GENERAL INSTRUCTIONS, EQUIPMENTS AND LABORATORY SETUP OF MICROBIOLOGY LABORATORY

In this course, microorganisms isolated from infected animals and humans are handled. Certain rules and regulations are necessary to avoid the possibility of zoonotic infection.

Any disregard to these rules or exhibits carelessness endangers the health of students handling/working in the laboratory.

Following rules are outlined for the safety of laboratory worker/students handling the microorganisms in the laboratory.

1. **Microbiological procedures:**
   a. Reporting all spills and broken glasswares to laboratory technician.
   b. Minimizing production of aerosols.
   c. Washing hands prior to and following laboratories and at any time contamination is suspected .
   d. Never eat or drink in the laboratory.
   e. Disinfecting lab benches prior to and at the conclusion of each lab session
   f. Identification and proper disposal of different types of waste
   g. Never applying cosmetics, including contact lenses, or placing objects (fingers, pencils) in the mouth or touching the face.
   h. Reading and signing a laboratory safety agreement indicating that the student has read and understands the safety rules of the laboratory.
   i. Good lab practice, including returning materials to proper locations, proper care and handling of equipment, and keeping the bench top clear of extraneous materials.

2. Protective procedures: including a. tying long hair back, wearing personal protective equipment (eye protection, coats, closed shoes; glasses may be preferred to contact lenses), and using such equipment in appropriate situations b. always using appropriate pipetting devices and understanding that mouth pipetting is forbidden.

3. Emergency procedures: including
   a. Locating and properly using emergency equipment (eye-wash stations, first-aid kits, fire extinguishers, chemical safety showers, telephones, and emergency numbers).
   b. Reporting all injuries immediately to the instructor following proper steps in the event of an emergency.

In addition, institutions where microbiology laboratories are taught will
1.train faculty and staff in proper waste stream management
2.provide and maintain necessary safety equipment and information resources
3. train faculty, staff, and students in the use of safety equipment and procedures
4.train faculty and staff in the use of MSDS. The Workplace Hazardous Materials Information System (WHMIS) requires that all hazardous substances, including microorganisms, be

labelled in a specific manner. In addition, there must be a Material Safety Data Sheet (MSDS) available to accompany each hazardous substance. MSDS sheets are now supplied with every chemical sold by supply houses. The person in charge of the microbiology laboratory should ensure that adherence to this law is enforced.

All laboratory work can be done more effectively and efficiently if the subject matter is understood before coming to the laboratory. To accomplish this, read the experiment several times before the laboratory begins.

Know how each exercise is to be done and what principle it is intended to convey. Also, read the appropriate sections in your textbook that pertain to the experiment being performed, this will save you much time and effort during the actual laboratory period. All laboratory experiments will begin with a brief discussion by your instructor of what is to be done, the location of the materials, and other important information.

Feel free to ask questions if you do not understand the instructor or the principle involved.

Much of the work in the laboratory is designed to be carried out in groups or with a partner. This is to aid in coverage of subject matter, to save time and expense, and to encourage discussion of data and results.

I have read the above rules and understand their meaning

_____

Signature

_____

Date

GENERAL PRECAUTIONSANDLABORATORYSAFETY PROCEDURES

General precautions

1. All health-care workers should routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids of any patient is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

2. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

3. All health-care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal.

4. Health-care workers who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment.

5. The following procedure should be used to clean up spills of blood or blood-containing fluids:

(1) Put on gloves and any other necessary barriers.

(2) Wipe up excess material with disposable towels and place the towels in a container for sterilization.

(3) Disinfect the area with either a commercial or approved germicide or household bleach (sodium hypochlorite). The latter should be diluted from 1:100 (smooth surfaces) to 1:10 (porous or dirty surfaces); the dilution should be no more than 24 hours old. When dealing with large spills or those containing sharp objects such as broken glass, first cover the spill with disposable toweling. Then saturate the toweling with commercial germicide or a 1:10 bleach solution and allow it to stand for at least 10 minutes. Finally clean as described above.

Precautions for laboratories

Blood and other body fluids from clinical cases should be considered infective.

1. All specimens of blood and body fluids should be put in a well-constructed container with a secure lid to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and of the laboratory form accompanying the specimen.

2. All persons processing blood and body-fluid specimens should wear gloves. Masks and protective eyewear should be worn if mucous membrane contact with blood or body fluids is anticipated. Gloves should be changed and hands washed after completion of specimen processing.

3. For routine procedures, such as histologic and pathologic studies or microbiologic culturing, a biological safety cabinet is not necessary. However, biological safety cabinets should be used whenever procedures are conducted that have a high potential for generating droplets. These include activities such as blending, sonicating & vigorous mixing.

4. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.

5. Use of needles and syringes should be limited to situations in which there is no alternative, and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.

6. Laboratory work surfaces should be decontaminated with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed.

7. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional policies for disposal of infective waste.

8. Scientific equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer.

9. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

10. There should be no eating, drinking, or smoking in the work area.

Exercise:

1. Enlist the equipments available in your laboratory along with its technical use.

2. What is GLP & GMP ?

3. Write the difference between Laminar Flow & Biosafety Cabinet, along with neat labelled diagram of air flow.

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