Plan for Administrative Oversight

Introduction

Algonquin College developed its Biosafety Program in 2010 and has since updated it to align with the *Human Pathogens and Toxins Act* (HPTA) and the *Human Pathogens and Toxins Regulations* (HPTR). This Plan for Administrative Oversight (PAO) outlines the high-level institutional mechanisms in place to manage, control, and reduce biosafety and biosecurity risks related to the use of human pathogens and toxins. It supports compliance with PHAC licencing requirements by describing the College's internal accountability structures and administrative controls, including roles for the Biosafety Officer (BSO), Institutional Biosafety Committee (IBSC), and responsible personnel. The Plan also provides a framework for maintaining oversight through training, documentation, and review processes, and will be submitted as part of Algonquin College's licencing obligations under PHAC.

Contents

List of Abbreviations

ACET	Algonquin College Executive Team
ASET	Applied Science and Environmental Technology
BSC	Biological Safety Cabinet
BSO	Biological Safety Officer
CBS	Canadian Biosafety Standard
CBH	Canadian Biosafety Handbook
CFIA	Canadian Food Inspection Agency
CL	Containment Level
HAA	Health of Animals Act
HAR	Health of Animals Regulations
HPTA	Human Pathogens and Toxins Act
HPTR	Human Pathogens and Toxins Regulations
IBSC	Institutional Biosafety Committee
JOHSC	Joint Occupational Health and Safety Committee
LRA	Local Risk Assessment
OHS	Occupational Health and Safety
ORA	Overarching Risk Assessment
PAO	Plan for Administrative Oversight
PHAC	Public Health Agency of Canada
PPE	Personal Protective Equipment
PSDS	Pathogen Safety Data Sheet
RG	Risk Group
RRF	Reagent Request Form
SDS	Safety Data Sheet
SSBA	Security Sensitive Biological Agent

Criteria 1: Commitment from senior management to manage and control biosafety and biosecurity risks at the institution/organization.

The College Executive team has endorsed a comprehensive Enterprise Risk Management program, which is monitored by the Board of Governors. Risk management is operationalized through a series of policies dealing with Risk Management, Occupational Health & Safety and Emergency Management, and Legal Affairs. The implementation of these programs is evidenced in the application of a series of health and safety programs and standards and through planning documents such as the Emergency Management Framework and Business Continuity Plan. This creates a robust policy landscape, within which the management of biosafety and biosecurity risk occurs.

Algonquin College's corporate policy HS01: Occupational Health and Safety outlines institutional obligations and clarifies supervision and/or management responsibilities for health and safety throughout the College. The Department of Applied Science and Environmental Technology (ASET) is responsible for the management of all laboratory spaces and activity associated with biohazards and the biosafety and biosecurity risks they present at the College. The ASET Department has established a Biosafety Program that outlines Algonquin's commitment to administratively manage and control biosafety and biosecurity risks in accordance with the applicable legislation, regulations and standards. This Program serves to protect members of the Algonquin community, the public, and the environment when biohazardous materials are used in education, applied research, or any other activity in the ASET Department.

The Biosafety Program, consisting of the Biosafety Manual and various associated Safety Standards and Procedures, Risk Assessments, and Plans, was developed to outline ASET's laboratory safety standards and operational practices and procedures which serve to reduce hazards and enhance safety. The official version of the Biosafety Manual is found on the Algonquin College Biosafety Website and all Biosafety documents are updated continuously as changes are approved by the ASET Department and the Department of Occupational Health and Safety (OHS).

As well, the College has an Institutional Biosafety Committee (IBSC) in place. The Biosafety Committee will generally meet semi-annually or as needed to deal with safety issues, concerns, policy/protocol improvements or other matters that may be of a biological safety nature. The Co-Chairs of the IBSC (Chair, ASET and the Manager of OHS prepare and submit an IBSC executive summary report once per year to Senior Managers at the College to summarize the continued management of biosafety and biosecurity risks at Algonquin College.

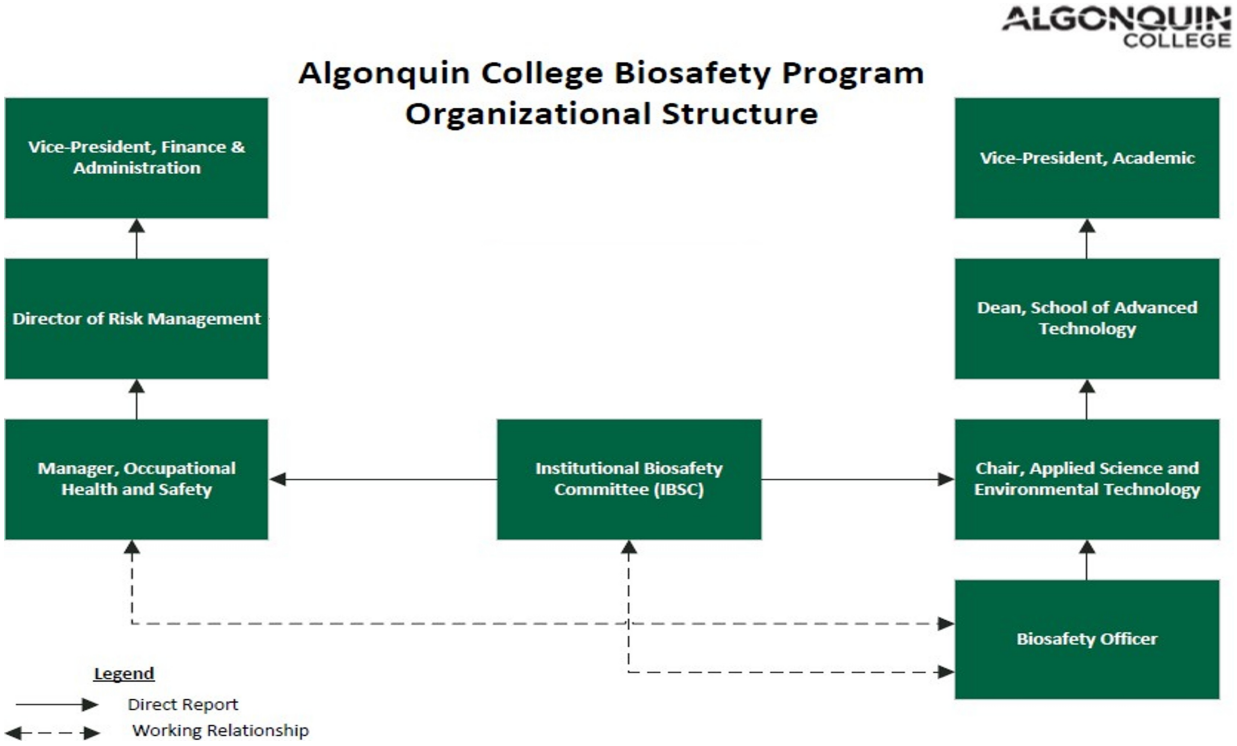
Senior Management Letter of Commitment

The Senior Management Team at Algonquin College is committed to managing and controlling biosafety and biosecurity risks through the provision and maintenance of a Biosafety Program. The College will maintain a Biosafety Program comprised of the Overarching Risk Assessment, the PAO for Biosafety and Biosecurity, the Biosafety Manual, and the Institutional Biosafety Committee (IBSC) Terms of Reference. The Containment Level 2 (CL2) zones are located at the Ottawa campus in 'A' building and is owned and managed by the ASET Department. Other documents that support the implementation and operation of the Biosafety Program (e.g. Safety Standards, Procedures, Plans, Training etc.) are updated continuously and published to the Algonquin College Biosafety Website as changes are approved by the relevant institutional stakeholders.

Criteria 2: Delineation of roles and responsibilities for committees, individuals, departments, etc., that have a role in the control/management of biosafety and biosecurity risks.

Algonquin College ensures that all Biosafety and Biosecurity hazards are monitored and evaluated through a clear reporting structure, as shown below:

Algonquin College Biosafety Program Organizational Structure



Institutional Biosafety Committee (IBSC)

The IBSC is an advisory committee comprised of members of the College community who are knowledgeable in the safe use of biohazardous materials. The IBSC is mandated to fulfil the responsibilities of the IBSC as described in the Canadian Biosafety Handbook (CBH). The IBSC is involved in the management of the Biosafety Program and is responsible for policy process oversight in order to ensure all persons working with biohazardous materials are in compliance with all applicable regulations, guidelines, standards, procedures, and laws. The committee shall ensure Biosafety and Biosecurity oversight in compliance with the Public Health Agency of Canada (PHAC) and the Canadian Food Inspection Agency (CFIA) who have developed the Canadian Biosafety Standard (CBS) [2022] and the CBH [2016] which comply with the Human Pathogens and Toxins Act (HPTA), the Human Pathogens and Toxins Regulations (HPTR), the Health of Animals Act (HAA) and the Health of Animals Regulations (HAR) to regulate activities in Canada involving human and animal pathogens and toxins. The responsibilities, mandate, and membership of the Committee are outlined in Algonquin College's IBSC Terms of Reference (Appendix 5 of the Biosafety Manual).

Institutional Biosafety Committee Membership

The IBSC shall be comprised of members of the College community with experience and training that enables them to advise on the containment principles, technologies, and operational practices to prevent unintentional exposure to pathogens or toxins. Members of the committee are appointed by the Chair, ASET Department in consultation with the Manager, OHS.

Compulsory members of the IBSC include:

1. Manager, OHS
    - Manager at Algonquin College
    - IBSC Co-Chair
    - Training in Industrial Hygiene
2. Chair, ASET Department
    - Manager at Algonquin College
    - IBSC Co-Chair
    - Licence Holder under the HPTA
    - Graduate degree in Biology/Biochemistry/Biotechnology or a closely-related field
3. Biosafety Officer(s) [BSO(s)]
    - Diploma or degree in Biology/Biochemistry/Biotechnology or a closely-related field
    - Biology and Microbiology training

Additional members of the IBSC are appointed by the Co-Chairs of the IBSC and may include other members of the College community (see below). The appointment of any additional members to the IBSC shall be reviewed annually by the IBSC Co-Chairs.

Optional Members of the IBSC include:

4. Laboratory Technologist(s)
    - Subject-matter expert(s) and laboratory practitioner expert(s) in Biology/Biochemistry/Biotechnology or a closely-related field
5. Faculty Member(s)
    - Subject-matter expert(s) in Biology/Biochemistry/Biotechnology or a closely-related field
6. Director of Applied Research, or designate
7. Other member(s) as deemed appropriate and duly appointed by the Co-Chairs of the IBSC

Institutional Biosafety Committee Accountability

The IBSC is responsible for Containment Level 2 (CL2) Biosafety and Biosecurity oversight of work conducted at Algonquin College in the Ottawa Campus ‘A’ building CL2 zones. These CL2 designated zones are owned by the ASET Department and regulated by the established Biosafety Program The committee ensures that activities in the CL2 laboratories, within the CL2 zones, are conducted in compliance with the CBS, 3rd edition, 2022, and the CBH, 2nd edition, 2016. The IBSC reports to senior executives through the committee Co-Chairs. The Manager, OHS also serves on the Joint Occupational Health and Safety Committee (JOHSC) at the Ottawa campus so that information can flow freely between the IBSC and the JOHSC as needed. The JOHSC is a college-wide committee whose primary responsibilities include the

inspection of the physical condition of the workplace on a regular basis; monitoring reporting functions of serious injuries; and making recommendations to the College regarding measures and procedures which serve to reduce hazards and enhance safety.

The ASET Department is responsible for internal controls to minimize physical, chemical and biological hazards. The Manager, OHS (Co-Chair of the IBSC) provides organizational support in all areas of health and safety including audits as well as environmental safety, fire and life safety, hazardous materials, hazardous waste disposal and occupational hygiene. Members of the IBSC monitor the continued use of approved containment practices and the maintenance of the facility during routine internal inspections. The frequency of these inspections is determined by the Co-Chairs of the Biosafety Committee and relates to the level of risk. An internal audit procedure and inspection checklist can be found in Appendix 9 (ASET's Lab Inspection Process) of the Biosafety Manual. Results of the internal inspections are relayed to the IBSC and, if necessary, to the Risk Management Department for review and corrective actions.

Through the Co-Chair (Manager, OHS), the IBSC reports to the Risk Management Department. The Risk Management Department has complete oversight on all risk management, health and safety, biosafety and biosecurity risks at the college. The Risk Management Department Mandate is: "Under the authority and direction of the Algonquin College Executive Team (ACET), the Risk Management Department is responsible for advancing and promoting an enterprise risk management framework, stewardship of College policy surrounding risk management and risk management practices, monitoring the risk profile of the College and providing guidance and leadership related to changes in the development, implementation and monitoring the risk profile of the College and providing guidance and leadership related to changes in the development, implementation and monitoring of risk mitigation measures on an ongoing basis." Any biosafety or biosecurity issues that cannot be resolved at the IBSC level and/or any conflicts of interests that are identified at the IBSC level are referred to the Risk Management Department. Risk Management would make recommendations to the Vice-President, Finance and Administration (Reporting Executive). The Executive Sponsor has the final decision-making authority.

Institutional Biosafety Committee Responsibilities

The IBSC is responsible for the following:

1. Formulate and recommend effective procedures governing the use of biohazardous materials/agents in the ASET Department at Algonquin College in accordance with the CBS, CBH, PHAC, and CFIA standards and guidelines;
2. Advise on content and review the Biosafety Program every five (5) years or as regulatory requirements change;
3. Review and promote training programs that enhance ASET's Biosafety Program;
4. Provide advice on the safe use of biohazardous agents and materials under the control of the ASET Department;
5. Provide advice and make itself available to the BSO(s) for issues regarding any biohazardous agents/materials, procedures, protocols or events. And respond to biosafety issues that require immediate consultation;
6. Review reports of all inspections, incidents, unusual occurrences and relevant materials presented by the BSOs. Make any recommendations deemed appropriate based on the information supplied in these reports;
7. Review all audits and reports regarding biosafety sent to the ASET Department by Federal, Provincial or Municipal authorities. Make any recommendations deemed appropriate based on the information supplied in these audits or reports;

8. Approve requests to commission/decommission laboratories in which biohazardous agents were or will be used.

The Chair, ASET Department is responsible for the following:

1. Develop policies and implement effective procedures for implementation of the CBS, CBH, PHAC, and CFIA standards and guidelines;
2. Ensure compliance with regulation for the use of, or exposure to, biohazardous materials;
3. Ensure that training sessions regarding biosafety and biohazards are completed by all lab users;
4. Conduct investigations of any incidents related to accidents, injury, and/or noncompliance related to biosafety;
5. Authorize purchase requests for biohazardous materials.

The BSO(s) is responsible for the day-to-day operations of the biosafety program including but not limited to the following:

1. Act as a liaison between Algonquin College and PHAC on regulatory issues. To assist the Chair, ASET in developing policies and implementing effective procedures for implementation of the CBS, CBH, PHAC, and CFIA standards and guidelines;
2. Monitor compliance by conducting risk assessments and internal inspections/audits;
3. Develop, oversee, and document biosafety-related training;
4. Notify the Chair, ASET (Licence Holder) and Manager, OHS of any lab acquired infections, inadvertent possession of human toxins, and pathogens not received as expected.
5. Inform the Licence Holder of any non-compliance by a person conducting activities under the licence;
6. Establish procedures for dealing with spills;
7. Keep abreast of legislation concerning biohazardous materials and advise the IBSC about potential impacts on the College;
8. Determine the containment requirements and list any safety concerns of materials before submitting purchase requests for biohazardous materials;
9. Assist the Chair, ASET in investigations of any incidents related to accidents, injury, and/or noncompliance related to biosafety;
10. Compile and provide any reports/documentation as required by the regulatory agencies;
11. Verify the accuracy and completeness of licence applications or renewals;
12. Work collaboratively with all management, faculty, staff, students, and external agents as it relates to the continual improvement of the Biosafety program.

Summary

Algonquin College's Biosafety Program consists of two constituent elements: (i) B*iosafety*, namely the containment principles, technologies, and operational practices to prevent unintentional exposure to pathogens or toxins, and (ii) *Biosecurity*, namely the security measures to mitigate loss, theft, or misuse of biohazardous materials. Sound management of the Biosafety Program necessarily requires participation of different organizational units and the implementation of the Biosafety Program is therefore a responsibility shared between those different organizational units.

The components of the Biosafety Program are outlined in detail in Algonquin College's Biosafety Manual. Guidance for the safe handling and storage of human and animal pathogens and toxins are found in the CBH and the CBS.

The IBSC is empowered to advise the Licence Holder on matters pertaining to Biosafety policy, procedure and any other measures relevant to the administration of the Biosafety Program at Algonquin College. Authority for this committee and its role is referenced in the ASET Department's Biosafety Manual. The IBSC is responsible for CL2 Biosafety and Biosecurity oversight of work conducted at Algonquin College in the ASET CL2 zones. The CL2 zones, consist of three interconnected teaching laboratories and various supporting preparatory and equipment rooms, plus a stand-alone lab space, that is owned by the ASET Department. The IBSC reports to the Risk Management Department through the Manager OHS and to the Senior Vice President-Academic through the Chair, ASET via the Dean, School of Advanced Technology. BSO(s) at Algonquin College work within the ASET Department and report to the Chair, ASET (Licence Holder). The BSO(s) also have a working relationship with the Manager, OHS, who is a Co-Chair of the IBSC. Additionally, the Manager, OHS is a member of the Joint Occupational Health and Safety Committee (JOHSC) at Algonquin College – Ottawa campus.

The ASET Department is responsible for administering Algonquin College's Biosafety Program. The Chair, ASET and the BSO(s) work together to ensure compliance. The Chair, ASET Department is responsible for ensuring Algonquin College's Biosafety Program is administered and all staff and students are trained to the CBS and PHAC standards. Based on this training, staff are held accountable for the health and safety of employees and students under their supervision. They will ensure that workers and students work in compliance with legislation and established safe work procedures. Regular review of the CL2 lab and procedures associated with its day-to-day operations is completed by the BSO(s) and other members of the IBSC, and results of these internal inspections are relayed to the IBSC and, if necessary, to the Risk Management Department for review and corrective actions.

Criteria 3: Establishment of a single point of contact to provide guidance on the Plan and a senior level 'champion' who can represent biosafety issues at a senior level on his/her behalf.

The BSO(s) acts as the single point of contact to provide guidance on the Biosafety Plan through contact with the Chair, ASET.

Mrs. Angela Raymond
Academic Technologist, Biosafety Officer
Telephone: 613-727-4723 Ext 6549
Email: raymona1@algonquincollege.com

Mr. Vernon Mussgnug
Academic Technologist, Biosafety Officer
Telephone: 613-727-4723 Ext 5906
Email: mussgnv@algonquincollege.com

The Co-Chairs of the IBSC communicate matters of biosafety and biosecurity to Senior Level Management through two mechanisms. The academic area reports to the Senior VP- Academic through Mr. Adam Shane, Chair, ASET Department. Mr. Mike Benkie reports to the Risk Management Department.

Mr. Adam Shane
Chair of Applied Science and Environmental Technology (ASET)
Algonquin College, Licence Holder , Co-Chair IBSC
Telephone: (613) 727- 4723 Ext 5400
Email: shanea@algonquincollege.com

Mr. Mike Benkie
Manager, Occupation Health Safety, Co-Chair IBSC
Telephone: 613-727-4723 Ext 7142
Email: benkiem@algonquincollege.com

Criteria 4: Overview of how biosafety and biosecurity risks, including those from research with dual- use potential, are identified at the institution/organization.

Overarching Risk Identification

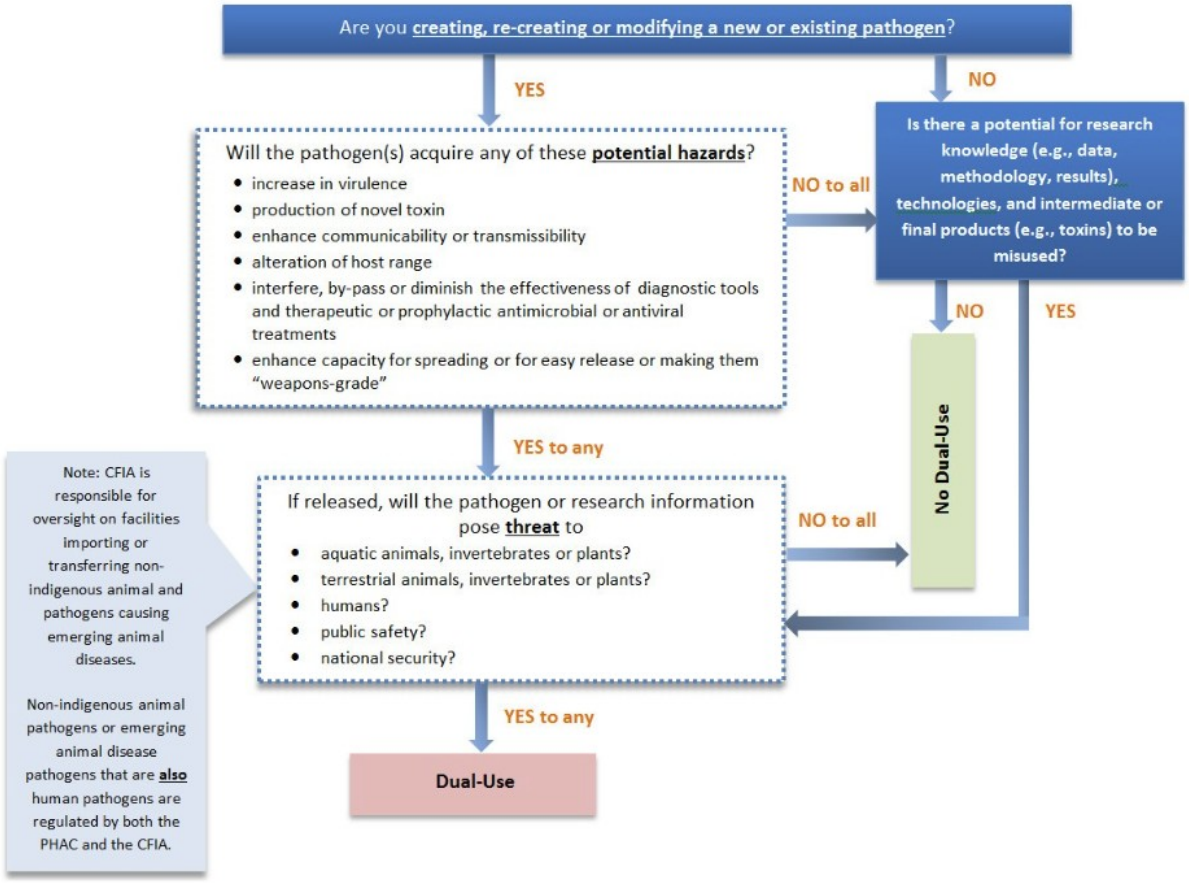
An Overarching Risk Assessment (ORA) is performed at the department level to identify the hazards and risk management programs needed for the safe use of biological materials and is completed by the Chair, ASET and BSO(s), drawing on the IBSC and local subject matter experts. The ORA identifies risk through pathogen risk assessment, local risk assessment (or lab activity risk assessment), and biosecurity risk assessment. It is reviewed and updated as the ASET Department adds new laboratory teaching programs or as existing programs are significantly changed.

Local Risk Identification to support Biosafety and Biosecurity

Local risk assessment (LRA) or Lab Activity Risk Assessment is an all-hazards approach to identifying chemical, biological and physical hazards as well as biosecurity risks. The Chair, ASET, the BSO(s), faculty, and students all share in identifying operational risks in the CL2 zones. These risks are identified during the setup, operation, and clean up of lab activities. Lab activities are continually modified and updated to limit risk.

Faculty and/or principal investigators submit lab activity protocols and requests for reagents and biological organisms to the BSO(s). The BSO(s) use the *Lab Activity Risk Assessment Tool* (found in Appendix 8 of the Biosafety Manual) to identify all the hazards present and their associated risk mitigation strategies. As part of the Lab Activity Risk Assessment, the potential for dual-use is identified. Dual-use activities are prohibited in ASET. Dual-use potential is identified by following PHAC's Decision Tree for the Identification of Dual-Use Potential in Life Sciences Research.

Decision Tree: Identification of Dual-Use Potential in Life Sciences Research



https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/licensing-program/plan-administrative-oversight-pathogens-toxins-a-research-setting-required-elements-guidance.html

Before a laboratory activity or protocol is used for work with biohazardous materials, it must be submitted to the BSO(s) for review. The BSO(s) then undertake a complete risk assessment of the project proposal including assessing the possibility of aerosols and other dangers. The Lab Activity Risk Assessment for each lab protocol is reviewed and updated as faculty create new laboratory teaching activities or as existing activities are significantly changed.

Once the BSO(s) have reviewed the laboratory activity or protocol, it is either returned to the faculty and/or principal investigator for modifications or it is authorized (by signature) by the BSO(s), thus indicating that the laboratory activity or protocol is authorized for use by the ASET Department. In cases where the BSO(s) are unsure, a recommendation is made to the Chair, ASET who will conduct a risk assessment review and has final authority.

In general, a local risk assessment will:

- Identify the Risk Group of the microorganism (or tissue that might contain this microorganism) Note: consult the BSO(s) who can access the PHAC ePATHogen database of over 8000 agents to which they have assigned a risk group;

- Describe the potential hazard associated with the microorganism, including symptoms of disease (which it is important for all lab members to know so that they will be aware of any potential lab acquired infection so that it can be diagnosed and treated appropriately);
- Describe what is being done with the material and where;
- Consider the procedures' potential for generating aerosols that might contain and spread infectious agents;
- Indicate whether or not sharps will be used and the precautions associated with them;
- Describe the overall risk mitigation strategy and details of this strategy including:
    a. Physical containment (i.e. lab design) can be indicated by stating which containment level, 1 or 2, laboratories will be used for the different types of work
    b. Operational requirements
        - Containment equipment and supplies required e.g. Biological Safety Cabinet (BSC), centrifuge cups with aerosol resistant lids containing o-rings, closed, screw-capped tubes
        - Note: Aerosol generating procedures with unfixed biological agents which need to be conducted in a BSC include but are not limited to sonication and homogenization. If the production of significant Risk Group 2 aerosols is unavoidable, then aerosols must be contained by using equipment such as a BSC.
    c. Identify standard personal protective equipment (PPE)
    d. Describe what is to be worn and for which procedures and materials if there are additional PPE requirements
    e. Decontamination and disposal methods
    f. Medical surveillance (e.g. immunization, titre checks, first aid and medical response to accidental exposure)
    g. Training needs

PHAC has developed a biological agent search tool: ePATHogen. It contains a searchable list of biological agents with their associated human and animal risk group classifications, as well as the associated containment level (CL), Security Sensitive Biological Agent (SSBA) status, regulatory authority, and containment considerations. A list of regulated toxins is also included. If a biological agent of interest is not listed in ePATHogen, a pathogen risk assessment will need to be conducted to determine the human and animal risk group classifications. Consult the online Canadian biosafety guideline Pathogen Risk Assessment which describes this process. Furthermore, consult the pathogen risk assessment page to download an editable template.

A department-authorized laboratory protocol will include the following components:

- Risk assessment completion box with date and assessor's name;
- Detailed description of the laboratory activity;
- A reagent table that includes Safety Data Sheet (SDS) and Pathogen Safety Data Sheet (PSDS) information, PPE, waste disposal and engineering controls to reduce risk;
- A reagent request form (RRF) that includes individual and total quantities of chemicals and biohazardous material; the RRF also includes information on which equipment is to be used.

It is expected that all authorized faculty, staff, and/or students conducting laboratory work must read and follow these department-authorized laboratory protocols.

Biosecurity Risk Assessment

The ASET Department has training and reporting mechanisms in place to promote, maintain, and reinforce the Biosecurity practices listed below.

Physical security:

- Provide electronic card access to Containment 1 and 2 laboratories to authorized individuals only;
- Do not copy keys or give keys/electronic security devices to unauthorized individuals;
- Lock laboratory doors when the lab is not occupied;
- Challenge anyone unfamiliar who is unaccompanied in the areas that do not have public access; if not comfortable challenging them then report to Campus Security at x5000 and the BSO(s) as well as the Chair, ASET;
- Do not give biohazardous material to anyone who is not an authorized;
- Transfer of biohazardous material from one internal lab to another of **equivalent** Containment level is permitted following proper procedure
- Transfer of RG2 pathogens to a Containment level 1 lab is prohibited
- Loss or theft of biohazardous material (or other material from laboratories) is to be reported immediately to the BSO(s) and the Chair, ASET.

Infectious Material and Toxin Accountability:

- Algonquin College shall not approve the use of biohazardous materials that are classified as greater than Risk Group 2 (RG2), nor materials that require use in greater than CL2 laboratories. All biological material must undergo a risk assessment and any special biosecurity requirements shall be identified during the risk assessment;
- Any organisms with dual-use potential are not authorized for use at Algonquin College;
- Maintain an inventory tracking system so that missing material is readily identified;
- Report any loss/theft of biohazardous material to the BSO(s) and the Chair,ASET;
- Complete an annual audit of inventory and file this documentation in a central electronic database that is under the management of the ASET Department.

Incident and emergency response:

- Report incidents, including missing infectious material/toxins or signs of forced entry, to the Chair, ASET and BSO(s) for a follow-up investigation.

Personnel suitability and reliability:

- Ensure that individuals have the appropriate training, experience, competency and personality traits to carry out the work.

Lab user responsibilities:

- Lock laboratory doors when the lab is not occupied;
- Challenge anyone unfamiliar who is unaccompanied in the areas that do not have public access; if not comfortable challenging them then report to Campus Security at x5000 and the BSO(s) as well as the Chair, ASET;
- Do not give biohazardous material to anyone who is not an authorized;
- Transfer of biohazardous material from one internal lab to another of **equivalent** Containment level is permitted following proper procedure
- Transfer of RG2 pathogens to a Containment level 1 lab is prohibited
- Loss or theft of biohazardous material (or other material from laboratories) is to be reported immediately to the BSO(s) and the Chair, ASET;
- Report any loss/theft of biohazardous material to the BSO(s) and the Chair, ASET;

BSO responsibilities:

- Lock laboratory doors when the lab is not occupied;
- Challenge anyone unfamiliar who is unaccompanied in the areas that do not have public access; if not comfortable challenging them then report to Campus Security at x5000 and BSO(s) as well as the Chair, ASET;
- Do not give biohazardous material to anyone who is not an authorized;
- Transfer of biohazardous material from one internal lab to another of **equivalent** Containment level is permitted following proper procedure
- Transfer of RG2 pathogens to a Containment level 1 lab is prohibited
- Transfer of RG2 biohazardous material to an external lab may be done with prior confirmation of the external lab's licencing status and approval by both institutes' BSOs; subject to proper Transportation of Dangerous Goods packaging and documentation
- Do not approve the use of biohazardous materials that are classified as greater than RG2 and requiring greater than CL2;
- Perform a risk assessment on all laboratory activities before their delivery in the CL2 labs and identify any special biosecurity requirements during the risk assessment;
- Do not authorize any organisms with dual-use potential for use at Algonquin College;
- Maintain an inventory tracking system so that missing material is readily identified;
- Complete an annual audit of inventory and file this documentation in a central electronic database that is under the management of the ASET Department;
- Report any loss/theft of biohazardous material to the Chair, ASET;
- Report incidents, including missing infectious material/toxins or signs of forced entry, to the Chair, ASET.

Chair, ASET (Licence Holder) responsibilities:

- Grant electronic card access to Containment (1 and 2) labs to authorized individuals only;
- Do not copy keys or give keys/electronic security devices to unauthorized individuals;
- Maintain facility requirements including self-locking doors and posting any required door signage (eg. biohazardous sign, containment level, contact information)
- Maintain electronic records of who has authorized access to the CL2 zone at all times and store this information in a central repository managed by the ASET Department;
- Maintain electronic records of who has accessed the CL2 zones using department-authorized e-access cards;
- Do not approve the use of biohazardous materials that are classified as greater than RG2 and requiring greater than CL2;
- Do not authorize any organisms with dual-use potential for use at Algonquin College;
- Ensure that individuals have the appropriate training, experience, competency and personality traits to carry out the work;
- Perform a follow-up investigation regarding any reported biosecurity incidents in the CL2 zone and apply corrective action(s) pertaining to any biosecurity nonconformities.
- Maintain electronic records of who has accessed the CL2 zones using department-authorized e-access cards;

Criteria 5: Overview of how biosafety and biosecurity risks, including those from research with dual- use potential, are assessed once they have been identified at an institutional/organizational level.

Risks identified by the ORA are assessed for the severity of consequences and the probability of occurrence. The Chair, ASET and the BSO(s), in consultation with the IBSC whenever necessary, assess risks using SDS, PSDS, guidelines, legislation and best practices. The ORA is reviewed regularly and updated as the ASET Department adds new laboratory teaching programs or as existing programs are significantly changed.

Local Risk Assessments

All hazards (chemical, biological, physical) identified by LRA, or Lab Activity Risk Assessment, are assessed for the severity of consequences and the probability of occurrence. The Lab Activity Risk Assessment Tool, used by the BSO(s), assesses the hazards present in a planned lab activity and the associated risk minimization strategies. As part of the Lab Activity Risk Assessment, the potential for dual-use is assessed. Dual-use activities are prohibited in ASET. The Lab Activity Risk Assessment is reviewed and updated as faculty create new laboratory teaching activities or as existing activities are significantly changed.

The Chair, ASET, the BSO(s), and faculty all share in assessing daily operational risks in the three CL2 teaching labs within the CL2 zones. Identified risks are assessed using the Biosafety Manual, SDS, PSDS, guidelines, legislation and best practices. All parties work collaboratively to ensure that risk minimization strategies are in place and lab activities are continually modified and updated to limit risk.

All laboratory activities and research projects must undergo a risk assessment prior to the commencement of any laboratory work. Faculty, principal investigators, and/or students conducting applied research projects must first indicate all biosafety concerns to the BSO(s) in a documented format.

During the LRA the BSO will consider:

- The biohazardous nature of the materials and their appropriate containment measures and controls
- Any Safety Standards and Procedures, lab manuals, lab activities or research manipulations. No dual-use of biohazardous materials will be approved;
- Assessment of safety and biosafety; and
- If special security measures are required.

A LRA will:

- Identify the RG of the microorganism (or tissue that might contain this microorganism) Note: consult the BSO(s) who can access the PHAC ePATHogen database of over 8000 agents to which they have assigned a RG;
- Describe the potential hazard associated with the microorganism, including symptoms of disease (which it is important for all lab members to know in order to identify any potential lab acquired infection so that it can be diagnosed and treated appropriately);
- Describe what is being done with the material and where;
- Consider the procedures' potential for generating aerosols that might contain and spread infectious agents;
- Indicate whether or not sharps will be used and the precautions associated with them;
- Describe the overall risk mitigation strategy and details of this strategy including:
    h. Physical containment (i.e. lab design) can be indicated by stating which containment level, 1 or 2, laboratories will be used for the different types of work
    i. Operational requirements
        - Containment equipment and supplies required e.g. BSC, centrifuge cups with aerosol resistant lids containing o-rings, closed, screw-capped tubes
        - Note: Aerosol generating procedures with unfixed biological agents which need to be conducted in a BSC include but are not limited to sonication and homogenization. If the production of significant RG2 aerosols is unavoidable, then aerosols must be contained by using equipment such as a BSC.
    j. Appropriate PPE
    k. Describe what is to be worn and for which procedures and materials if there are different PPE requirements
    l. Decontamination and disposal methods
    m. Medical surveillance (e.g. immunization, titre checks, first aid and medical response to accidental exposure)
    n. Training needs

Safety standards for work with RG2 materials are reviewed by the BSO(s) as part of the risk assessment process. These safety standards, found in the Biosafety Manual, are approved by the BSO(s) and Chair, ASET. After approval, these assessed protocols must be made available to everyone conducting the procedures outlined in the lab protocol; all lab workers must demonstrate knowledge of the safety standards before commencing work.

Laboratory course manuals (i.e. teaching activities completed during regularly scheduled student lab courses) are first assessed by the faculty member who is developing the materials. Then, the course manuals are assessed by the BSO(s) for biosafety risks. Once the BSO and/or Chair, ASET issue their approval, an activity only needs to be risk assessed if there is a change to the activity. All research projects undergo initial and continual review.

The Chair, ASET works in conjunction with the BSO(s), members of the IBSC, in conducting biosecurity risk assessments. This often involves reference checks, administrative controls, engineering controls, and internal inspections/audits.

Overarching Risk Assessment: its review involves the IBSC and the Risk Management Department.

Local Risk Assessments: Research projects must undergo a risk assessment prior to the commencement of any laboratory work. Ongoing research projects are reviewed weekly and/or monthly by the BSO(s) and the principal investigator.

Biosecurity Risk Assessments: reviewed regularly by the BSO(s) as part of the Lab Activity Risk Assessment. The Biosecurity Plan is reviewed annually by the Chair, ASET and the IBSC.

Criteria 6: Overview of how biosafety and biosecurity risks, including those from research with dual- use potential, are managed and controlled at an institutional/organizational level.

Biosafety and Biosecurity

Should any staff or student identify biosafety or biosecurity risks, they must contact the Chair, ASET and BSO(s). The Chair, ASET and BSO(s) work closely and meet regularly to evaluate the efficacy of controls. Controls include all of the following:

Administrative Controls:

- Biosafety Manual
- IBSC Terms of Reference
- Hazardous Waste Program
- Risk assessed laboratory activities for staff and students
- Training
- Safety standards, Procedures, and Protocols
- Inventory control
- Personnel Suitability and Reliability: Access is granted to authorized personnel only, all laboratory staff must undergo laboratory safety training, and students/visitors must be supervised.
- Incident and Emergency Response: Accident Reporting and Investigation procedures (Policy HS05), Fire Safety and Emergency Evacuation procedures (Policy HS06)

Engineering Controls

- BSCs
- Fumehoods
- Autoclaves
- Black Core electronic access doors
- Negative pressure space (inward directional airflow)
- -80°C freezer with locking mechanism

Personal Protective Equipment

Described in the Biosafety Manual and specifically outlined in the reagent table in each lab activity (standard PPE includes Eye/Foot/Head/Skin Protection).

The Biosafety Manual, which outlines the standards that are acceptable for working with biohazardous material, outlines the control mechanisms established as part of ASET's Biosafety Program. This document is updated as changes occur or when requirements are added.

Members of the IBSC monitor the continued use of approved containment practices and the maintenance of the facility during routine inspections. The frequency of inspections is determined by the Co-Chairs of the IBSC and relates to the level of risk. An internal audit procedure and inspection checklist can be found in *Appendix 9 of the Biosafety Manual*. Results of the internal inspections are provided to the Chair, ASET for review and corrective actions. Egregious deficiencies are reported to the IBSC for discussion and recommendations and the ASET Department is responsible for follow up with corrective actions until these deficiencies are resolved. Unaddressed or repeat deficiencies are reported to, and reviewed by, the IBSC and, if deemed necessary based on level of risk, reported to the Risk Management Department for review. Recommendations to withdraw biohazard approval for egregious nonconforming lab activities is communicated by the IBSC to the Risk Management Department where

necessary.

Accident Reporting and Investigation

As per Algonquin's Incident Reporting procedures, members of the College Community are required to report all injuries, occupational disease, and near-misses to their manager through an online incident reporting form. Biosafety-related injuries and near-misses include confirmed or suspected laboratory acquired infections/intoxications, exposure to infectious material or toxins, and containment system failure that may have resulted in exposure to biohazardous material.

Injury reports assist Algonquin in determining the root cause(s), identifying corrective actions, and in developing measures for preventing recurrence. Reporting of near-miss events allows the Chair, ASET and Manager, OHS to investigate in order to prevent future injuries. Injury and Near-Miss Reports involving biohazardous materials are reviewed by the BSO(s) and IBSC, investigated, and reported to the appropriate government agencies including PHAC and/or CFIA, if required.

Managers and Supervisors shall:

1. Provide first aid/medical treatment as required;
2. Complete the Accident/Incident Report form with the employee and/or student;

The Accident/Incident Report is directed to the supervisor (Chair, ASET) and to OHS on submission. Faculty, staff, researchers and volunteers must undergo laboratory safety training which includes detailed biosafety training and testing. Students are also given training but must be supervised when working in the ASET labs.

Criteria 7: Description of all work areas covered by the Plan (research areas, teaching, off-sites, etc.).

The PAO covers the CL2 zones, consisting of three teaching laboratories, interconnected with various supporting preparatory and equipment rooms, and a stand-alone CL2 lab space, in the A building of the Ottawa campus. Identification of the room numbers that make up the CL1 labs and the CL2 zone is maintained by the ASET Department as a secured document in consideration of Biosecurity. Biohazardous materials are only used in the areas listed, and at their appropriate level of containment. **No off-site locations are authorized for work involving RG 2 pathogens.** If new work areas are introduced, the PAO will be reviewed by the IBSC (see Element 10) and updated accordingly.

Criteria 8: Description of all individuals covered by the Plan (researchers, faculty, students, etc.).

All individuals trained to work in the laboratory, including faculty, staff, students, researchers and volunteers are covered by the Plan. Faculty, staff, researchers and volunteers must undergo laboratory safety training which includes detailed biosafety training and testing. Students are also given training but must be supervised when working in the ASET labs. Visitors must also be supervised when working in the ASET labs.

Criteria 9: Summary of how the Plan is communicated.

Summary of how the Plan is communicated:

- Yearly training and at point-of-hire
- Biosafety Manual
- Biosafety Website
- IBSC meetings (generally twice per year)
- Biohazard sign, Contact Information, and Visitor Policy posted on the entrance doors of the laboratories (so that Visitors are also aware)
- Weekly lab meetings between Chair, ASET and BSO(s) and Lab Technologists

Criteria 10: Overview of the procedures to review and monitor the Plan.

At a minimum, the Biosafety Program (comprised of the IBSC and its terms of reference, the PAO, and the Biosafety Manual) will be reviewed yearly by the IBSC and is then followed up by consultation with full-time faculty and staff. The outcomes are communicated to senior level management by the Co-Chairs of the IBSC. The Biosafety Program (comprised of the IBSC and its terms of reference, the ORA, the PAO, and the Biosafety Manual) is under continual review for improvements and addition of new elements that can contribute to the overall compliance. This includes, but is not limited to, any changes in regulations, additions of new work areas, trends in non-compliance and reviews of accidents/incidents.