

# LABORATORY SAFETY

## MANUAL

### SECTION I:

#### GENERAL SAFETY REQUIREMENTS

Safety in the laboratory requires every student's participation and cooperation. Noncompliance with safety precautions not only endangers the individual, but also compromises the health and safety of fellow students.

**I. Student Responsibilities-** Each student's responsibilities include:

- Complying with all safety policies and procedures;
- Maintaining awareness of the risks associated with assigned duties;
- Taking all necessary and appropriate safety precautions relevant to performance of duties;
- Becoming familiar with emergency procedures prior to accidental spills, overt personal exposures, fire,
- Reporting unsafe conditions or practices to the Instructor;
- Reporting all incidents resulting in injury or exposure to hazardous agents to the Instructor.

The following rules and procedures apply to Turtle Mountain Clinical Training Laboratory

#### A. Personal

1. **Hand washing-** is the most important single precaution to prevent the spread of infections. Hands should be washed with soap and water, if visibility soiled, or waterless hand cleaner after: completing a task removing gloves immediately upon accidental contact with contaminated materials.

Protective hand cream may be applied in the laboratory in the designated hand washing area.

## **B. Dress Code**

1. The use of a long sleeved laboratory coat (buttoned closed) or a back closed gown is required when working with patient specimens.
  - a. **Clothing** worn by laboratory students/Instructors should be clean, neat and in good repair.
  - b. **Clothing** worn by laboratory students/instructors should provide protection to the skin in the event of a chemical splash or spill. (OSHA laboratory standards (29CFR1910.1450 App. A) state that "Personnel(Instructors/students) should not wear loose (e.g. saris, dangling neckties, and over large or ragged laboratory coats), skimpy (e.g. shorts, strapless, cropped or halter tops) or torn clothing... Short trousers or miniskirts are inappropriate laboratory attire because laboratory coats open in the front when a person sits thereby exposing the legs above the knees to potential spills.
2. **Personal Protective Equipment (PPE)** such as fluid resistant gowns, gloves, goggles, face masks, face shields should be available and are required when there is significant probability that potentially hazardous substances may be splashed on the worker.
3. **Shoes** should be fluid impermeable material, leather or synthetic, and should cover the entire foot. Shoes with open toes are not unacceptable. Because cloth shoes will absorb chemicals or infectious fluids, they are not recommended.

## **C. Specific precautions when working in the laboratory:**

1. Food and beverages must not be stored in refrigerators, freezers, or other areas where biological materials are present. The laboratory area will designate those places where food and beverages may be stored, and identify them with appropriate signs

2. Eating, drinking, or chewing gum are not permitted in laboratories where biological materials are handled and work is performed. The laboratory shall designate areas where eating, and drinking are permitted.
3. Application of cosmetics and handling of contact lens will follow the guidelines for eating and drinking.
4. Long hair must be tied back when working near open flames or mechanical equipment, where there is a possibility of entanglement, and when working with specimens.
5. Always use protective equipment that is provided for working with hazardous materials. Be familiar with the location and operation of eye washers, the location of fire extinguishers and other safety equipment.
6. No mouth pipetting. Mouth pipetting is prohibited.
7. Laboratory personnel will assure that only visitors or maintenance personnel who have been advised of the potential biohazards and have been warned to avoid touching any working surfaces will be allowed through the laboratory.
8. Smoking. The Turtle Mountain Allied Health Building is smoke-free. There are no designated smoking areas within the building.
9. Students are offered appropriate immunizations or test for agents handled in laboratory (ex. TB skin test annually, Hepatitis B vaccine)

#### **D. Disposal of biological materials and expendable supplies**

1. Unless there is evidence of contamination with blood, urine may be disposed through the sewage system. Use caution to prevent splatter. The empty container must be disposed in red bag lined trash containers or may be autoclaved.
2. Those specimens contaminated with blood should be disposed of in red biohazard bags or placed in buckets lined with biohazard bags to be incinerated.
3. Other body fluid, solid, and semi-solid waste including laboratory supplies (e.g. microbiological cultures) and urine should be placed in containers or buckets lined

with biohazard bags, and sent to your designated area to be incinerated prior to disposal. The fill level must be below the rim of the container.

4. All specimens received in the designated area must be incinerated prior to disposal.

5. Specimen transport bags bearing the biohazard sign and gloves should be discarded in red bag trash.

6. Trash and paper, in the laboratory is also to be placed in biohazard bags.

7. Only Red biohazard and autoclave bags are to be used in the laboratory areas.

### **E. Safe handling of Needles**

Most needle sticks can be prevented by "safety awareness" on the part of the user. The Needle sticks can be prevented if the approved containers are used properly and with caution.

1. Recommendations for safe handling of needles and other sharps

a. Needles containing safety devices, when available, are always to be applied after use when (ex. butterfly, protective needles and syringes).

b. Needles and other sharps are never to be discarded directly into the trash.

c. Needles and other sharps must not be unattended (i.e. on furniture, trays, equipment or in beds and linen).

d. Needles are not to be clipped or bent. Destructoclips and similar devices are not to be used.

e. Needles are never to be recapped by hand.

f. Employees must never reach into any container used for disposal of contaminated sharps.

### **F. Sharps Disposal**

Items considered sharps are: needles, syringes, slides, glass pipettes, glass capillary tubes, scalpels and knives.

## **SECTION II:**

### **STANDARD PRECAUTIONS**

## **PRECAUTIONS**

Standard Precautions expands the coverage of Universal Precautions by recognizing that any body fluid may contain contagious microorganisms

### **A. Nature of the risks**

1. **HEPATITIS:** Most cases of laboratory associated hepatitis are caused by one of the following agents: Viral hepatitis, Hepatitis B virus (HBV) and Hepatitis C which accounts for most of the transfusion-associated Hepatitis cases seen in the USA. Laboratory acquired Hepatitis is now recognized as a major occupational hazard to laboratory workers handling biological materials.

2. **AIDS:** The etiology of Acquired Immunodeficiency Syndrome (AIDS) is a retrovirus called Human Immunodeficiency Virus (HIV). Transmission occurs from infected persons through direct intimate contact involving mucosal surfaces, such as sexual contact or through parenteral spread such as shared needles and syringes. Airborne transmission and spread through casual contact has not been documented.

### **B. General safety requirements**

All precautions listed under Section I of this manual will apply to standard precautions.

### **C. Standard Precautions Principle**

Since medical history and examination cannot reliably identify all patients with blood-borne pathogens, all body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens. Standard Precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in the hospital. Standard precautions apply to blood and body fluids, secretions, excretions and all tissues. Standard precautions do not apply to sweat.

### **D. Exposure categories**

1. **Category I:** Tasks that involve exposure to blood, body fluids, or tissues. All procedures or other job-related tasks that involve an inherent potential for mucous membrane or skin contact with blood, body fluids, or tissues, or a potential for

spills or splashes of them, are Category I tasks. Use of appropriate protective measures should be required for every employee engaged in Category I tasks.

2. Category II: Tasks that involve no exposure to blood, body fluids, or tissues, but employment may require performing unplanned Category I tasks. The normal work routine involves no exposure to blood, body fluids, or tissues, but exposure or potential exposure may be required as a condition of employment.

### **E. Standard precautions barrier protection.**

Standard precautions include general safety precautions plus:

1. Gloves will be worn when
  - a. Handling blood, tissues, body fluids or items contaminated with blood or body fluids including specimen containers, laboratory instruments, counter tops, etc.
  - b. Performing venipuncture, changing gloves and washing hands between each patient.
  - c. Student's hands are abraded or active dermatitis is present.
2. Gloves will be replaced as soon as possible when contaminated, before touching non-contaminated items or surfaces.
3. Always wash hands with soap and water, for at least 15 seconds, following the removal of gloves or use an alcohol based hand rub solution.
4. To protect the mucus membranes, masks and eye protection, face shields splashguards or safety cabinets must be used if splashing or spraying of blood or body fluid is anticipated.
5. All lab coats, gloves, and other personal protective equipment must be removed prior to leaving the work area.

6. Soiled gloves, masks and other disposable personal protective equipment will be discarded into red bag-lined receptacles after use.