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Section: Laboratory Safety Manual	Subject Title: Biological Safety	
Issued by: LABORATORY MANAGER	Original Date: April 20, 2001	
Approved by: Laboratory Director	Revision Date: October 22, 2003	

Policy:

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

Purpose:

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

Responsibility:

Management and personnel

Key Elements:

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

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

Biosafety Level	Practices and Techniques	Safety Equipment	Facilities
1	Standard microbiological practices	None: primary containment provided by adherence to standard laboratory practices during open bench operations.	Basic
2	Level 1 practices plus: Laboratory coats; decontamination of all infectious wastes; limited access; protective gloves and biohazard warning signs as indicated.	Partial containment equipment (i.e., Class I or II Biological Safety Cabinets) used to conduct mechanical manipulative procedures that have high aerosol potential that may increase the risk of exposure to personnel.	Basic
3	Level 2 practices plus: Special laboratory clothing; controlled access.	Partial containment equipment used for all manipulations of infectious material.	Containment
4	Level 3 practices plus: Entrance through change room where street clothing is removed and laboratory clothing is put on; shower on exit; all wastes are decontaminated on exit from the facility.	Maximum containment equipment (i.e. Class III biological safety cabinet or partial containment equipment in combination with full-body, air-supplied, positive-pressure personnel suit) used for all procedures and activities	Maximum Containment

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Related Documents:

GOOD LABORATORY PRACTICE - SUMMARY	MI\LS\05\01
PERSONAL PROTECTIVE EQUIPMENT	MI\LS\33\v01
BODY SUBSTANCE PRECAUTIONS	MI\LS\06\v01

Procedure :

1. All specimens are to be in solid, leak resistant containers contained in a secondary container (plastic bag) that is securely closed. The plastic bag should have a pouch for the requisition.
2. Do not use dry ice, freezer pads etc. used for transportation of specimens for any other purpose as they are potentially contaminated.
3. Perform procedures that have the potential to generate aerosols or droplets in a biological safety cabinet or behind a protective shield. Keep biological safety cabinets clear of clutter.
4. Consider all quality control materials as potentially infectious.
5. **Keyboards and telephones in non-laboratory areas are designated as clean** and should not generally be accessible to individuals handling specimens or engaged in laboratory work. In the event that such a worker needs to use these keyboards or telephone, they must remove their gloves and wash their hands before doing so.

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

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

For keyboards and telephones designated as contaminated (all in-lab keyboards and telephones used by staff handling biohazardous material with gloves) are to be used only with gloves.

- Cover keyboards with appropriate protective covers (skins).
- Decontaminate protective covers after gross contamination (visible or known contamination) or at least weekly with an appropriate disinfectant.
- Change gloves that have been grossly contaminated with body products.
- Service personnel must use gloves prior to use of such keyboards

Wash your hands thoroughly upon leaving the laboratory.

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

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6. Do not operate centrifuges in a biological safety cabinet since the motor may produce strong air currents and turbulence which may disrupt the laminar air flow.
7. Use only centrifuges with safety buckets. Use the safety buckets in the correct manner.
8. Perform vortexing using sealed tubes or secondary containers in an open laboratory. Do not use Parafilm as a primary closure.
9. Procedures for cleaning, disinfection and sterilization of laboratory equipment, supplies, and environmental surfaces are available.
10. Clean and disinfect equipment (water baths, test tube racks, etc.) at least once a month or after contamination with any biological material.
11. Clean and disinfect the exterior of the pipetting devices with an appropriate disinfectant if it becomes contaminated with specimen. If the pipettor is contaminated internally, the entire unit must be disassembled and decontaminated.
12. Clean and disinfect any equipment to be repaired **prior to** repair.
13. When using a syringe for inoculating bottles, do not hold the bottle by hand when puncturing the top and do not force blood or any body substance into the bottle.