Security Considerations for Biological Substances

Biosecurity refers to security measures designed to prevent the loss, theft, misuse, diversion, or intentional release of biological substances including: pathogens, toxins, human specimens, animal specimens, cell lines, plant pathogens and transgenic organisms. These measures include access control, inventory and emergency procedures commensurate with the risk level determined by risk assessment.

UBC's Administrative Oversight Plan filed with the Public Health Agency of Canada commits UBC members to a 2-tier biosecurity plan. The first tier is a high level risk assessment performed by the Biosafety Committee in conjunction with the Biosafety Office. The second tier this a local biosecurity plan developed by UBC Permit Holders, potentially in collaboration with their local safety team.

Risk Assessment Process – UBC Biosafety Permit Process

The high level assessment is performed by the Biosafety Committee based on the information provided in the UBC permit process (on RISe). This includes the substances/organisms/toxins being used, the condition of the facility, and the security measures in the building where work is being done. This information is then used to review the security measures in specific areas, re-assess the requirements for the local biosecurity plan and established reporting mechanisms.

Elements of a Local Biosecurity Plan

This is the site specific plan submitted as part of the biosafety permit application process. At minimum, the plans must include a description of the physical security measures, inventory management practices and emergency response procedures for missing substances. Higher risk projects assessed as having Dual Use Potential require more additional measures with respect to information management and personal trustworthiness.

Physical Security – Access Control

Physical security combines facility design and operational practices designed to contain biological substances and limit access to authorized personnel. The physical design measures include physical delineation of containment zone, key card access systems, door locks and freezer locks and location.

Accountability Procedures - Lab Level Inventory

While UBC Biosafety Permits report on inventory contents and location, laboratory level inventory management is a more detailed tracking of substances classified as Risk Group 2 or higher. This system must track, at minimum, a description of the pathogen or toxin that includes:

- The pathogen (Genus & species) or toxin name
- Risk group

- Storage location
- Any substances stored outside of the containment zone
- Inventory tracking sheets for toxins.
- Risk group 3 pathogen inventory must also include:
- Specific identification of Genus, species, strain, subtype & batch number
- A means to allow for the identification of a missing or stolen sample in a timely manner, i.e.:
- Number of vials
- Quantity per vial

Biological substances en route must also be accounted for and failures to arrive reported. The shipment of biological substances considered to be infectious or potentially infectious is globally regulated. All shipments sent to or from UBC must conform these standards, as outlined in the IATA Dangerous Goods Regulations.

Incident & Emergency Response

Emergency response plans must include a reporting plan detailing a procedure for authorized users to follow in the case of samples determined to be missing from inventory or a planned shipment does not arrive as expected. It is prudent for reporting procedures to include consultation with all lab members to ensure a sample is not misplaced and notification of the permit holder prior to reporting to the Biosafety Office (604 822 4353) or Committee (604 827 5111). The Biosafety Advisor, Biosafety Permit Holder and the Subcommittee will confer on next steps, including reporting to law enforcement and federal authorities.

Information Management & Security

The protection of information should be consistent with the level of risk posed by the material in question. Access to records and documentation pertaining to clinical specimens, risk group 3 pathogens, security sensitive toxins or research with dual use potential must be restricted to authorized personnel only.

Personal Suitability & Reliability

All candidates for study team membership should be screened to ensure they have an appropriate combination of credentials, experience and training needed to do their assigned role safely and competently. The Canadian Biosafety Standard stipulates that each authorized user undergo an initial training needs assessment with annual review with an aim to ensure this level of competency. Where higher risk, security sensitive substances or projects are involved, additional security or background checks may be required.