



Laboratory Biosafety

Laboratory biosafety includes the practices and procedures used to handle:

- infectious specimens – e.g. wound swabs



- cultures of organisms - agar plates containing bacterial pathogens



- potentially infectious waste e.g. sharps



Why is Laboratory Biosafety Important?

- to prevent laboratory acquired infections and/or contamination of the environment.
- to prevent unauthorized access to infectious materials.
- to protect the lives of employees, patients and visitors
- to protect laboratory equipment and facilities.

Neglecting laboratory safety is very costly. Secondary effects of a laboratory accident are:

- loss of reputation
- loss of customers / loss of income
- negative effect on staff retention
- increased costs—litigation, insurance

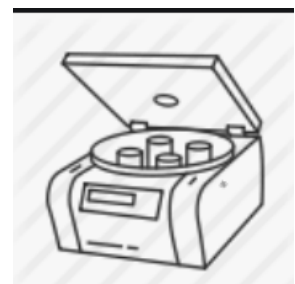
Who needs to manage biosafety?

Biosafety is the business of every laboratory staff member- staff need to know how to practice safely and consistently comply with this. Staff should be alert to potential safety risks and notify these as soon as possible to the laboratory manager and/or the laboratory biosafety manager.

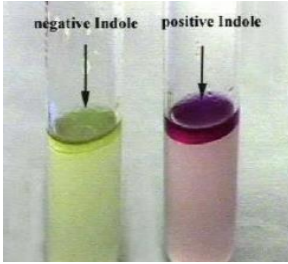
The Laboratory Manager has a primary responsibility to ensure that the laboratory is set up and operates in a safe manner.

The Biosafety Officer identifies and investigates all laboratory hazards which may impact on employee and visitor safety. These include:

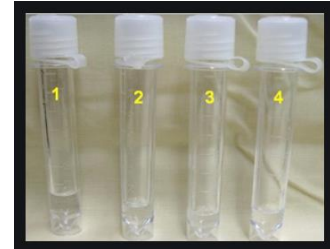
- Physical hazards - laboratory equipment e.g. Centrifuges and Biosafety Cabinets



- Biological hazards - bacterial cultures and patient specimens. e.g. *Neisseria meningitidis* and CSF samples



- Chemical hazards - reagents used in testing procedures e.g. Sodium hydroxide and Kovacs Indole reagent.



How should each laboratory improve biosafety?

- Perform a risk assessment of all potential hazards
- Develop written safety policies and procedures to manage the hazards
- Orientate/train all staff in standard safe laboratory practices
- Investigate and report laboratory accidents
- Perform regular safety audits and report findings to hospital and laboratory management
- Laboratory and hospital management takes timely action to address outstanding hazards

What can be done to help keep the employees and visitors safe?

- Provide fire extinguishers, hand wash and eye wash stations.
- Provide a facilities for washing and drying hands
- Provide and mandate use of Personal Protective Equipment e.g. gloves, gowns, goggles
- Perform certain hazardous tasks in Biosafety Cabinet Class II to protect workers
- Manage waste storage and disposal safely e.g. autoclave cultures/samples, provide sharps containers
- Only allow laboratory entry via secure access to laboratory employees
- Provide a dedicated tearoom, fridge, and facilities outside laboratory for staff use and prevent consumption of food within the laboratory areas
- Store chemicals correctly in chemical storage cupboards
- Provide and maintain adequate First Aid and Spills kits
- Develop and support a policy for routine staff vaccination against relevant pathogens, especially hepatitis B.
- Educate staff on risks, signs and symptoms of laboratory-acquired infections and the need to notify suspected infections to management

References

- WHO Laboratory Quality System stepwise tool: Start organising the biosafety <https://extranet.who.int/lqsi/activities/1/22>
- WHO Laboratory Quality System handbook <https://www.who.int/ihr/publications/lqms/en/>
- Fleming Fund Biosafety Officer Role Description G_10_LQM_Ap_26_A