on behalf of their employers. The qualifications required of the **RSO** at **The Michener Institute** are an appropriate combination of relevant work experience and formal training in assuring radiation safety. At least three years of relevant practical work experience is highly desirable.

The Radiation Safety Officer must have completed an RSO training course that is to be renewed every 5 years. The alternate RSO must have previously completed an RSO course and held the position of RSO at The Michener Institute. To maintain best practices and understanding of RSO roles and regulations the alternative RSO will complete 8 CE hours per year relevant to the position of RSO (CNSC law and regulation), which is to be documented and submitted to the current RSO for record retention.

TO ENSURE RADIATION SAFETY AND COMPLIANCE WITH REGULATORY REQUIREMENTS ON BEHALF OF MANAGERS, THE RSO OR DESIGNATE AT THE MICHENER INSTITUTE IS PROVIDED WITH THE TIME, AUTHORITY, AND RESOURCES TO CARRY OUT THE FOLLOWING DUTIES:

1. In conjunction with managers and the JOHSC, supervise, advise and consult regarding issues related to Michener's use of radioactive materials in accordance with legislation and any relevant conditions of CNSC Licenses;
2. Prepare reports to the managers and annual reports to the signing authorities regarding the status of the radiation safety program;
3. Review and request the purchase of radioactive material in order to ensure that the proposed uses and locations of use are acceptable and comply with the Institute's radiation protection program, relevant legislation, and License conditions;
4. Authorize only those purchases and uses of radioactive materials, and those work procedures, and conditions and locations of use, that complies with the Institute's radiation program, relevant legislation, and License conditions;
5. Assess the proposed use of radioactive materials in laboratories, and designate laboratories for the use of radioactive materials;
6. Maintain a record of the status of all designated laboratories that use radioactive materials;
7. Develop and implement administrative controls or procedures to ensure radiation safety and compliance with regulatory requirements;
8. Assess the qualifications and competence of persons who apply to use or handle radioactive materials, to determine whether they can do so safely and in compliance with relevant legislation and Licenses;
9. Ensure that radiation protection programs are developed, implemented and maintained; Ensure that persons who are required to use or handle radioactive materials are adequately trained in radiation safety matters and complies with the Institute's radiation safety procedures;
10. Authorize qualified persons to possess, use or handle radioactive materials in accordance with Michener's policies and relevant legislation, procedures and Licenses;
11. Authorize the disposal of radioactive materials in accordance with legislation, the CNSC License,

and Michener's policies and procedures;

12. Designate Nuclear Energy Workers (NEWs) in accordance with the CNSC Regulations;
13. Assess, independently or in conjunction with managers or the JOHSC, the effectiveness of radiation protection programs;
14. Ensure that persons who may be exposed to radiation in the course of their duties (such as porters, cleaners, secretaries, shippers and receivers) receive appropriate training in radiation safety matters;
15. Develop and implement programs to inspect and critically review the conduct of licensed activities, the adequacy of locations and facilities where radioactive materials are used and stored, and the adequacy of personnel training and safety procedures;
16. Implement remedial actions to correct any deficiencies identified in the inspection programs referred to (15) above;
17. Initiate revisions to procedures, changes to equipment and facilities, and amendments to CNSC Licenses to ensure that the Institute's operations, equipment and facilities remain in compliance with regulatory requirements;
18. Communicate with managers, the JOHSC and users of radioactive materials on matters relevant to radiation safety;
19. Design and implement, in accordance with regulatory requirements, appropriate personnel monitoring and bioassay programs to measure external and internal exposures to ionizing radiation;
20. Administer or control the issue, use and maintenance of radiation monitoring devices and equipment within the Institute, and the recording of results;
21. Monitor the occupational radiation exposures received by persons by reviewing, at least quarterly, their records of exposures;
22. Where the above reviews of radiation exposure records indicate that exposures are unnecessarily high, recommend to managers measures to reduce these exposures in accordance with the As Low As Reasonably Achievable (ALARA) principle of dose limitation;
23. Investigate reports of overexposures to ionizing radiation, of accidents involving radioactive materials, and of losses of radioactive materials in order to confirm or determine pertinent facts;
24. Recommend appropriate actions to mitigate the consequences of or to prevent the recurrence of, overexposures to ionizing radiation, accidents involving radioactive materials or losses of radioactive materials;
25. Ensure that the incidents referred to in (24) above, and the results of related investigations, are reported to the CNSC and other relevant authorities in accordance with legislation and the License issued to the Institute;
26. Assess the adequacy of survey programs for measuring or managing radiation fields and radioactive contamination during licensed activities, such as during storage and disposal of radioactive materials;
27. Ensure that the results of programs to reduce or remove radioactive contamination meet regulatory requirements;

28. Ensure that sealed radiation sources are leak-tested in accordance with the Institute's procedures and regulatory requirements;
29. Ensure that all persons who use or handle radioactive materials follow approved procedures, in order to prevent occupational exposures to ionizing radiation exceed regulatory limits or violate the ALARA* principle of dose limitation;
30. Prepare or review proposed or existing radiation safety procedures, either independently or in co-operation with the JOHSC;
31. Co-ordinate, or participate in, emergency responses to accidents involving radioactive materials;
32. Ensure that records and reports that are required of the Institute by legislation and License are prepared, maintained or submitted as required; and
33. Ensure that any radioactive materials that are to be transported are packaged for transport in accordance with regulations.

RADIATION SAFETY DEVICES

1. Lead used for X and Gamma radiation shielding:

a) Lead glass used in dispensing stations;
b) Lead lined aprons (PPE);
c) Lead lined syringe shields;
d) Lead boxes for storage and decay of radioactivity;
e) Lead pots for holding radioactive liquid and solid sources;
f) Lead lined trolleys to transport radioactive phantoms on 10th floor;
g) Lead lined pots for transporting radioactive syringes.

2. Concrete:

- Concrete vaults used to store X and Gamma radioactive sources.

3. Plexi-glass used to shield Beta radiation:

a) A plexi-glass box is used for the storage and decay of beta-emitting radionuclides
b) Plexi-glass/lead pots are used for containment of Beta radiation sources.

4. Hand-held radiation detection equipment:

- The following equipment is calibrated yearly and undergoes weekly quality control testing during periods of use:
  a) One sodium iodide(Tl) crystal probe;
  b) One G-M probe
  c) Three proportional detectors.
  d) Three ion chamber survey meters

5. Radiation measurement devices:

a) One multi-well sodium-iodide(Tl) crystal detector is used to measure wipes that are used to detect radiation contamination on work areas and non-work areas;
b) Six ionization detectors (dose calibrators) are used to measure radioactive sources.

6. Plans:

a) REMOTE location - radioactive storage room is located on an outer wall of the 10th floor, a low traffic area.
b) Signage is placed on all doors that contain radioactive sources. These rooms are given selective keys. The cleaning staff are not permitted in these rooms. All garbage is monitored and disposed of when no longer radioactive.
c) Training- All support staff who could potentially come in contact with radiation receives training from the radiation safety officer (RSO).
d) Personal monitoring- all potentially exposed individuals wear a personal monitoring device (OSL) that records body exposure to radiation.
e) Absorbent materials- are placed on any areas where radioactivity may be potentially spilled. This measure allows for easier decontamination.
f) Decontamination kits- are available on all floors where liquid gamma radionuclides are used or stored (10^{th} floor– rooms 1043A and 1003). These kits are replenished by the RSO.

Radioisotope License-defines what radioactive materials may be brought into The Michener Institute, what amounts may be brought in and how the materials are to be used, handled, stored, and disposed of.

RADIOLOGICAL TECHNOLOGY

WHO IS RESPONSIBLE FOR RADIATION SAFETY?

We are all responsible to protect ourselves from the hazards of radiation.

The Radiological Technology program will assign a most responsible person for maintaining equipment standards through regular quality control testing, for keeping appropriate records, and for ensuring that a suitable quality assurance program is carried out.

The program will also assign a most responsible person for the administration of the personnel radiation monitoring program by issuing and maintaining personnel dosimeters, monitoring and maintaining the records of radiation exposures quarterly, investigating reports of overexposures to X-radiation, and making recommendations to mitigate the consequences of or to prevent the recurrence of overexposures. This individual is also responsible to ensure any incidents of overexposure and results of investigations are communicated to the personnel involved and reported to relevant authorities and the RSO in accordance with legislation.

Radiological Technology Laboratory

Room 1137A	*X-ray Room*	*Philips Diagnostic with Wireless Portable Detector (image receptor)*
Room 1137B	*X-ray Room*	*Philips diagnostic with Wireless Portable Detector (image receptor) and permanent detector in the upright stand*
Room 1137C	*X-ray Room*	*Philips diagnostic with Wireless Portable Detector (image receptor)*
Room 1137D	*X-ray Room*	*Siemens Mulitx X-ray tube and table with IDC 1500 upright stand*
Room 1137E	*X-ray Room*	*Storage room (former darkroom)*
Room 1143	*Tutorial Room*	*Fuji FCR XGI Computed Radiography Reader* *4 Coral PACS workstations*
Room 1106	*CT Scanner*	*Toshiba Aquilion 64*
GE OPTIMA XR200amx	*Mobile X-ray machine*	
Siemens Mobillet	*Mobile X-ray machine*	
Philips Pulsera C-arm	*Mobile Fluoroscopy machine*	

RADIOLOGICAL TECHNOLOGY LAB SAFETY

Personal Safety

1. Lab coats or hospital scrub suits and closed-toe and heel shoes MUST be worn. No sandals will be permitted in the lab area.
2. No food is permitted in the lab area.
3. Long hair must be tied back.

Radiation Protection

1. Personal Radiation Dosimeters MUST be worn during all labs. These Personal Radiation Dosimeters must be kept in the storage rack when not in use.
2. Current Personal Radiation Dose readings will be available from the Radiological Technology Radiation Safety Officer responsible for personal dosimeters. Any exposure reading will be communicated to the student/employee. Any significant exposure reading will be investigated.
3. Signage is placed on doors to rooms housing X-ray equipment indicating "Unauthorized Entry Prohibited" and "Caution X-rays".
4. Door from the outside hallway into room 1137-B must be kept locked at all times.
5. Keep all doors from control area into X-ray room open at all times, unless making a radiographic exposure. The exposure-door interlock will prevent accidental exposure.
6. **PRIOR** to making a radiographic exposure - Ensure that everyone has left the X-ray room, is behind the control area, and the door is closed.
7. Never aim and X-ray tube directly at a door or window.
8. An instructor MUST supervise all radiographic exposures.
9. The portable X-ray machines and portable Image Intensifier may only be energized to produce
   X-radiation inside an X-ray room behind lead-lined walls. A lead apron with thyroid collar MUST be worn when standing in room during fluoroscopy.
10. Stand to one side while turning on/off the main power.
11. Always report any accident, equipment malfunction or breakdown to an instructor immediately. Do not continue with the lab until an instructor has inspected the breakdown.
12. Every accident must be documented on the incident report form and submitted to appropriate personnel.

X-Radiation Safety Signage for X-Ray room door:

WHO IS RESPONSIBLE FOR RADIATION SAFETY?

We are all responsible to protect ourselves from the hazards of radiation.

The Radiation Therapy program will assign a most responsible person for maintaining equipment standards through regular quality control testing, for keeping appropriate records, and for ensuring that a suitable quality assurance program is carried out.

The program will also assign a most responsible person for the administration of the personnel radiation monitoring program by issuing and maintaining personnel dosimeters, monitoring and maintaining the records of radiation exposures quarterly, investigating reports of overexposures to X-radiation, and making recommendations to mitigate the consequences of or to prevent the recurrence of overexposures. This individual is also responsible to ensure any incidents of overexposure and results of investigations are communicated to the personnel involved and reported to relevant authorities and the RSO in accordance with legislation.

Radiation Therapy Laboratory

Room 941	*LINAC Simulation Lab*	*Elekta Linear Accelerator unit with kV imaging and emulated treatment beam*
Room 943	*LINAC Simulation Lab*	*Elekta Linear Accelerator unit with kV imaging and emulated treatment beam*

RADIATION THERAPY LAB SAFETY

- Lab coats or hospital scrub suits with close-toe and heel shoes must be worn at all times.
- No food is permitted in the laboratory area.
- Long hair must be tied back.
- Personal OSL monitors must be worn at all times and returned to the storage rack when not in use.
- Current Personal Radiation Dose readings will be available from the Radiation Safety Officer responsible for personal dosimeters. Any exposure reading will be communicated to the student/employee. Any significant exposure reading will be investigated.
- Signage is placed on doors to rooms housing X-ray equipment indicating “Unauthorized Entry Prohibited” and “Caution X-rays”.
- Inside the labs, there is a Beam On light between each control area and each Linac.
- Double check before making an x-ray exposure that there is no one present in the treatment area.
- An instructor must be present at the time of irradiation.
- Always report any accident, equipment malfunction or breakdown to an instructor immediately. Do not continue with the lab until an instructor has inspected the breakdown.

- Every accident must be documented on the incident report form and submitted to appropriate personnel.

Radiation Safety signage for Radiation Therapy laboratory room door:

THE MICHENER INSTITUTE
SAFETY MANUAL
920-026

APPENDICES

Reviewed September 2023

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APPENDIX I - EXTRACTS FROM THE OCCUPATIONAL HEALTH AND SAFETY ACT

Revised Statutes of Ontario, 1990 Chapter 0.1 as amended.

Understanding the Language used in the occupational Health and safety Act

The way OHSA written is very specific to give direction to the person reading it. The words "and", "or", "shall", "may", "will" and "prescribed" have very specific meanings.

- "And" tells the reader that the content of each clause and sub-clause are equal. Means that all of the directions written out must be taken
- "or" offers a choice between directions found in the clauses and sub-clauses, means that only one must be taken
- However, if "or" is found in a clause setting out prohibitions, it means all of the items listed are not to be done
- The choice of one of these words (Shall, May, will) changes the force of instruction from compulsory to discretionary to possible. "Shall" action must be taken, "will" a future possibility of it being taken; and "may" offers a choice of whether or not to take it at all.
- "Prescribed" simply means "as dictated or laid out by" the regulation of OHSA.

<u>Section 25 Duties of Employers</u>

1. An employer shall ensure that:

   a) The equipment, materials and protective devices as prescribed are provided;
   b) The equipment, materials and protective devices provided by the employer are maintained in good condition;
   c) The measures and procedures prescribed are carried out in the workplace;
   d) The equipment, materials and protective devices provided are used as prescribed; and
   e) A building, structure, or any part thereof, or any other part of a workplace, whether temporary or permanent, is capable of supporting any loads that may be applied to it,

      i) As determined by the applicable design requirements established under the version of the Building Code that was in forced at the time of its construction,
      ii) In accordance with such other requirements as may be prescribed, or
      iii) In accordance with good engineering practice, if subclauses (i) and (ii) do not apply. R.S.O. 1990c, c. O.1, s. 25 (1); 2011, c. 11, s. 9.

2. Without limiting the strict duty imposed by subsection (1), an employer shall,

   a) Provide information, instruction and supervision to a worker to protect the health or safety of the worker;
   b) In a medical emergency for the purpose of diagnosis or treatment, provide, upon request, information in the possession of the employer, including confidential business information, to a legally qualified medical practitioner and to such other persons as may be prescribed;
   c) When appointing a supervisor, appoint a competent person;
   d) Acquaint a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent;
   e) Afford assistance and co-operation to a committee and a health and safety representative in the carrying out by the committee and the health and safety representative of any of their functions;
   f) Only employ in or about a workplace a person over such age as may be prescribed;
   g) Not knowingly permit a person who is under such age as may be prescribed to be in or about a workplace;
   h) Take every precaution reasonable in the circumstances for the protection of a worker;
   i) Post, in the workplace, a copy of this Act and any explanatory material prepared by the Ministry, both in English and the majority language of the workplace, outlining the rights, responsibilities and duties of workers;
   j) Prepare and review at least annually a written occupational health and safety policy and develop and maintain a program to implement that policy;
   k) Post at a conspicuous location in the workplace a copy of the occupational health and safety policy;
   l) Provide to the committee or to a health and safety representative the results of a report respecting occupational health and safety that is in the employer's possession and, if that report is in writing, a copy of the portions of the report that concern occupational health and safety; and
   m) Advise workers of the results of a report referred to in clause (l) and, if the report is in writing, make available to them on request copies of the portions of the report that concern occupational health and safety.
   n) notify a Director if a committee or a health and safety representative, if any, has identified potential structural inadequacies of a building, structure, or any part thereof, or any other part of a workplace, whether temporary or permanent, as a source of danger or hazard to workers. RSO. 1990, c. O.1, s. 25 (2; 2017, c.34, Sched. 30, s. 1 (1).

3. For the purposes of clause (2) (c), an employer may appoint himself or herself as a supervisor where the employer is a competent person.

<u>Section 26 Additional duties of Employers</u>

1. In addition to the duties imposed by section 25, an employer shall:

   a) Establish an occupational health service for workers as prescribed;
   b) Where an occupational health service is established as prescribed, maintain the same

according to the standards prescribed;

c) Keep and maintain accurate records of the handling, storage, use and disposal of biological, chemical or physical agents as prescribed;

d) Accurately keep and maintain and make available to the worker affected such records of the exposure of a worker to biological, chemical or physical agents as may be prescribed;

e) Notify a Director of the use or introduction into a workplace of such biological, chemical or physical agents as may be prescribed;

f) Monitor at such time, or times or at such interval or intervals the levels of biological, chemical or physical agents in a workplace and keep and post accurate records thereof as prescribed;

g) Comply with a standard limiting the exposure of a worker to biological, chemical or physical agents as prescribed;

h) Establish a medical surveillance program for the benefit of the workers as prescribed;

i) Provide for safety-related medical examinations and tests for workers as prescribed.

j) Where so prescribed, only permit a worker to work or be in a workplace who has undergone such medical examinations, tests or x-rays as prescribed and who is found and be physically fit to do the work in the workplace;

k) Where so prescribed, provide a worker with written instructions as to the measures and procedures to be taken for the protection of a worker; and

l) Carry out such training programs for workers, supervisors and committee members as may be prescribed.

2. For the purposes of clause (1) (a), a group of employers, with the approval of a Director, may act as an employer.

3. If a worker participates in a prescribed medical surveillance program or undergoes prescribed medical examinations or tests, his or her employer shall pay:

a) The worker's costs for medical examinations or tests required by the medical surveillance program or required by regulation;

b) The worker's reasonable travel costs respecting the examinations or tests; and

c) The time the worker spends to undergo the examinations or tests, including travel time, which shall be deemed to be work time for which the worker shall be paid at his or her premium rate as may be proper. R.S.O. 1990, c.0.1, s. 26.

Duties of a Supervisor

Section 27

1. A supervisor shall ensure that a worker:

   a) Works in the manner and with the protective devices, measures and procedures required by this Act and the regulations; and
   b) Uses or wears the equipment, protective devices or clothing that the worker's employer requires to be used or worn.

2. Additional Duties of Supervisors

   Without limiting the duty imposed by subsection (1), a supervisor shall:

   a) Advise a worker of the existence of any potential or actual danger to the health or safety of the worker of which the supervisor is aware;
   b) Where so prescribed, provide a worker with written instructions as to the measures and procedures to be taken for protection of the worker; and
   c) Take every precaution reasonable in the circumstances for the protection of a worker. R.S.O. 1990, c.0.1, s.27.

Duties of workers

Section 28

1. A worker shall:

   a) Work in compliance with the provisions of this Act and the regulations;
   b) Use or wear the equipment, protective devices or clothing that the worker's employer requires to be used or worn;
   c) Report to his or her employer or supervisor the absence of or defect in any equipment or protective device of which he is aware, and which may endanger himself, herself or another worker; and
   d) Report to his or her employer or supervisor any contravention of this Act or the regulations or the existence of any hazard of which he or she knows.

2. No worker shall:

   a) Remove or make ineffective any protective device required by the regulations or by his or her employer, without providing an adequate temporary protective device and when the need for removing or making ineffective the protective device has ceased, the protective device shall be replaced immediately;
   b) Use or operate any equipment, machine, device or thing or work in a manner that may endanger himself, herself or any other worker; or
   c) Engage in any prank, contest, feat of strength, unnecessary running or rough and boisterous conduct.

3. A worker is not required to participate in a prescribed medical surveillance program unless the worker consents to do so. R.S.O. 1990, c. O.1, s.28.

APPENDIX II - POLICY REGARDING IMMUNIZATION, COMMUNICABLE DISEASES AND OCCUPATIONAL HEALTH & SAFETY

The Michener Institute's primary purpose is the education and training of health care professionals. It is important that students enrolled in Michener programs/courses understand that there is a possible risk of exposure to communicable diseases. This exposure may occur when performing specific procedures, such as phlebotomy, on fellow students or patients. It may also occur when working with various types of specimens, including blood and body fluids that may be used in testing procedures.

In order to minimize the possibility of exposure, students are responsible for conducting themselves in a manner consistent with the health and safety of themselves and others, and shall be given appropriate education, including procedures related to general infection control and precautions related to body substances.

Immunization Requirements

The student is responsible for completing all the immunization requirements. The immunization program must meet and remain current with the standards and associated health practices set forth in:

The Public Hospitals Act 1990, Revised Statutes of Ontario, Regulation 965 Communicable Disease Surveillance Protocols published jointly by the Ontario Hospital Association and the Ontario Medical Association and approved by the Minister of Health any future legislated changes to the Public Hospitals Act

Immunization Procedure

Once the completed Health Record and immunity blood test documents are received, it will be reviewed for completeness by the Michener Health Nurse. If necessary, the student will be contacted for specific immunization requirements. Due to the nature of some of the immunizations, it is important that students start the required immunizations immediately.
Students must complete the all the requirements prior to the start classes.
Students can receive immunizations through their family physician. It is expected the student incur all costs associated with Immunizations.

Students are responsible for remaining current in their immunizations throughout the duration of their program. Students should ensure they have a proof of their immunizations before beginning their clinical practicum as clinical sites use this record to verify immunization status. Upon request, the Michener Health Nurse can provide a wallet size immunization record. Students who do not comply with immunization requirements will be unable to participate in any clinical and / or specified didactic components of the program.

Strict confidentiality concerning the applicant's state of health will be maintained.
If you require additional information on the Privacy Policy at Michener, please contact Michener'sHealthNurseatGSzollosi@michener.ca.

ORGANIZATIONAL SCOPE:
All Michener students

PURPOSE:

This policy is a mandatory requirement for all students at the Michener Institute to ensure public health and safety of those in the hospital and clinical environment.

POLICY:

All students must meet Michener immunization requirements prior to the first day of classes and must remain current prior to clinical. These requirements meet the immunization standards and associated health practices set forth in:

- The Public Hospitals Act 1990, Revised Statutes of Ontario, Regulation 965, Section 4
- Communicable Disease Surveillance Protocols published jointly by the Ontario Hospital Association and the Ontario Medical Association and approved by the Minister of Health
- any future legislated changes to the Public Hospitals Act
- National Advisory Committee on Immunization (NACI) Canadian Immunization Guide

Students are responsible for maintaining their immunizations while registered in Michener programs. This includes clinical placements.

Students who incur an injury or other medically related incident while at The Michener Institute must seek medical assistance immediately through the Health Nurse.

Specific Immunization Requirements

I. Tuberculosis

In accordance based on the above recommended guidelines, The Two-step TB skin test is required for persons at risk of occupational exposure such as health care workers and is used to rule out the booster phenomenon.

A positive skin test may gradually wane over the years. The first skin test in persons previously exposed to M. tuberculosis may be negative. However, this test may recall the hypersensitivity, and a positive reaction may occur when a person is tested one or more weeks later. This delayed response is termed the "booster" phenomenon and can result in misinterpretation of the positive test as a new infection or conversion. The two-step skin provides an accurate "baseline" for future testing. Repeated tuberculin testing does not sensitize uninfected persons.

The two-step skin test requires the administration of two tuberculin (5TU PPD) skin tests. If the reaction to the first test is negative, a second test is given 1-3 weeks later.

All students must have documentation of at least 1 previously negative 2-step TB skin test prior to start of school. If one of the tests has not been completed within the past 12 months, you require an additional single TB test. If you have documentation of a single negative TB skin test within the past 12 months, then you should receive an additional single TB test. If you have never been tested, or do not have documentation of a previously negative 2-step, then a 2-step TB test will be given.

For positive TB test reactors, a chest x-ray, current within the last 12 months is required and a copy of the x-ray report is required. Anyone with a confirmed positive TB test and who has not received counseling or advice concerning prophylactic treatment should be referred for an expert consultation by their treating practitioner. In addition, those who have received counseling or advice concerning prophylactic treatment should provide a copy of their consult note.

It is essential to have accurate baseline information at the beginning of your school and clinical placement, as this is the comparison that is used in the event of an exposure.

The Michener Institute requires that all students be tested for Tuberculosis prior to commencing school and clinical component of their program. Students will not be permitted to begin clinical education without such proof and may delay the progression in the program.

Students are required to have an Annual TB test and submit documented proof when completed.

II. Hepatitis B

Students must have a Hepatitis B immunity blood test done to confirm the presence or absence of antibodies. If the student is positive for Hepatitis B antibodies, the student is considered to be immune.

Student s who have received three doses of hepatitis B vaccine and who have had an inadequate serological response should be tested for surface antigen (HBsAg) to determine if the reason for their non-response is because they are already a hepatitis B virus carrier. If the blood test identifying an inadequate serological response (anti-HBs<10IU/L) was done one to six months after completing the vaccination series and the student test negative for HBsAg, the student should receive an additional three-dose series. If the initial negative antibody result (anti HBs<10 IU/L) was done more than six months after completing the vaccination series, and the student is negative for HBsAg, a test for serological response (anti HBs) could be done after the first booster in the second series. If the anti-HBs is >= to 10 IU/L, no further doses are needed. If after the first dose an inadequate serological response is still found,

continue with the remaining two doses and repeat the serology test (anti-HBs) 6 weeks after completing the second series.

If the anti-HBs titre is below 10 IU/L 6 weeks after completing the second series, the person is considered a non-responder and must be counselled by The Michener Health Nurse to be vigilant in preventing and following-up after needle stick injuries or any other potential exposure to Hepatitis B.

Immunization dates along with lab evidence of non-immunity are required for those who have not developed antibodies after the 2nd immunization series.

Routine booster doses of vaccine are not currently recommended in persons with previously demonstrated antibody as immune memory persists even in the absence of detectable anti- HBs; however, periodic testing should be conducted in hepatitis B responders who are immunosuppressed to ensure they are maintaining their anti-HBs titre.

III. Measles (Rubella)

One of the following is acceptable:

-Persons Canadian born before Jan 1, 1970 are considered immune

-If born after Jan 1, 1970: documentation of 2 doses of measles vaccines. One after the 1st birthday plus one booster dose

-Physician-diagnosed measles

-Laboratory evidence of measles immunity (positive titre)

-If non-immune (negative titre), requires 1 dose of MMR unless contraindicated

IV. Mumps

One of the following is acceptable:

- Persons Canadian born before Jan 1, 1970 are considered immune

-If born after Jan 1, 1970 documentation of 2 doses of mumps vaccines. One after the 1st birthday plus one booster dose

-Physician-diagnosed mumps

-Laboratory evidence of mumps immunity (positive titre)

-If non-immune (negative titre), requires 1 dose of MMR unless contraindicated

V. Rubella (German Measles)

One of the following is acceptable:

- Persons Canadian born before Jan 1, 1970 are considered immune

-If born after Jan 1, 1970 documentation of 1 dose of live rubella-containing vaccine

-Physician-diagnosed rubella

-Laboratory evidence of rubella immunity (positive titre)

-If non-immune (negative titre), requires 1 dose of MMR unless contraindicated

VI. Varicella (Chicken Pox)

One of the following is acceptable:

-Laboratory evidence of varicella immunity (positive titre)

-If non-immune (negative titre), requires 2 doses of chicken pox vaccines, given at least 4 weeks apart

VII. Tetanus/Diphtheria and Polio

TdP booster is required every 10 years unless contraindicated

All students are required to complete and forward a copy of the following blood test to determineimmunity(titre):

1. Hepatitis B
2. Measles
3. Mumps
4. Rubella
5. Varicella

Policy On Communicable Diseases

ORGANIZATIONAL SCOPE:
All Michener students

PURPOSE:
This policy is a guideline for provincial communicable disease surveillance protocols.

POLICY:

All students are expected to be in a state of health such that they may participate in the academic program, including patient care, without posing a risk to themselves, to patients or others.

Students must comply with provincial communicable disease surveillance protocols developed under the Public Hospitals Act, Regulation 965.

During the clinical phase of programs, students are required to take part in the care of all patients assigned to their care. Patients may have various communicable diseases including Hepatitis, Tuberculosis and HIV/AIDS.

PROCEDURE:

The student will initiate the immunization process upon acceptance into the individual program. Complete medical documentation must be submitted to the Health Nurse before the first day of classes.

Following admission, students with positive TB skin tests, students who do not develop immunity to Hepatitis B Virus after vaccination, and students with no immunity to varicella will be counseled by the Health Nurse. In addition, the Health Nurse will discuss the cases of students who test positive for Hepatitis B viral surface antigen with the Occupational Health

Physician to assess the need for further counseling including that related to the ramifications regarding clinical practice.
Students may be asked to volunteer to participate in laboratory sessions involving practicing procedures on themselves and/or fellow students during the didactic portion of their programs. Students should inform Michener Health Services if they have health concerns that would preclude them from safely participating in such activities.

In some laboratory sessions, students may work with specimens supplied by external agencies such as Canadian Blood Services. These specimens have been screened for communicable diseases and are the safest specimens with which to work.

All students are expected to understand and adhere to infection control policies, including the principles of body substance precautions, when participating in the examination and care of all patients, regardless of the diagnosis.
If students are exposed to or contract certain diseases while working in health facilities, they will be required to follow OMA/OHA protocols as stated in the Public Hospitals Act. This may include providing body fluid specimens. Although health care workers are sometimes exposed to certain diseases, it is rare that a health care worker contracts a disease in the workplace.

Admitted applicants who are chronic carriers of Hepatitis B or C Virus, or who have contracted Human Immunodeficiency Virus (HIV) infection and/or Coronavirus Disease 2019 (COVID-19), are required to inform the Health Nurse at the Michener Institute of their status. The Health Nurse will provide counseling and, as appropriate, will discuss the case with the Michener Institute Occupational Health Physician to establish the need for further counseling, including the ramifications of the infection on clinical practice.

COVID-19 Protocols

The most up to date information is located on the website at https://michener.ca/students/covid-19-protocols/.

To prioritize the health and wellbeing of students, patients, faculty and staff, there is now daily screening in place at Michener. All staff, faculty, and students must enter the building through the entrance at 222 St. Patrick Street and be screened.

You may be screened in one of these ways:

1) By verbally attesting that you do not have any of the COVID-19 symptoms
2) By tapping in with your ID badge in addition to the daily attestation (uhnscreen.ca)

Students, patients, faculty and staff are requested to stay home if they have any COVID-19 like symptoms. Furthermore, if they do not pass the screening process, they will be requested to leave the premise.

Symptomatic and exposed Staff and Students must follow current guidelines to be tested in an assessment centre with a PCR test.

When staff, faculty, and students are on the premise, they are required to wear face masks at all times when they are in shared spaces at the St. Patrick Campus. They are requested to maintain a physical distance of 2 meters where possible. There are hand sanitizer dispensers on every floor and cleaning staff are contracted to sanitize the building throughout the day.

Important points to note:

- All students, faculty and staff are required to wear masks at all times unless eating or drinking. Masks are available at the building entrance.
- Distancing of 2m (6 feet) or more is required wherever possible.
- Elevator capacity is significantly reduced.
- Labs have been scheduled with reduced student numbers to support physical distancing.
- Labs have been scheduled to limit travel expectations for students.
- Labs have been scheduled to promote distancing in common areas such as the lobby.
- Please adhere to your scheduled timetable and direction from your program to support safety on campus.
- Face shields are available for labs where distancing is not attainable.
- Students are discouraged from staying onsite for extended hours.
- Rooms, such as large classrooms with distancing, will be assigned to programs for breaks. Students are discouraged from staying onsite for extended hours.

COVID-19 Vaccination Policy

Michener is committed to protecting and promoting the health, safety and well being of its community, especially during the COVID-19 pandemic declared by the World Health Organization ("WHO"). Michener recognizes the importance of vaccination of Staff and Students to reduce the risk of serious infection and transmission of infection to co-workers and students and the potential for exposure in the community. This mandatory COVID-19 vaccination policy (the "Policy") aims to protect Michener's population including students, faculty, employees, staff, patients, contractors, and visitors.

COMPLIANCE

Michener requires that all Staff and Students receive the COVID-19 vaccine, unless they are exempt on the basis of medical or other grounds pursuant to the Human Rights Code
To facilitate this Policy, all Staff and Students will be required to provide one of the following:

1. Proof of full vaccination against COVID-19 where, for the purposes of this Policy, "full vaccination" means having received all required doses of a COVID-19 vaccine approved by Health Canada; or
2. Proof of a medical contraindication to vaccination as demonstrated by a written note provided by a physician or registered nurse in the extended class that sets out (i) a documented medical reason for Staff or Students not being fully vaccinated against COVID-19, and (ii) the effective time period for the medical reason (i.e., permanent or time-limited) (the "Documentation"); or
3. A written request that another ground pursuant to the Human Rights Code applies which exempts an individual from getting the COVID-19 vaccine as demonstrated by evidence as required by Michener to determine that such a ground is in effect.

Staff who are unable to be vaccinated for medical reasons are required to provide the Documentation for review to UHN's Health Services. Students who are unable to be vaccinated for medical reasons are required to provide the Documentation for review to Michener's Health Services.

Staff and Students who are unable to be vaccinated due to other grounds pursuant to the Human Rights Code are required to provide the related documentation for review to Michener's People and Culture Department.

RAPID ANTIGEN TESTING

If Staff and Students are deemed exempt following review of the Documentation or documentation related to request for human rights accommodation, they will be required to participate in the self-administered COVID-19 testing program and will be provided with rapid antigen testing kits that must be self-administered at home.

Similarly, until such time as fourteen days following Staff and Students being fully vaccinated, they will also be required to participate in the self-administered COVID-19 testing program. These Staff and Students will be required to provide a negative test within the previous 48 hours of coming on-site to Michener.

Staff who test positive on the rapid test must contact UHN Health Services and arrange for a confirmatory diagnostic PCR test at a Community Access Center. They will need to self-isolate at home pending the result of the confirmatory test. Students who test positive on the rapid test must contact Michener Health Services and arrange for a confirmatory diagnostic PCR test at a Community Access Center. They will need to self-isolate at home pending the result of the confirmatory test.

These rapid antigen tests are intended for regular testing of asymptomatic Staff and Students only and to identify those who may be infectious before coming on-site. The tests are not to be used by anyone with symptoms or who has a known exposure to someone with COVID-19.
Rapid test kits can only be used by the Staff and Students who receive them. The rapid tests may not be given or sold to any other person.

All Staff and Students will be required to attest during their entry at Michener to screening that they either have been vaccinated or, where there is a medical contraindication to vaccination or other verified Human Rights Code exemption, have completed a rapid antigen test with a negative test result within the previous 48 hours when coming on-site.

NON-COMPLIANCE WITH THE POLICY

A failure of Staff and Students to disclose to UHN and/or Michener Health Services their vaccination status or to comply with the terms of this Policy and/or the COVID-19 rapid antigen testing program may result in discipline up to and including termination of employment, in the case of Staff, or withdrawal from one's studies in accordance with the Michener's Withdrawal Policy, in the case of Students.

If Staff or Students are dishonest with regard to their participation in testing, testing result or vaccination status, they will be terminated with cause or be immediately and permanently withdrawn from their program of study in accordance with the Withdrawal Policy.
If a Staff member or Student without an approved exemption (medical or other ground pursuant to the Human Rights Code) refuses to be fully vaccinated after October 22, 2021 (without both vaccine shots), they will no longer be able to work or attend class on-site at Michener.

COVID-19 protocols and vaccination information are rapidly evolving as we learn more about the virus.

APPENDIX III - ACRONYMS USED IN SAFETY PROGRAMS

ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	As low as reasonably achievable
ANSI	American National Standards Institute
BSC	Biosafety Cabinet
CANUTEC	The Canadian Transport Emergency Centre CAS Chemical Abstracts Service
CBRN	Chemical, biological, radiological and nuclear CCOHS Canadian Centre for Occupational Health and Safety CGA Compressed Gas Association
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
CVS	Cardiovascular symptoms
DOT	Department of Transport
EPA	Environmental Protection Agency HARP Healing Arts Radiation Protection IDLH Immediate Danger to Life and Health
JHSC	Joint Health and Safety Committee
LFL	Lower flammable limit
MOL	Ministry of Labour
SDS	Safety Data Sheet
NIOSH	National Institute of Occupational Safety and Health
OHSA	Occupational Health and Safety Act
PIN	Product Identification Number
ppb	Parts per billion
PPE	Personal Protective Equipment
ppm	Parts per million
RPO	Radiation Protection Officer
RSO	Radiation Safety Officer; Revised Statutes of Ontario
RTECS	Registry of Toxic Effects of Chemical Substances
SCBA	Self Contained Breathing Apparatus
TDG	Transportation of Dangerous Goods
TLD	Thermo luminescent dosimeter
UFL	Upper flammable limit
WHMIS	Workplace Hazardous Materials Information System WSIB Workplace Safety and Insurance Board

Revised September 2021

APPENDIX IV – ONTARIO HOSPITAL EMERGENCY CODES

MICHENER EMERGENCY COLOUR CODE CHART	
CODE YELLOW CODE AMBER	MISSING PERSON MISSING CHILD/ CHILD ABDUCTION
CODE ORANGE CODE ORANGE CBRN	EXTERNAL DISASTER CBRN DISASTER
CODE RED	FIRE
CODE WHITE	VIOLENT SITUATION
CODE BLUE	CARDIAC ARREST / MEDICAL EMERGENCY - ADULT
CODE GREEN CODE GREEN (STAT)	EVACUATION (PRECAUTIONARY) EVACUATION (CRISIS)
CODE PINK	CARDIAC ARREST / MEDICAL EMERGENCY – INFANT/ CHILD
CODE BROWN	HAZARDOUS SPILL
CODE PURPLE	HOSTAGE TAKING/ GANG ACTIVITY
CODE BLACK	BOMB THREAT / SUSPICIOUS PACKAGE
CODE GREY CODE GREY BUTTON-DOWN	INFRASTRUCTURE LOSS OR FAILURE EXTERNAL AIR EXCLUSION
CODE SILVER	ACTIVE SHOOTER

APPENDIX V - TERMS OF REFERENCE FOR THE JOINT HEALTH AND SAFETY COMMITTEE

I. MANDATE

The members of the Joint Health & Safety Committee (JHSC) have the mandate to support the People Strategy and act as an advisory body. The Joint Health and Safety Committee (JHSC) is a provincially legislated requirement.

II. PURPOSE

The principle behind the JHSC and Ontario's Occupational Health & Safety Act (herein referred simply as the Act) is that workers and supervisors alike share in the responsibility for ensuring a healthy and safe workplace. Our group contributes to a healthy and safe working environment in the following ways:

- Commit to the Government of Ontario's Road to Zero strategy to eliminate workplace injury or illness
- Obtaining information from employer respecting
    - Identification of health and safety hazard
    - Obtaining information and be consulted about health and safety tests
- Identify potential hazards through workplace inspections, evaluate the potential hazards
- Address matters related to safety regulations, where applicable and/or as prescribed by the Act and its regulations and recommend corrective actions and to follow-up on implemented recommendations
- Receive health/safety reports and review for trends and analysis
- Make recommendations on health and safety matters affecting or may be affecting workers
- Being consulted on:
    - Preparation of hazardous materials / physical agents inventories,
    - Training for workers using hazardous materials / physical agents,
    - Assessment and control program for designated substances
- Requesting from the WSIB an annual summary of workplace injury experience
- Being provided with results of reports in employer's possession
- Being bound by confidentiality requirements of the OHSA
- Meeting at least once every three months, maintaining and keeping minutes of proceedings of those meetings
- Being given time to prepare for and attend meetings and carry out other duties specified by the OHSA
- Being paid for time spent in preparing for meetings and attending to duties for JHSC members, as specified by the OHSA

III. TERMS OF REFERENCE

1.1 Structure of the committee

1.2 The constructor or employer shall cause a JHSC to be established and maintained at the workplace.S.9 (4). Such committee provides benefits for health and safety of the workers equal to, or greater than, the benefits to be derived under a committee established.

1.3 The JHSC shall consist of at least five (5) members. Two (2) members shall be selected by the employer; three (3) members shall be selected by the workers.

1.4 At least half the members of a committee shall be workers employed at workplace who do not exercise managerial functions s.9(7).

1.5 The following areas of the organization shall be represented – Staff, Faculty, and Management.

1.6 The JHSC shall meet once every three months (S.9 (33). Date, Time and place will be determined as per availability of JHSC members.

1.7 Any member may call a special meeting if the need arises. This meeting will be scheduled through the Co-chairs.

1.8 A constructor or an employer shall posted and keep posted at the work place the names and work locations of the committee members in a conspicuous place or places where they are most likely to come to the attention of the workers.s.9(32).

2.1 Selection of Members

2.2 Both workers exercising managerial functions will be appointed to the committee by Employer/PC.

2.3 Workers who do not exercise managerial functions will be selected to the committee by the workers (every two years).

2.4 Workers from each group whose member had completed his/her term of office will be asked for volunteers to stand for selection.

2.5 If there are no volunteers the committee may ask interested individuals form the group to stand for selection.

2.6 Workers from all groups, who do not exercise managerial functions, will be eligible to vote for those standing for to be selected.

2.7 In the event that a worker member is unable to complete his/her term of office, a new member shall be selected in the normal manner.

3.1 Terms of Office

3.2. Each worker member shall serve at least term of two (2) years.

3.3. A worker committee member may be selected for an additional second term

3.4. Selection of members to the committee will be structured so that no more than two (2) Members will complete a term of office in any calendar year.

3.5. At the discretion of the committee the term of office may be extended for such a period as to ensure provisions under 3.3. and S.9(9)

4.1 Co-chairs

4.2 There shall be Co-chairs, one (1) representing the employer and one (1) representing the workers.

4.3 Selection of Co-chairs

4.3.1 The worker Co-chair shall be selected by the worker members of the committee.

4.3.2 The worker Co-chair shall serve a term of two (2) years.

4.3.3 The management Co-chair shall be Selected by the management members of the committee or Employer.

4.3.4 The management Co-chair shall serve a term of two (2) years, or to the extent possible.

4.4 The Co-chairs will alternate chairing meetings. Should the designated chair not be available to attend a meeting, the other Co-chair will organize and preside over the meeting.

4.5 A Co-chair may, with the consent of his/her counterpart, invite any additional person(s) to attend the meeting to provide additional information and comment, but shall not participate in the regular business of the JHSC meeting.

5.1 Certified members

5.2 Certified members will be selected in the same manner as members of the JHSC. (see Selection of Members)

5.3 Once selected, the members will undertake the required Certification Training as outlined in the Occupational Health and Safety Act.

5.4 The Certified Work Member's term on the committee will be the same as that of any other member

5.5 The Certified Work Member will function in the capacity as any other member other than in the manners described under Sections 43 (7), 48 and 45 of the Act.

6.1 Selection of Secretary

6.2 The committee will have secretary made available, by the employer, for each meeting. The secretary will, at the direction of the Co-chair, transcribe and distribute the meetings' minutes and prepare and circulate a meeting agenda a week prior to each meeting.

6.3 The secretary will not participate in the regular business of the JHSC, if selected personnel who is independent of JHSC.

7.1 Function of the Joint committee

7.2 To attain the spirit of the Occupational Health and Safety Act, the functions of the Joint committee shall be:

7.2.1 To identify, evaluate and recommend a solution of all matters pertaining to health and safety in the workplace to management.

7.2.2 To recommend continuing education and training programs in order that all employees are knowledgeable in their rights, responsibilities and duties under the Occupational Health and Safety Act and the Michener Policies.

7.2.3 To advise on or to address matters related to Hazardous Materials, where applicable.

7.2.4 To deal with any health, safety or environmental matters that JHSC deems appropriate.

7.2.5 To work in compliance with Section 9 of the Occupational Health and Safety Act.

7.2.6 Complete required training as described in 7.7.1 (@UHN.elearning, Note: Contact Co-chairs for access).

7.3 Inspections

7.3.1 The members of the JHSC who represent workers shall volunteer (on sign-out worksheet- JHSC folder) or designate a member of the committee to inspect the physical conditions of the workplace at least once a year, inspecting at least a part of the work place in each month S.9 (27). The worker member should be a Certified Member, if possible.

7.3.2 As per volunteer sign-out sheet for the inspection, JHSC co-chair (worker member) will schedule the places to be inspected with date and location in coordination with volunteered members and post a schedule on JHSC folder/email/bulletin board at the beginning of January of each year) Send out inspection notice to the manager of area to be inspected and meeting invitation to all parties involved.

7.3.3 Adhere to inspection schedule with exception of unforeseen circumstance rescheduled with in next 5 business days from the original scheduled date (exception" or longer in pandemic)".

7.3.4 All health and safety concerns noted during the inspection will be recorded on the standard workplace inspection forms (checklist and specific report) and forwarded to the committee for consideration as soon as possible with in 48 hrs. to 5 business days

7.3.5 The workplace inspection summary report will be forwarded to the manager/responsible area/ authority personnel (with in 10 business days from the date of inspection with the exception of facility closure) for action. The manager/responsible authority will inform the JHSC (with in lime lines as per the class designated e.g. A, B or C) and the status of outstanding items before the next committee meeting. Unresolved items will be actioned by the committee at each meeting and forwarded in recommendation form to the

Employer.

7.3.6 Send all inspection reports to UHN ex-officio or JHSC resource personnel every 6 months. Send all completed inspection summary reports to UHN JHSC management leadership every 6 months, after every 2nd meeting of the year.

7.4 Recommendations

7.4.1 The JHSC will make written recommendation using the standard recommendation form.

7.4.2 Recommendations will be signed by the Co-chairs and forwarded to the Employer for response. In the event consensus cannot be reached, either Co-chair may present a written recommendation to the Employer.

7.4.3 Within 21 days the Employer will communicate in writing directly to the JHSC or Co-chair in compliance with section 9(20) and 9(21) of the Occupational Health and Safety Act. If consensus cannot be achieved, recommendations can be forwarded by either Co-chairs on behalf of the JHSC as per Section 9(19.1).

7.5 Accident Investigation

7.5.1 The worker members of the JHSC will designate a worker member (preferable the Certified Member) to investigate all critical and fatal workplace accidents. In addition, the worker member may investigate incidents that have the potential to be serious accidents.

7.6 Work refusal

7.6.1 The worker members of the JHSC shall designate a worker member (preferable a Certified Member) to investigate work refusals as outlined under section 43 of the Occupational Health and Safety Act.

7.7 Dangerous Circumstances Investigations

7.7.1 Where a complaint of dangerous circumstances has been reported to the worker Certified Member of the JHSC he/she may investigate the complaint as outlined under section 48 of the Occupational Health and Safety Act.

7.8 Induction of New Members

7.8.1 New members of the JHSC shall receive the following orientation:

- A copy or online access to this workplace agreement and terms of reference by the Co-chairs.
- A copy or online access to JHSC folder for review of the last twelve meeting minutes by the Co-chairs.
- Training in the following online courses provided through UHN E- learning:
  - UHUHOC014W JHSC Orientation
  - UHUHOC016W JHSC Workplace Inspections
- A general orientation by the Employer.

8.1 Attendance at Meetings

8.2 If a committee member is unable to attend a meeting, he/she must inform the Co-chairs of the expected absence and provide any required reports of information.

8.3 All members shall attempt to attend JHSC meetings: notify week ahead of absence with exception of emergency same day notice.

8.4 Quarterly meeting schedule for the entire year shall be posted (JHSC folder) by the end of January of each year.

9.1 Minutes of the Meeting

9.2 The secretary will take minutes and be responsible for having the minutes typed within five (10) business days of the meeting. The Co-chairs will review the minutes, edit where necessary, sign and return to the secretary for circulation.

9.3 All items, resolved or not, will be reported in the minutes. Unresolved items will be forwarded to the Employer and maintained on the minutes until resolved

10.1 Agenda

10.2 The Co-chair of the scheduled meeting will prepare an agenda, at least one week prior to the meeting and forward a copy to the secretary for typing and distribution to all Committee Members.

11.1 Quorum

11.2 A quorum of four (4) members, one of which must be a management member, is required to conduct regular business.

12.1 Conduct of the Committee

12.2 All business decisions will be made on a consensus basis. Committee members must agree upon all resolution, recommendations, etc. Formal motions will not be used.

The JHSC Terms of Reference shall be reviewed every two years to ensure accuracy of content.

Michener UHN

JOINT HEALTH & SAFETY COMMITTEE TERMS OF REFERENCE

AGREEMENT:

As agreed between The Michener Institute of Education at UHN and the members of Joint Health and Safety Committee:

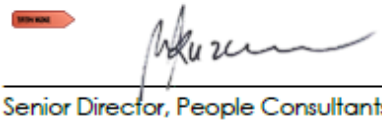
Workplace agreement

1. The Joint Health and Safety Committee of the Michener Institute of Education at UHN has been established under the auspices of the Occupational Health and Safety Act of Ontario
2. It is our belief that through joint education programs, joint investigations of problems and joint resolution of those problem, the workplace will be made safer and healthier for all staff.
3. The proper functioning of the Joint Health and Safety Committee can only be carried out where the representatives of the employer and the workers are committed to these responsibilities
4. This agreement and the following terms of reference are adopted in good faith to promote and assist the Joint Health and Safety Committee whenever and wherever possible.

Signed at: The Michener Institute of Education at UHN

This 17 day of July (month), 2023 (year)

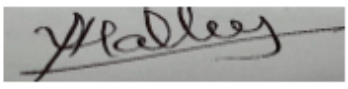
For the Employer



Senior Director, People Consultants (Natasha Kuzmanov)

For the Committee

Worker Co-Chair (Alan Joson)



Management Co-Chair (Yasmin Halley)

Creation date: 2017

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APPENDIX VI - THE MICHENER INSTITUTE SAFETY PROGRAM

The government, employers and workers all have an interest in striving to eliminate all accidents and potential hazards from the workplace.

The Occupational Health and Safety Act depend on the employer and the employees to translate the Act's principles into action. The combined participation of workers and employers with equal powers to act on health and safety matters. The IRS means that everyone is working together to solve the health and safety concerns.

The Internal Responsibility System (IRS)

Everyone has a role to play in keeping the workplace safe and healthy. This concept is the key principle behind OHSA, It is called the "Internal Responsibility System". The IRS focuses on the specific duties, rights, responsibilities and shared obligation of employers, supervisors, workers and JHSC to keep the workplace healthy and safe.

Employers have a duty to:

- ☐ Set up a joint health and safety committee if one is required by the Act. The employer must ensure that at least one worker member and one employer member become certified members.
- ☐ provide pertinent information to JHSC concerning:
  - Workplace hazards
  - Testing
  - Training
- ☐ ensure that the Act and all regulations are complied with
  - All prescribed equipment, materials and protective devices must be provided and maintained
  - Prescribed measures and procedures must be carried out
- ☐ take every precaution reasonable in the circumstances for the protection of a worker
  - Workers must be provided with information, instruction and supervision
  - The employer must appoint a competent person (as defined in the Act) as supervisor
  - A worker exposed to hazardous material or physical agent must be given instruction and training prescribed by regulation
  - Training must be developed in consultation with the JHSC
- ☐ ensure that any hazardous material used in the workplace meets the requirements of the regulations concerning:
  - exposure limits, labelling, material safety data sheets, worker instruction and training
  - complete assessment, posting of warnings

Supervisors have a duty to:

- ☐ take "every precaution reasonable in the circumstances" for the protection of workers
- ☐ ensure that workers:
  - comply with the Act and regulations
  - use protective devices and clothing as required by the employer
- ☐ advise workers of actual or potential health and safety hazards of which the supervisor is aware
- ☐ where prescribed, provide written instructions to the worker as to the measures and procedures to be

taken

Workers have a duty to:

- ☐ Work in compliance with the Act and regulations.
- ☐ wear or use protective equipment or clothing required by the employer, and not interfere with protective devices
- ☐ to report to their employer or supervisor:
  - any violation or contravention of the Act
  - defective equipment or protective devices or clothing of which the worker is aware and which may endanger themselves or another worker
  - workplace hazards they are aware of to a supervisor
- ☐ Do not operate equipment, or work in a way that it may endanger themselves or any other worker.
- ☐ Do not engage in contests, pranks or boisterous conduct.

JHSC

- Joint Health and Safety committee or Health and Safety representative has a role to play by monitoring and supporting IRS.

AN INTRODUCTIONTORACE:

- RECOGNIZE
- ASSESS
- CONTROL
- EVALUATE HAZARD CONTROLS

There are legislated roles and responsibilities of the workplace parties in recognizing, assessing, controlling hazards and evaluating the hazard controls (8.1.6.C)

R	A	C	E
Recognize	Assess	Control	Evaluate
• Workplace safety inspection • Being vigilant • reported problems or concerns by any parties • review of documents	Compare to a standard Risk assessment 1. Identify how the individual might get hurt 2. Identify the probability, severity and hazard priority	Locations: 1. at the source 2. along the path 3. at the worker Controls: 1. elimination 2. substitution 3. engineering 4. Administrative 5. PPE	The Control is: 1. Communicated to personnel affected 2. Working as expected 3. Reduces the risk 4. Does not create new hazard 5. Reduces complaints, illnesses and injuries

Workplace Safety Inspections

Component: Hazard Recognition
Procedure: Workplace Inspections
Objectives: To maintain the desired Health and Safety standards in production and equipment and provide a safe workplace

ACTIVITIES:	Responsibilities	Time Frame	Participation:	Resources:
Review Procedure	□ Senior Management □ Management JHSC Representatives	□ As required by changes to the legislation / regulations	□ JHSC Management Representatives □ JHSC	□ Current policy and procedure -Web based resources; Government Website
Conduct Inspection	□ Worker Member preferable certified	□ Monthly (at least a part of the work place each month, whole workplace inspection once a year)	□ Worker Member certified (if possible)management member may accompany □ Staff Member/supervisor of area	□ Testing/maintenance and previous inspection reports
Produce Written Report	□ Inspection Team □ Recommendation must be signed by chairs	□ Within 48 hours to 5 business days of inspection	□ Inspection Team	□ Inspection notes
Take Action	□ Department Supervisor or Facilities Director or related department	□ Timely, with written follow up prior to next regular JHSC meeting	□ As appropriate	□ Inspection Report
	□ JHSC	□ Next regular JHSC meeting	□ JHSC	□ Inspection Team □ Report □ Written follow up
Review Results	□ Management	□ Timely as per Hazard rating in workplace inspection report	□ Management □ Department Supervisor	□ Report □ Written follow up □ Recommendation(s) from ~~JOHSC~~ JHSC
Follow Up				

Rev: 03/05

The Michener Institute of Education at University Health Network: Workplace Inspection Report

Floor/ Department: _____ Date of Inspection (DD/MM/YY):_____ Time of inspection:_____

Inspected By: _____ And _____ Manager / Contact : _____

Inspection Findings				Corrective Action		
Ite	Room/Area	HR (A/B/	Hazards Observed	Recommended/Proposed Corrective Action	Action Taken	Date

HR = Hazard Rating: A = Major - requires immediate action, B = Serious - requires short-term action, C = Minor - requires long-term action

The Michener Institute of Education at University Health Network: Workplace Inspection Report

Floor/ Department: _____ Date of Inspection (DD/MM/YY):_____ Time of inspection:_____

Inspected By: _____ And _____ Manager / Contact : _____

Distribution: JOHSC Committee and the following individuals (for departmental action).

Department	Person Responsible	Item Number(s)	Response Time

*HAZARD CLASSIFICATION

Hazard Classification	Hazard Consequences	Examples
"A" Major RESPOND IMMEDIATELY	Death Permanent disability Loss of a body part Extensive loss of a structure equipment or material	Falling down stairwell Fall caused by lifting or transferring Mishandling chemical substances Explosion
"B" Serious RESPOND WITHIN 24-48 HOURS	Serious injury or illness that results in temporary Property damage that is disruptive, but less severe than Class "A"	Slippery/fall hazard conditions on walkway Loose shelving Broken tread at the bottom of stairs
"C" Minor RESPOND WITHIN 21 DAYS	Minor injury or illness that is non-disabling Property damage that is not disruptive	Clutter in hallway Light in stairwell burnt out

HR = Hazard Rating: A = Major - requires immediate action, B = Serious - requires short-term action, C = Minor - requires long-term action

Hazard Recognition:

Component: Hazard Recognition
Procedure: Investigation of an Accident/Incident/Hazard Report
Objectives: To effectively investigate, respond and find solutions to reported hazards and provide a safe workplace.

ACTIVITIES:	Responsibilities	Time Frame	Participation:	Resources:
Review Procedure	□ Management JHSC Representatives	□ When activities indicate updating is required	□ Management JHSC Representatives □ Health Nurse □ JHSC	□ Current policy, procedure and report form □ External resource material
Identify Hazard	□ Person first involved	□ Immediate	□ Person first involved □ Witness(es) □ Supervisor or other Competent Person* certified member	□ WHMIS □ Institute Safety Manual
Produce Written Report	□ Supervisor or other Competent Person* if possible certified member	□ Immediate	□ Supervisor or other Competent Person* □ Person first involved □ Witness(es)	□ Procedure and report form
Take Corrective Action	□ Supervisor or other Competent Person	□ Immediate, if possible	□ Appropriate Staff	□ Appropriate Staff □ WHMIS □ Safety Manual □ External sources
Follow Up	1. JHSC --- 2. Senior Management	□ Next regular JHSC meeting --- □ Shortly after JHSC meeting	□ JHSC □ Persons involved, as requested by JHSC --- □ Senior Management □ Management as delegated by Senior Management	□ Report --- □ Report □ Recommendations from JHSC

*As defined by the Occupational Health and Safety Act, "competent person' means a person who,

(a) is qualified because of Knowledge, training and experience to organize the work and its performance,
(b) is familiar with this Act and the regulations that apply to the work, and
(c) has knowledge of any potential or actual danger to health or safety in the workplace. Rev: 11/20

Hazard Assessment

Component: Hazard Assessment
Procedure: Monitoring
Objectives: To identify hazardous agents through monitoring, and work to eliminate or minimize worker exposure, and thereby provide a safe workplace.

ACTIVITIES:	Responsibilities	Time Frame	Participation:	Resources:
Educate Staff about Regulations	Senior Management JHSC Certified Members of JHSC Management, as appropriate	Ongoing	Senior Management Management as delegated by Senior Management Certified Members of JHSC	Ministry of Labour External resource material Safety Manual WHMIS Education Package
Identify Hazardous Agents	Person identifying the presence of a hazardous agent	Immediate	The person identifying the presence of a hazardous agent Department Supervisor Appropriate Management Certified Member of JHSC when appropriate Operations Director, when appropriate	Senses (M) SDS Regulations
Develop and Monitor Action Plans	JHSC	Ongoing	JHSC	As required
Monitor the Hazardous Agent	Senior Management	While actual working conditions are in effect	Monitoring body Worker , if appropriate Certified Worker Member of JHSC	Equipment
Generate Report	Monitoring Body			
	Senior Management JHSC	When report is available	Senior Management JHSC Department Supervisor The person identifying the presence of the hazardous agent Operations Director, when appropriate	Report/results of testing (written/verbal) Regulations NIOSH Pocket Guide to Chemical Hazards
Follow Up	Senior Management	Following review, as	As appropriate	Report

WHMIS: Labelling

Component: WHMIS
Procedure: Labelling of WHMIS Controlled Materials
Objectives: To comply with WHMIS regulations and provide a safe workplace.

ACTIVITIES:	Responsibilities	Time Frame	Participation:	Resources:
Check Labels On Incoming Goods	□ Distribution and Receiving Co-ordinator or Designate	□ Upon delivery	□ Distribution and Receiving Co-ordinator or Designate □ Requester of goods or Designate (e.g. Laboratory Services Staff)	□ Supplier label
Prepare Labels for Decanted Solutions	□ Laboratory Services Staff	□ Upon decanting	□ Laboratory Services Staff	□ Supplier labels □ SDS
Prepare Labels for Solutions Prepared In-House	□ Laboratory Services Staff	□ Upon preparation	□ Laboratory Services Staff	□ Supplier labels □ SDS

Rev: 11/20

WHMIS: Workplace Inventory

Component: WHMIS
Procedure: Workplace Inventory
Objectives: To comply with WHMIS regulations and provide a safe workplace

ACTIVITIES:	Responsibilities	Time Frame*	Participation:	Resources:
Review Inventory	□ Supervisor of Area	□ Quarterly, starting from January	□ Supervisor and/or Delegate	□ Current inventory list □ Purchase orders □ Physical count
Revise Inventory	□ Supervisor of Area	□ Quarterly, starting from January	□ Supervisor and/or Delegate	□ Inventory review □ Area Supervisor □ Supplier
Update the M(SDS) Binders *Where applicable	□ Supervisor of each program Facilities (L ab Services is responsible for updating the master copy in the lobby)	□ By September Lab Services: Ongoing updates of master binder in lobby	□ Supervisor and/or Delegate	□ Intranet □ Binder □ SDS □ Revised inventory □ Reference binder at reception
Update Intranet	□ Laboratory Services Staff	□ Ongoing as SDS outdate or SDS online for new/additional products are received	□ Laboratory Services Staff	□ Current SDS

- The binders must be updated for the start date of the program. The time frame therefore varies for post diploma programs with a start date other than September.
- Some Michener Programs have selected a paperless process for SDS online documents, where electronic access is available within labs or classrooms.

Rev: 11/20

WHMIS: Education

Component: WHMIS
Procedure: WHMIS Education
Objectives: To comply with WHMIS regulations and provide a safe workplace

ACTIVITIES:	Responsibilities	Time Frame	Participation:	Resources:
Review Educational Material	□ People & Culture	□ Every three years or as required by legislation	□ People & Culture □ JHSC	□ Educational materials □ Legislation □ Health and safety agencies □ Blackboard and UHN elearning
Assign WHMIS Training by Department and Position	□ Management JHSC Representatives	□ General review every three years or upon creation of new positions	□ Management JHSC Representatives □ People & Culture □ Supervisors (Classes of Hazard)	□ Assignment document Black board, email notification by HR
Educate New Employees	□ Director, Organization Development and People & Culture: distribution of educational package (delegated to People & Culture) □ Supervisor: allow time and ensure completion	□ Refer to Guidelines for WHMIS Training	□ Employee People & Culture	□ Education package □ OHSEA "WHMIS Right to Know" booklets and videos (in the library) □ People & Culture
	□ People & Culture: distribution of assignment □ Supervisor: allow time and ensure completion	□ One week	□ WHMIS Level 3 employees □ People & Culture	□ Assignment package □ OHSEA Classes of Hazard booklets and videos □ People & Culture
Educate Employees about Classes of Hazard	□ People & Culture □ JHSC □ Supervisors	□ Annually	□ All Employees □ People & Culture	□ Review package □ People & Culture

Conduct Annual Review

Rev: 06/01

APPENDIX VII - BOMB THREAT

1st Call	9-911
2nd Call	x3333

WHEN A BOMB THREAT IS RECEIVED

1) Listen. Remain calm and do not hang up.

2) Do not interrupt the caller.

3) Obtain as much information as possible and record in form below.

4) Signal someone within your immediate proximity and have them contact Toronto Police Services at 9-911.

5) Complete the form provided below.

6) Call x3333 to alert Security and/ or Reception.

Gender: (circle)	Male				Female				Not sure		
Estimated age: (specify)	under 20	20-30			30-40	40-50			50+	Age:	
Accent:	English		French			Other:					
Voice:	Loud				Soft				Other:		
Speech:	Fast				Slow				Other:		
Diction:	Good		Nasal		Slurred		Lisp		Other:		
Manner:	Emotional	Calm		Vulgar		Stressed		Nervous		Other:	
Background	Traffic				Other voices				Silence		
Voice was familiar (specify)											
Caller was familiar with the area/ building (specify)											

Revised Aug 2011