

Microbiology Laboratory Safety Guide

1). Objectives

Students successfully completing this laboratory training should be able to:

1. Locate and properly use basic emergency equipment such as eye wash stations, first aid kits, fire extinguishers, a telephone, etc.
2. Wear proper attire for the microbiology lab at all times.
3. Wash hands prior to and following laboratories and at any time contamination is suspected.
4. **Never eat or drink in the laboratory. EVER.**
5. **Never** apply cosmetics, handle contact lenses, place objects (fingers, pencils, etc.) in the mouth, or touch the face.
6. Report all injuries immediately to the instructor.
7. Report all spills or broken glassware to the instructor and receive instructions for clean-up.
8. Disinfect the lab benches prior to and after laboratory exercises.
9. Keep lab benches clear of extraneous materials.
10. Follow appropriate steps in the event of an accident.

2). Introduction

Laboratory safety is critically important in the microbiology lab because we will be working with a number of potentially pathogenic organisms, Biosafety (BSL) 1 and 2 organisms, and toxic chemicals. BSL 1 organisms are defined as organisms that are not consistently known to cause disease in healthy individuals. BSL2 organisms are defined as organisms that are associated with human disease via percutaneous injury, ingestion and mucous membrane exposure. While none of the organisms or chemicals utilized in this laboratory is excessively pathogenic or toxic, any of these might cause problems if handled incorrectly or inappropriately. Therefore, proper lab procedures must be followed at all times. The purpose of this guide is to familiarize you with some basic aspects of lab safety and the facilities found in the laboratory.

3). Safety Procedures

A). Overriding Principles

Please treat every culture used in the microbiology lab as a potential pathogen and every chemical utilized as a hazardous chemical. Follow all safety procedures so that we can ensure that no student or instructor becomes infected by any microorganisms or harmed by any chemical used in this class.

B). Safety Equipment

Identify and know the location of the following safety equipment in the lab:

- The nearest safety shower and eye-wash station (figure 1)
- The nearest fire extinguisher/fire pull (figure 2)
- The nearest fire blanket
- The nearest fire alarm pull station (figure 2)
- The first aid kit (figure 3)
- The lab bench disinfectant
- The nearest emergency phone (located on the wall in each lab)
- The evacuation route



Figure 1: Safety shower/eye wash combination located in the front of every classroom.

(A)



(B)



Figure 2: (A) Fire pull and fire extinguisher. Note: If you pull the fire alarm due to an emergency you must also call 911 to make sure the fire department has been alerted. (B) First Aid Kit located at the front of every classroom.

C). Important Phone Numbers

Please know the following important phone numbers:

- Police, Fire, Ambulance: 911 (emergency number)
- Campus Sheriff: (831) 479-6313 (non-emergency number)

4). Proper Attire

Please wear proper clothing for the microbiology lab at all times. Proper clothing consists of:

- **Closed toe shoes** that protect the feet from falling cultures, chemical spills, or dropped glassware.
- **Absolutely** no sandals or other footwear that leave toes exposed.
- Clothing **without loose sleeves or scarves** that may droop into cultures, burners, or onto the lab benches. No exposed bellies, either!
- Please **tie back all long hair** to prevent it from falling into burners or cultures.
- Remove gloves **BEFORE** leaving the lab.
- Purchase a lab coat which will protect your clothing from stains and exposure to microorganisms. Lab coats stay housed in the microbiology lab.
- Goggles

5). Hand Washing

Students must wash their hands with disinfectant soap **prior to beginning** the laboratory and **upon completion** of the laboratory exercises. **Always keep hands away from your mouth, eyes, nose, and face during the laboratory period. Keep all objects away from your face, mouth, or eyes during the microbiology lab. DO NOT APPLY MAKE-UP WHILE IN THE LAB!**

6). Food and Drink in the Microbiology Lab

There should be **absolutely no food, drink or open food containers** in the microbiology lab (figure 3). **This includes chewing gum.** If you need a short break, carefully wash your hands, remove the lab coat and leave the laboratory.



Figure 3: Biohazard signs posted in Labs dealing with hazardous chemicals or microorganisms. **Absolutely no eating or drinking at any time.**

7). Bunsen Burners and Gas Jets

When using the Bunsen burners it is important to remember basic safety rules:

- **Keep long hair tied back out of the way.**
- Secure any loose clothing.
- Turn burner off when not in use. The lab gets very hot when all the burners are going at once, so please turn off unnecessary burners.
- **Turn gas jets completely off when not in use.**

8). Spills and Exposure

Proper technique for microbial spills involves:

1. Do not try to catch dropped culture tubes or dishes before they hit the ground. This puts your face right down into the spray of droplets from the contaminated materials.
2. **Do not touch the spill.**
3. Flood the spill area and any contaminated materials with disinfectant and cover with paper towel.
4. Let stand for at least 15 minutes.
5. Alert your instructor to ensure proper disposal.

For all injuries including **ALL** cuts (no matter how minor) and burns alert your instructor immediately. For simple exposure to cultures, please wash the infected area immediately and carefully with disinfectant soap.

9). Broken Glass or Other Sharps

Do not touch broken glass or sharps with your hands. Use the broom and dustpan to collect the sharp materials and discard them in the appropriate container (the broken glass disposal container or the red sharps container for sharps that have been contaminated with blood/cultures). (Figure 4)

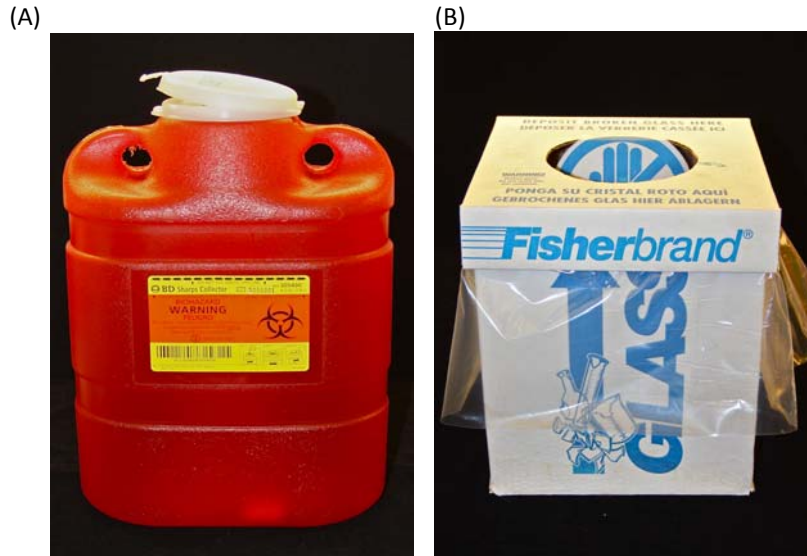


Figure 4: (A) Biohazard sharps disposal: any broken glass contaminated with blood or bacterial cultures. (B) Broken glass disposal: any broken glass NOT contaminated with blood or bacterial cultures disposed of in here. Paper products or gloves should NOT be disposed of in either container.

10). Culture Handling and Materials Disposal

All cultures must be disposed of in the red Biohazard labeled bags and Biohazard disposal can (figure 6). Chemical waste including stain waste must also be disposed of in the proper collection container (figure 7). You will be further instructed in all proper laboratory and disposal procedures and will be expected to know and follow those procedures.



Figure 5 : (A) Dispose of culture tubes and plates in small red biohazard bag bags , secure bags then dispose of them in the larger biohazard container (B).

11). Health Issues

If you are pregnant or immune compromised please contact your instructor so that a few additional appropriate safety measures can be taken. Also talk to you health care provider and provide them with a list of organisms that you will be working with.

12). Laboratory Work

Before beginning any laboratory exercise you should:

- Carefully read all instructions noting all safety procedures for the laboratory exercises assigned for the given laboratory period;
- Store all unnecessary personal items in the cubbyholes in the laboratory;
- Wash your hands with disinfectant soap
- Wipe down the lab bench with disinfectant
- Only have materials required for the exercise on the lab bench.

At the end of each laboratory period you should:

- Place all cultures in the proper incubators or racks
- Dispose of all materials as required by the instructor
- Check to see that all Bunsen burners are off and the gas valve is completely closed.
- Wipe the lab bench with disinfectant (figure 8)
- Carefully wash your hands with disinfectant soap.



Figure 7: Lab disinfectant.

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MICROBIOLOGY LABORATORY SAFETY AGREEMENT

Course # _____

I, (Print name) _____

(ID #) _____

I WILL ADHERE TO THE FOLLOWING RULES:

1). COMPLY WITH THE DRESS CODE ESTABLISHED BY THE CABRILLO COLLEGE BIOLOGY DEPARTMENT AND EXPLAINED BY THE INSTRUCTOR.

2). WEAR PROTECTIVE CLOTHING (GOGGLES, GLOVES, LABCOATS, CLOSE TOED SHOES) AT ALL TIMES WHEN WORKING IN THE MICROBIOLOGY LAB.

3). **NOT EAT ANY FOOD, CHEW GUM, SMOKE, OR DRINK ANY BEVERAGE IN THE LABORATORY.**

4). DISPOSE OF WASTE IN THE MANNER PRESCRIBED BY THE INSTRUCTOR.

5). REPORT ANY AND ALL ACCIDENTS TO THE INSTRUCTOR IMMEDIATELY.

6). WORK IN A SAFE MANNER AND LEAVE A NEAT AND CLEAN STATION FOR THE NEXT STUDENT.

7). **NOT BRING VISITORS (ANY PERSON NOT REGISTERED IN THE COURSE) INTO THE LABORATORY.**

I UNDERSTAND THE CONSEQUENCES OF NOT FOLLOWING ANY OF THE ABOVE RULES MAY RESULT IN A ZERO GRADE FOR THE GIVEN EXERCISE. MULTIPLE VIOLATIONS WILL RESULT IN DISMISSAL FROM THE LABORATORY CLASS FOR THE SEMESTER.

Sign and return this laboratory safety agreement to the instructor.

STUDENT SIGNATURE _____ DATE _____