



MLS STUDENT SAFETY HANDBOOK

22nd Edition

Revised 8/2024; 11/2024

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INTRODUCTION

Purpose

A variety of hazards exist in the student laboratories at Andrews University. The risks associated with these hazards can be significantly reduced or eliminated if proper precautions and practices are observed in the laboratory. The Occupational Safety and Health Administration (OSHA) has established rules regulating chemical and biological safety in the workplace and the laboratory. While these OSHA rules are applied explicitly to employees, the Department of Medical Laboratory Sciences (MLS) at Andrews University is vitally concerned with the safety of the students in its laboratories. To manage, prevent, and minimize, to the fullest extent practical, all risks to students' and instructors' health, safety, and well-being, the MLS Department has developed this Student Safety Handbook.

This Student Safety Handbook is intended to be the underlying foundation of the department's safety program. It applies to all laboratories under the supervision of the MLS Department. It is designed to aid faculty, staff, and students in maintaining a safe teaching environment, conducting research, and learning.

The safety of these laboratories resides with the responsible person in charge of a given laboratory, typically the instructor. However, safety is everyone's concern. Remember that no job should be considered so vital that it cannot be done safely.

The material in this handbook primarily summarizes two OSHA rules: the Chemical Hygiene Plan and the Exposure Control Plan.

The Chemical Hygiene Plan deals with chemical safety, mainly using and handling hazardous chemicals. The Exposure Control Plan deals with biological material that may be potentially infectious. Both of these plans refer to *employees*; however, because the safety of students is essential, any student who participates in laboratory activities in the MLS Department must adhere to the safety principles stated within this handbook. Other safety issues, such as mechanical, electrical, and fire, are also discussed in this handbook.

Objectives

This Student Safety Handbook intends to aid in creating a safe teaching and learning environment for MLS students and faculty by:

1. Implementing a hazard communication program.
2. Involving instructors and students in maintaining safety rules and safe working procedures.
3. Educating all students and instructors.
4. Posting all necessary data to comply with state, federal, and local laws.
5. Promptly report and investigate all accidents, injuries, or incidents that could lead to injuries or damage.
6. Conducting an ongoing safety training program for all students and faculty.
7. Establish procedures and training for hazard exposure and medical and fire emergencies.

DRESSING & BEHAVING FOR SUCCESS

At Andrews University

For both male and female students, the dress style must reflect principles of modesty, appropriateness, and professionalism rather than current fashion trends. During the Fall and Spring Semesters, MLS students must dress according to the Andrews University Dress Code while attending classes on campus.

Remember simplicity, taste, function, and appropriateness when deciding what to wear. Items such as short shorts/skirts, "spaghetti" straps, tight clothing, low cut, strapless or midriff blouses, and extremes in cosmetics are unacceptable for the Andrews University student. The student must wear clothing that covers the legs but not dragging the floor. The student must wear shoes that cover the whole foot. Shoes cannot be made of canvas. Shorts and open-toe shoes are not allowed in student laboratories. All students must wear knee-length laboratory coats with long sleeves while attending laboratory sessions.

The use of jewelry is discouraged. Jewelry is prohibited, particularly dangling-type earrings, ankle or wrist bands, necklaces, hand jewelry that will pierce the glove, or any other accessory that may interfere with the student's work or compromise safety.

Long hair (longer than shoulder length) must be tied back so that it will not come in contact with contaminated material. This rule also applies to any other type of head covering, such as scarves or hijabs.

Headphones and audio devices are not permitted in labs that require handling clinical specimens or biohazardous materials. In the event of "dry labs" or labs without clinical materials or biohazardous materials, headphones or earbuds may be allowed at the instructor's discretion, provided that one ear remains unobstructed for hearing or noise-canceling is not used. The student must request permission to use any electronic device in the laboratory space.

Students who disregard safety and dress codes will be asked to leave the class or laboratory session. Persistent dress and safety violations will be documented and noted in the student's citizenship file. Continued disregard for the dress code may jeopardize continuance in the MLS Program and at Andrews University.

During Clinical Practicums

Healthcare workers must take particular care of their appearance. No one cares to be around someone who looks or smells objectionable. Patients who are ill or anxious are even more susceptible to their environment; therefore, Medical Laboratory Scientists must be careful not to offend patients' sensitivities. Cleanliness is required, but any fragrances, whether from cologne, perfume, or perfumed/scented soaps or lotions, are strongly discouraged.

Clinical affiliates' dress codes generally follow the same standards Andrews University requires. In addition to the styles of clothing already mentioned above as inappropriate, blue jeans are not allowed. During clinical practica, students must conform to the institution's dress code to which they are assigned. An excellent rule is to consult with the clinical site's education coordinator before reporting for duty.

Personal Protective Equipment

Personal protective equipment in appropriate sizes is readily available to students. All personal protective equipment is assigned based on the task assessment, which does not allow blood or other potentially infectious materials to pass through to or otherwise reach the student's work clothes (e.g., scrubs), street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the time that the protective equipment is used. In addition to the information below, refer to the Personal Protective Equipment policy (Appendix A, p. 27).

GLOVES: Students are required to wear disposable, single-use gloves when they have the potential for direct skin contact with blood and other potentially infectious materials; also, when a student has nonintact skin (such as cuts and/or abrasions) when touching or handling contaminated items or surfaces.

Gloves are removed inside out aseptically and are replaced as soon as possible when visibly soiled, torn, punctured, or any time their ability to function as a barrier is compromised. They are not washed in disinfectant for reuse. The MLS Department provides hypoallergenic gloves (e.g., Nitrile gloves) to all students enrolled in an MLS course with a laboratory component. Note: Students with contact dermatitis caused by gloves may find protective skin creams (e.g., Derma Shield) helpful in preventing further irritation.

LAB COAT: Knee-length laboratory coats with long sleeves must be worn only in the laboratory area and closed (e.g., buttoned, snapped, etc.) to protect clothing. Head covering such as scarves or hijabs should be tucked inside the lab coat so they do not come in contact with contaminated material. Laboratory coats are worn only in the work area and never outside the laboratory (e.g., cafeteria, halls, dormitory, classroom, or restrooms). The MLS department provides one laboratory coat per student. A replacement lab coat may be purchased from the MLS Department Office. Students must replace their lab coats when compromised and no longer provide adequate protection.

Typically, Clinical Year students receive a cloth lab coat, which will be laundered, when necessary, by a designated individual in the MLS Department. Students are not allowed to remove any lab coats from the lab without permission.

Disposable laboratory coats must be removed and placed in a zip-lock plastic bag for storage before leaving the laboratory area. Cloth laboratory coats must be hung in designated areas.

APRONS: Aprons are worn in addition to the laboratory coat when the laboratory coat cannot provide adequate protection (e.g., during pregnancy) or when fluid contamination is likely (e.g., apheresis). Aprons are not substitutes for laboratory coats but serve as additional protection.

EYE PROTECTION: Eye protection may be required while in the laboratory. Eyewear and/or portable deck-top plastic shields are provided to prevent splashes, sprays, spatter, or droplets of blood or infectious materials if there is a potential for eye, nose, or mouth contamination. The student may also purchase protective eyewear, such as goggles. Eyewear should be appropriately cleaned before use and whenever splashes or contamination are visible. When not in use, protective eyewear should be decontaminated and put in an individual case in contamination-free storage.

MASKS/FACE SHIELDS: Disposable masks will be provided for use during laboratory activities per CDC recommendations and university guidelines for SARS-COV-2 safety.

**Note: This product is listed as an example only and should not be considered an endorsement by the author or the Department of Medical Laboratory Sciences. Other vendors offer similar products.*

PROFESSIONAL & SAFE LABORATORY BEHAVIOR

- No horse-play.
- No practical jokes.
- Only bring the papers and books necessary for the laboratory; put everything else in your locker. Refer to the Locker Use Policy (Appendix B, p. 30) for additional information.
- Limit conversation to the topic of the laboratory.
- Do not smell or taste chemicals.
- Do not eat, drink, chew gum, or suck on medicine or candy.
- Do not apply cosmetics (including lip balm).
- Do not manipulate contact lenses.

BIOLOGICAL SAFETY

Standard Operating Procedures

Because only some laboratory tasks are without potential exposure to infectious materials, general precautions for handling all such materials have been adopted to minimize exposure.

Universal precautions, also called Standard Precautions, are observed throughout the laboratory to prevent contact with blood and other potentially infectious materials. This means all body fluids are potentially infectious and must be handled to avoid infection. Therefore, the following rules must be followed:

1. Wash your hands immediately (or as soon as possible) after removing gloves or other personal protective equipment and after hand contact with blood or other potentially infectious materials.
2. Hands must be washed before eating, drinking, applying cosmetics, changing contact lenses, and after using lavatory facilities. Wearing gloves does not mean you do not have to wash your hands!
3. All visibly contaminated personal protective equipment must be removed immediately and placed in an appropriately designated area or container for storage, washing, decontamination, or disposal.
4. Used needles and other sharps must not be bent, broken, recapped, or re-sheathed by hand. Used needles are not removed from disposable syringes. Needles and sharps are disposed of in impervious disposable FDA-approved sharp containers. Once the puncture-resistant containers are full, they are sealed and disposed of in the dumpster. **They are not to be autoclaved! The MLS department treats items such as transfer pipets, applicator sticks, and pipette tips as sharps; however, these items differ from needles and are not disposed of in FDA-approved sharp containers but in milk jugs designated and labeled as sharp containers.**
5. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in the student laboratory work areas.
6. Food and drink are not to be stored in laboratory refrigerators, freezers, or cabinets or placed on shelves, countertops, bench tops, or in other areas of possible contamination.
7. All procedures involving blood or other potentially infectious materials are performed to minimize splashing, spraying, spattering, and generating droplets of these substances. For example, blood specimens must be opened using a gauze square, or equivalent, to minimize contamination of skin and clothing. Plastic shields or boxes are used to reduce splashing.
8. Specimens are centrifuged with the lid firmly latched to reduce the risk of infection by spattering. Do not open the centrifuge until the rotor has stopped.
9. Mechanical pipetting devices are used for all liquids. Mouth pipetting/suctioning is prohibited. Pipette tips are disposed of in biohazard containers. Needles are not used for sampling unless no alternative exists.
10. All patient specimens are kept in clean and dry containers with a secure lid. All specimens are transported in a secondary container (e.g., impervious plastic bag) that prevents leakage during handling, processing, storage, transport, or shipping. The container is labeled or color-coded appropriately. A puncture-resistant secondary container is used if the specimen could cause a puncture. If specimens are transported, the transport system and containers are disinfected properly each week or when visibly contaminated.
11. Unfixed or unstained slides are considered infectious and treated appropriately.
12. Laboratory surfaces are made of impervious materials to facilitate disinfection.
13. Only authorized personnel are allowed in the laboratory. Casual visitors (e.g., family members and friends) are only permitted in the lab with prior authorization. Nonlaboratory personnel like tour groups may only be allowed in the lab by appointment. They must wear all appropriate personal protective equipment and be under the direct supervision of a department faculty member.
14. Service and maintenance personnel are permitted to enter a biohazard area once the laboratory's safety requirements are reviewed, the instrument to be serviced is decontaminated, and appropriate personal protective equipment is issued and worn where indicated.
15. Each laboratory area further delineates standard operating procedures (SOPs). These include:

Phlebotomy

- Tourniquets used for phlebotomy are recommended for single-patient use and, after use, are disposed of, given high-level disinfection, or sterilized. Tourniquets students use on other students for instructional purposes may be reused if not visibly contaminated. If visibly contaminated, they may be reused after thorough cleaning (such as wiping with 95% isopropanol).
- Gloves are used during all phlebotomy procedures.
- Needle holders (e.g., Vacutainer®) for evacuated blood tubes may be reused unless visibly contaminated. If visibly contaminated, they may be reused after being given high-level disinfection and cleaning.

Hematology

- The sealant for hematocrit tubes is used once and not reformed for reuse.
- Sedimentation racks are decontaminated before and after use with dilute chlorine (10% bleach).
- Centrifuges are cleaned and decontaminated on schedule, and additionally, if a tube breaks or leaks in the centrifuge with dilute chlorine (10% bleach).
- Hemocytometers and their coverslips are cleaned with 70% alcohol after use.
- Stained microscope slides (e.g., using Wright's and new methylene blue) are not hazardous but should still be handled with universal precautions.
- When removing a cap from a tube of blood, eyes should be protected by glasses, safety glasses/goggles, or a clear shield. Mucous membranes should be protected, so closing your mouth at that time is also essential.
- All specimens are treated as if infectious.
- Faculty permission and supervision are required to use the Sysmex or other hematology instruments.

Microbiology

- *Mycobacterium* and mycology cultures are handled in Class II, Biosafety Level 3 Biological Safety Cabinet.
- All specimens are treated as infectious.
- All inoculations are performed under the biosafety hood.
- Microscope slides and any other sharps must be disposed of in designated sharps containers.

Chemistry

- Sample probes may deliver a fine spray of sample. Shields around the probe are recommended. The equipment is decontaminated at the end of each lab session with a 10% bleach solution.
- Waste from analyzers is considered contaminated and discarded as liquid waste flushed down the drain into the sanitary system, and solid waste is placed in marked plastic bags and autoclaved.
- Contaminated needles and other contaminated sharps are not recapped or removed except where no alternative is feasible, and the medical procedure requires it (e.g., blood gas analysis).
- When recapping is necessary, it is accomplished using a mechanical device or a one-handed (scoop) technique.

Blood Bank

- Blood unit tubing is placed in marked containers and autoclaved and discarded appropriately.
- Waste like test tubes must be discarded in designated disposal containers.

General Laboratory

- Test tube racks, reusable pipets, test tubes, and testing devices are cleaned, disinfected, and/or sterilized as needed before reuse.

Contaminated Waste Removal/Disposal

To assure that minimal harm to people, other organisms, and the environment will result from the disposal of laboratory waste, the waste disposal program, located in Plant Services, specifies how waste is to be collected, segregated, stored, and transported and includes consideration of what materials can be incinerated. All disposal is done in accordance with the Michigan Department of Natural Resources.

Laboratory instructors should seek guidance about waste disposal procedures.

Hepatitis B Vaccination

The Hepatitis B vaccination (HBV) series is required for all Medical Laboratory Science students, although the vaccination cannot guarantee immunity to the Hepatitis B disease. Documentation regarding vaccinations is required for a student to enter clinical practica. Any student who declines HBV vaccination must sign the statement found at the end of this handbook.

HBV antibody testing is available to a student, at the student's expense, who desires such testing before deciding whether to receive HBV vaccination. If the student is immune to HBV by virtue of adequate antibody titer, then HBV vaccination may not be necessary.

Exposure Incident

In the event of an exposure incident, an "Incident Report" form will be filled. A confidential medical evaluation and follow-up will be performed, including at least the following:

1. Documentation of the route(s) of exposure and the circumstances under which the exposure occurred.
2. Identification and documentation of the source individual are done unless identification is unfeasible or prohibited by state or local law.
3. The source individual's blood is tested as soon as possible and after obtaining consent to determine HBV and HIV infectivity. If consent is not obtained, documentation that legally required consent could not be obtained is needed. When the source individual's consent is not required by law, the source individual's blood, if available, is tested and the results documented.
4. When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status is not repeated.
5. Results of the source individual's testing are made available to the exposed student, and the student is informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
6. The exposed student's blood is collected as soon as feasible and tested after obtaining consent. If the student consents to baseline blood collection but does not give consent at that time for HIV serologic testing, the sample is preserved for at least 90 days. If, within 90 days of the exposure incident, the student elects to have the baseline sample tested, the testing is done as soon as feasible.
7. High-risk exposures involve the patient's blood or body fluids introduced through intact skin, splashed onto mucous membranes, or broken or abraded skin. Any student sustaining a high-risk exposure notifies their supervisor immediately. Emergency counseling and treatment are available at the University Medical Center. High-risk exposures from patients known to be HIV-positive or patients at risk of being HIV-positive are handled as emergencies. Medication (e.g., AZT) must be started within 4 hours of the exposure to prevent HIV infection effectively.
8. Follow-up of the exposed student, including antibody or antigen testing, counseling, illness reporting, and safe and effective post-exposure prophylaxis, is conducted according to standard recommendations for medical practice.

For each evaluation under this section, the student will receive a copy of the evaluating physician's written opinion via mail within 15 working days after completing the evaluation. The written opinion will be limited to the following information:

1. The physician's recommended limitations on the student's ability to receive Hepatitis B vaccination and/or HIV prophylaxis.
2. A statement that the student has been informed of the medical evaluation results and has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials that require further evaluation or treatment.
3. Specific findings or diagnoses that relate to the student's ability to receive HBV vaccination and/or HIV prophylaxis. Any other findings and diagnoses remain confidential and are not included in the written report.

Personal Injury Policy for Students on Clinical Assignments

Note: Each student is responsible for ensuring copies of the **University's Incident Report Forms** are included in the materials they take to the clinical site.

Procedure: If you (the student) are injured while practicing at an Andrews University off-campus clinical site, please use the following procedure:

1. **Seek medical treatment right away if:**
 - a. You have had contact with blood or body fluids to an open wound, to mucous membranes, or as an invasive exposure; or if
 - b. You have been injured; for example, a fall, sprain, over-stretch, fracture, etc.; or if
 - c. Your instructor asks you to seek medical evaluation/treatment, or if
 - d. You feel that medical evaluation/treatment is needed.
2. **Report the incident to your on-site supervisor.** Also, fill out the following:
 - a. Incident Report form required by your clinical site **AND**
 - b. Andrews University MLS Incident Report Form (See page 21).
3. **Report the incident to your on-campus instructor/coordinator.** Send them copies of each completed Incident Report Form listed in 2 a & b.
4. **Follow all instructions** from your on-site supervisor, on-campus instructor/coordinator, and medical care providers.

CHEMICAL SAFETY

Standard Operating Procedures

General Guidelines

Because few laboratory chemicals are without hazards, general precautions for handling all laboratory chemicals should be adopted, including minimizing exposure and assuming that any mixture of hazardous chemicals is more toxic than the most toxic component.

Please refer to the following procedures when working with chemicals.

Transportation of Chemicals

All hazardous chemicals must be transported, even for short distances, in a safe manner. Safe transportation of chemicals includes using safety containers and carts where appropriate.

Accidents and Chemical Spills

Eye contact: Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention.

Ingestion: Seek medical attention immediately. Encourage the victim to drink large amounts of water.

Skin contact: Promptly flush the affected area with water for at least 15 minutes and remove any contaminated clothing; use a safety shower when contact is extensive. If symptoms persist after washing, seek medical attention.

Clean-up: Promptly clean up spills, using appropriate protective apparel and equipment, and dispose of them properly.

Avoiding Unnecessary Exposure to Chemicals

1. Do not smell or taste chemicals. Apparatus that can discharge toxic chemicals (vacuum pumps, distillation columns, etc.) should be vented into local exhaust devices.
2. Use only those chemicals for which the quality of the available ventilation system is appropriate.
3. Avoid eating, drinking, smoking, chewing gum, or applying cosmetics or lip balm in areas with laboratory chemicals.
4. Avoid storing or handling food or beverages in storage areas, refrigerators, glassware, or utensils used for laboratory operations.
5. Handle and store laboratory glassware carefully to avoid damage; do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur.
6. Use equipment only for its designed purpose.
7. Wash areas of exposed skin thoroughly before leaving the laboratory.
8. Wash hands immediately after removing gloves.
9. Avoid practical jokes or other behavior that might confuse, startle, or distract another worker.
10. Do not use mouth suction for pipetting or starting a siphon.
11. Confine long hair and loose clothing.
12. Wear sturdy, closed-toe shoes at all times in the laboratory. Sandals, perforated shoes, sneakers, or any shoes made of canvas or cloth are unacceptable.
13. Legs should be covered; shorts are not allowed.
14. Lab coats are required in specified places and times as the instructor determines.
15. Keep the work area clean and uncluttered, with chemicals and equipment properly labeled and stored. Clean up the work area on completion of an operation or at the end of each day.
16. Ensure that appropriate eye protection, where specified, is worn by all persons, including visitors, in areas where chemicals are stored or handled.
17. Wear appropriate gloves when the potential for contact with toxic materials exists; inspect the gloves before each use, wash them before removal, and replace them periodically.
18. Use any other protective, emergency apparel and equipment as appropriate.
19. Avoid use of contact lenses in the laboratory. If they are used, inform the supervisor so special precautions can be taken. Goggles may need to be worn.
20. Remove laboratory coats immediately upon significant contamination.
21. Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.
22. Leave lights on, place an appropriate sign on the door, and provide for containment of toxic substances in the event of failure of a utility service (such as cooling water) in an unattended operation.
23. Use a hood for operations that might release toxic chemical vapors or dust. As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substance with a threshold limit value (TLV) of less than 50 ppm.
24. Confirm adequate hood performance before use by:
 - i. Keeping the hood closed at all times, except when adjustments within the hood are being made.
 - ii. Keeping materials stored in hoods to a minimum.
 - iii. Leaving the hood "on" when it is not in active use if toxic substances are stored in it or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is "off".
 - iv. Not allowing materials to block vents or airflow.
 - v. Being aware of unsafe conditions and see that they are corrected when detected.

Chemical Storage

Chemical storage in the MLS Department is kept as small as practical. Storage on bench tops and in hoods may cause potential exposure to fire and spills. Ventilated cabinets and refrigerators are used only for chemical storage. No food is permitted in these storage areas. Flammable liquids of more than four-liter volumes are stored in flammable storage cabinets with self-closing doors and proper ventilation according to National Fire Protection Agency (NFPA) standards. Safety cans with a spring-loaded spout are used for transporting flammable liquids of more than one liter whenever possible, and technical procedures allow.

If used, toxic chemicals, including carcinogens, are stored in unbreakable chemical-resistant secondary containers in ventilated storage areas. These containers are labeled "CAUTION: HIGH CHRONIC TOXICITY or CANCER-SUSPECT AGENT." The Safety Officer maintains a separate inventory list of carcinogens and suspected carcinogens according to federal and state regulations. **Note: The MLS department does not now use, nor anticipate future use of, known carcinogenic materials.**

Cylinders of compressed gases are strapped or chained to a wall or bench top and capped when not used. For transport, a stable cart is used with the cylinder strapped or chained to the cart. The MLS department chemicals have been segregated into the following categories:

1. Inorganic acids
2. Organic acids
3. Oxidizing acids
4. Inorganic bases
5. Flammable and combustible liquids
6. Gases
7. Oxidizers

There are three additional categories -- organic peroxides, reactives, and toxic and environmentally hazardous chemicals. The MLS Department does not currently have any substances in these categories. The segregated acids, bases, and oxidizers are stored in a corrosive cabinet in a secured stockroom. The flammable and combustible liquids are stored in a flammable cabinet in the secured stockroom.

Labels

Chemicals used in the department, not in their original containers, must be labeled. These workplace labels must contain the following:

1. Identity of the chemical
2. Health hazard
3. Physical hazard

Often, the hazards are indicated with the National Fire Protection Association (NFPA) four-color diamond. MLS students are taught how to interpret this label during the safety orientation. The following guide is for reference:

B = Blue, Health Hazard

- 0 = No unusual hazard
- 1 = CAUTION: May cause irritation
- 2 = WARNING: May be harmful if inhaled or absorbed
- 3 = WARNING: Corrosive or toxic. Avoid skin contact or inhalation.
- 4 = DANGER: May be fatal on short exposure.

R = Red, Fire Hazard

- 0 = Not combustible.
- 1 = CAUTION: Combustible if heated.
- 2 = CAUTION: Combustible liquid. Flash point of 100° to 200°F
- 3 = WARNING: Flammable liquid. Flash point below 100°F
- 4 = DANGER: Flammable gas or extremely flammable liquid

Y = Yellow, Instability Hazard

- 0 = Stable: Not reactive with water
- 1 = CAUTION: May react when mixed with water
- 2 = WARNING: Unstable or may react with water
- 3 = DANGER: May be explosive if shocked, heated under confinement, or mixed with water
- 4 = DANGER: Explosive material at room temperature

W = White, Special Hazard

This area notes any special hazards the material presents, such as corrosive, radioactive, etc.

In 2012, the Occupational Safety and Health Administration (OSHA) adopted the Global Harmonized System of Classification and Labelling of Chemicals (GHS). A notable difference between the NFPA and GHS classification systems is that the GHS uses a rating of 1 through 5 instead of the NFPA's 0 through 4. In addition, the GHS reverses the meanings of the ratings. For example, Under the GHS, "1" indicates a severe hazard, and "5" indicates a minimal hazard, whereas under the NFPA, "0" indicates a minimal hazard, and "4" indicates a severe hazard. Furthermore, shipping labels under the newly implemented GHS are more informative and contain six (6) mandatory elements. See Appendix G for a sample GHS-compliant label. For further information on the comparison between the GHS and NFPA, please see Appendix F (p. 34) of this document and visit <https://www.osha.gov/dsg/hazcom/ghoshacomparison.html#4>.

NFPA and GHS Numeric System Comparison

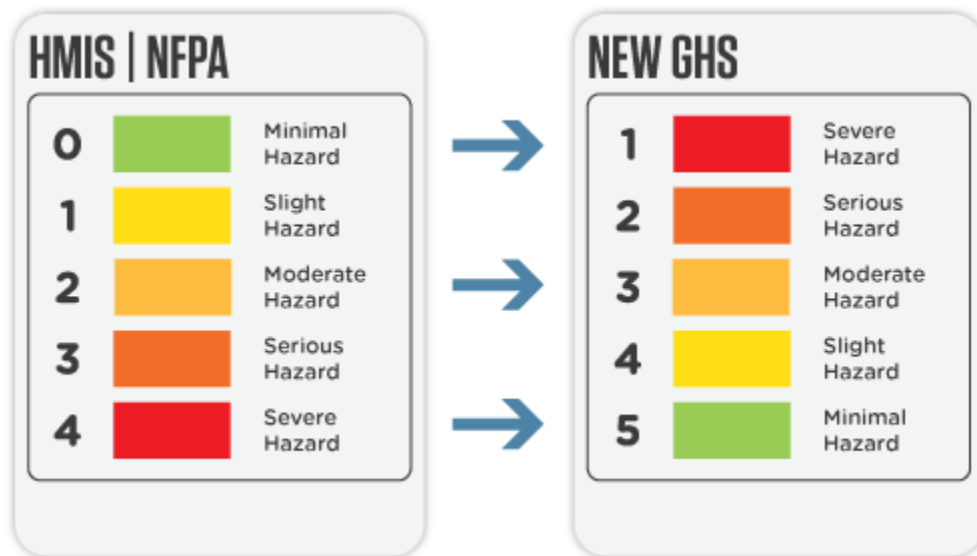


Image source: <http://blog.thecompliancecenter.com/hmis-and-nfpa-do-they-still-work/>

Safety Data Sheets (SDSs)

Safety Data Sheets are housed by the Andrews University Office of Campus Safety Compliance Department; however, the MLS department maintains binders containing the SDS for each chemical used in the MLS department. These two sets are located in Halez Hall 111 and Halez Hall 126 (MLS Student Labs HH111 and 126).

The chemical safety guidelines in 29CFR1910.1200 were revised in May 2012 to include the globally harmonizing system (GHS) for the worldwide uniform classification of chemicals.

The SDS document has a standard format of sixteen sections. The two sections most important for emergencies are Section 4: First Aid Measures and Section 6: Accidental Release Measures (spill measures).

In addition, the SDS will contain standardized pictograms depicting the hazards associated with the chemical. The pictograms and their hazard classes are:



GHS01 Explosive



GHS04 Compressed Gas



GHS07 Harmful



GHS02 Flammable



GHS05 Corrosive



GHS08 Health Hazard



GHS03 Oxidizing



GHS06 Toxic



GHS09 Environmental Hazard

Engineering Controls

Each laboratory has several devices to help provide a safe working area. Instructions are part of the safety orientation for each laboratory. They are:

1. Biohazard Hoods - used to contain microorganisms.
2. Fume Hoods - used to vent toxic and noxious fumes outside the lab.
3. Eyewash Fountains
4. Safety Showers - used to wash off chemicals that have come in contact with a person.
5. Fire Extinguishers
6. Chemical Storage and Ventilation - Ventilated storage cabinets for chemicals are provided as needed and have a separate exhaust duct. These cabinets are located in Halenz Hall, stockroom 331. Small quantities of frequently used chemicals are stored in cabinets located in HH111-B.

Personal Protective Equipment

Students must wear gloves when there is a potential for direct skin contact with blood, other body fluids, hazardous chemicals, and infectious materials.

Lab coats are to be worn only in the laboratory area and are to be buttoned to protect the student's clothing. MLS students receive one disposable lab coat per semester. Additional lab coats may be purchased from the MLS Department Office.

When chemical splashes are possible (e.g., specimen staining, glassware washing), an impervious apron appropriate for the task is worn.

Masks, eyewear, or protection shields are used to prevent splashes or sprays of blood, infectious materials, or hazardous chemicals if there is a potential for eye, nose, or mouth contamination.

The Department of Medical Laboratory Sciences does not perform any tasks that require the use of respirators.

Contaminated Waste Removal/Disposal

All disposal is done in accordance with the Michigan Department of Natural Resources. Certain chemicals are permissible for drain disposal. In each laboratory period, the instructor will provide instructions on how to dispose of waste. Do not dispose of any chemical or other material without specific instructions.

Indiscriminate disposal of chemical wastes by pouring **them** down the drain or adding them to mixed refuse for landfill burial is unacceptable. Hoods are not to be used to dispose of volatile chemicals. Disposal by recycling or by chemical decontamination is used when possible.

Chemical Spills

Chemical spills are contained using the "Think C.L.E.A.N." plan:

- * **C**ontain the spill.
- * **L**ease the area.
- * **E**mergency: eye wash, shower, medical care.
- * **A**ccess SDS.
- * **N**otify a supervisor.

All spills are contained according to OSHA guidelines. Appropriate spill containment methods, such as spill kits, are used. The lab instructor will provide direction for cleaning up any spill.

FIRE SAFETY

Fire Safety

While the fire hazard in the student laboratories is slight, the student must be aware of the potential of fire and be prepared to take appropriate action.

In Case of Fire

1. Activate the nearest fire alarm pull station.
2. Evacuate the building and proceed to the designated assembly point.
3. Contact the fire department – Dial 911 and provide the street address, building, name, and room number where the fire is.

Types of fire extinguishers

A - Used for trash, wood, and paper.

B - Used for chemical fire.

C - Used for electrical fires.



GENERAL SAFETY

**SAFETY IS THE PREVENTION OF INJURY BY CONTROL OF THE ENVIRONMENT
AND THE USE OF PROPER WORK METHODS BY MATURE INDIVIDUALS**

Employee Training

At the time of hiring and annually thereafter, employees undergo a safety orientation by the department safety officer or designate. The orientation includes training in the following items:

- Use of personal protective equipment
- Biological, Chemical, Fire, and Electrical Safety
- Safety tours
- Use of Safety Equipment
- Employee Reporting Responsibilities
- Use of laboratory equipment
- Identification of places of refuge and possible escape routes in the event of a hostile threat

Training information is documented on the Employee Training Checklist (refer to Appendix E, p. 32), and this record is maintained by the department safety officer and kept on the employee's file. Additional Safety Resources are available from the Office of Campus Safety and can be accessed at

<https://www.andrews.edu/services/safety/resources/index.html>.

Safety Features of Student Laboratories

The MLS student Laboratories at HH111 and HH126 are equipped with eyewash stations, emergency showers, American National Standards Institute (ANSI) class B first aid kits, and fire extinguishers. Emergency exits from these areas are clearly marked. As part of the annual safety training for students and employees, each individual must identify the safety equipment locations and emergency exits on the laboratory blueprints. See Appendix C, MLS student Laboratory HH111, p. 30, and Appendix D, MLS student Laboratory HH126, p. 31.

Housekeeping

Do not place any sharp objects, such as broken glass or needles, in the waste baskets. All sharps go into designated sharp containers.

Keep decks and floors free from clutter. Books, bags, coats, etc., must be left outside the lab unless specifically needed in the lab.

Electrical

All electrical equipment used in the laboratory has been tested for electrical safety. If you notice any frayed or worn wires, report it to your instructor immediately. Do not use such equipment.

Student Health Status

Individuals with compromised or weakened immune systems, including pregnancy, are strongly discouraged from enrolling in clinical courses due to the increased risk when handling potentially infectious agents. While enrolled in this course, individuals who become compromised or develop a weakened immune system, including pregnancy, must notify the Program Director for Medical Laboratory Science and the course instructor.

SAFETY RELATED FORMS

See pages
18-21

Hepatitis B Vaccine Consent/Waiver

I understand,

- That my education or work responsibilities while at Andrews University may result in inadvertent exposure to the Hepatitis B virus.
- The potential health risks of Hepatitis B exposure and the methods available to decrease my risks of contracting the virus.
- That receiving the vaccine is strongly recommended by the Michigan Department of Health, <http://www.immunize.org/catg.d/p2110.pdf> and the Centers for Disease Control, <https://www.cdc.gov/hepatitis/hbv/hbvfaq.htm#vaccFAQ> for anyone at risk, and that declining the vaccine would result in a potentially fatal disease.
- That a small percentage of individuals who receive the vaccine may not acquire sufficient antibodies to protect them in the event of exposure to the Hepatitis B virus. Therefore, I understand that it may be possible to get Hepatitis B even after having received the vaccine.
- That up to 30% of people vaccinated experience some mild adverse reactions, most commonly, discomfort at the site of injections, fatigue, and malaise. There have been rare reports of more serious reactions for which a causal relationship has not been clearly established. (Find more information at: <https://apps.who.int/iris/bitstream/handle/10665/255841/WER9227.pdf;jsessionid=431E60181A07DE1C9F9615161197B9E8?sequence=1> under Safety section).
- That should I accept the vaccine, I must make the necessary arrangements through my physician.

After carefully reading the above information, please **check ALL that apply**:

- I have already received the Hepatitis B, a three-dose vaccine series in which the second injection will be given one month after the first injection, and the third and final injection will be administered six months after the first injection.
- I have already received the HEPLISAV-B® vaccine, a two-dose vaccine series consisting of HepB-CpG.
- I hereby DECLINE the vaccine and release Andrews University; all employees and Board of Trustees members of Andrews University; clinical affiliates, their employees and Board of Trustees members, from liability in the event that I become infected with the Hepatitis B virus.
- None of the above.

Student Name (Please Print)

Student ID#

Student Signature

Date

Revised: 8/2019

Laboratory Safety Rules

1. Eating or drinking is not permitted in the laboratory.
2. Food or drinks are not permitted in the laboratory.
3. Place books and other personal items below the bench upon entering the laboratory. Do not place book bags or other personal items on your workbench.
4. All laboratory decks (countertops) must be washed before and after laboratory sessions with a fresh 10-15% bleach solution.
5. Shoes must be worn at all times. Sandals and any other open-toe footwear are not appropriate.
6. Mouth pipetting is not allowed.
7. Nothing is to be tasted in the laboratory. Keep all possible contamination sources out of your mouth—hands, pencils, markers, laboratory ware, and other items.
8. Gloves **MUST BE WORN** at all times when handling specimens. Do not work with an uncovered open cut. Cover the cut or skin abrasion with a Band-Aid before putting gloves on.
9. An appropriate laboratory garment or laboratory coat must always be worn while in the lab. This garment may not be worn outside or outside the lab.
10. Disposable masks **MUST BE WORN** at all times while in the lab.
11. Wearing contact lenses in laboratories where preserved specimens or organic solvents are used may result in eye irritation or injury. This practice is not recommended.
12. Long hair must be tied back or tucked under the lab coat so that it will not come in contact with contaminated material. Facial hair should be under an inch in length.
13. Natural nail tips must be kept no longer than 1/4-inch long. Acrylic nails are not permitted in the laboratory.
14. Adequate precautions must be observed when handling toxic or hazardous materials. Carefully follow laboratory procedures and instructor's directions.
15. Always observe aseptic techniques when dealing with microbial cultures.
16. Specimens must be deposited in designated biohazard receptacles, not sinks or wastebaskets.
17. Biohazard and toxic wastes must be deposited in designated biohazard receptacles and not in sinks or wastebaskets.
18. Contaminated equipment such as Petri dishes, test tubes, pipette tips, and similar items must be discarded in designated biohazard receptacles, not wastebaskets. Pipette tips are considered sharps and should be placed in designated sharps containers, tip side down.

19. Students are responsible for calling to the instructor's attention any defective equipment or unsafe conditions. Report ALL accidents, such as spilled culture, cuts, or burns, to the lab instructor. Our interest is safety!
20. Spills of materials containing viable organisms should be immediately contained with dry paper towels. The dry paper towels will soak up the spill and can then be sterilized. Immediately following this procedure, disinfect the spill area with the appropriate disinfectant.
21. Unauthorized experiments are not allowed. Students will not be permitted to work in the laboratory unless a lab instructor is present.
22. Diligently observe any special safety precautions or emergency procedures given by the instructor.
23. Students are expected to demonstrate appropriate conduct befitting the laboratory setting.
24. Headphones and audio devices are not permitted in labs that require handling clinical specimens or biohazardous materials. In the event of "dry labs" or labs without clinical materials or biohazardous materials, headphones or earbuds may be allowed at the instructor's discretion, provided that one ear remains unobstructed for hearing or noise-canceling is not used. The student must request permission to use any electronic device in the laboratory space.
25. ALWAYS wash hands with soap and water or disinfectant before leaving the laboratory.
26. If you do not understand something, ASK!!!

Failure to follow proper laboratory and/or safety procedures may lead to dismissal from the class/lab and/or a failing grade.

I hereby affirm that I have carefully studied and understand the safety rules for working in a laboratory and have been informed of the strict enforcement of such rules. I further agree that:

- There are potential hazards and dangers inherent in the equipment and materials used in the laboratory.
- The existence of safety rules and their enforcement does not guarantee absolute immunity from all possible personal injury or property damage in the laboratory, but compliance with safety rules and procedures, together with reasonable cautiousness and good common sense on my part, will minimize the chance of personal injury and property damage.

Student's Name (Please Print)

Student's ID #

Student's Signature

Date

Revised:11/2024

Andrews University

Department of Medical Laboratory Sciences

INCIDENT REPORT FORM

A. EMPLOYEE/STUDENT INFORMATION

Name: _____
Address: _____

Date: _____
Position: _____
Phone (home): _____
Phone (work): _____
Phone (other): _____

B. INCIDENT DESCRIPTION

Date: _____ Time: _____
Place: _____ Witness: _____

Description of Incident: _____

C. DESCRIPTION OF EMPLOYEE/STUDENT ACTION FOLLOWING INCIDENT (such as flushing with water).

Was medical attention initiated? ___Yes, ___No. If yes, complete section D.

D. DESCRIPTION OF MEDICAL TREATMENT

Physician: _____ Location: _____ Phone: _____
Diagnosis: _____
Treatment: _____

Date Employee May Return to Work: _____ Work Restrictions: _____
Physician Signature: _____ Date: _____

E. ANALYSIS OF INCIDENT

1. Describe Specific Unsafe Act: _____

2. What Could Have Been Done to Prevent Incident: _____

F. CORRECTIVE ACTION

Describe Steps Taken to Prevent a Recurrence of Incident: _____

G. INCIDENT REVIEW (This incident has been reviewed by the department chairperson and safety officer)

RECOMMENDATIONS: _____

Department Chair: _____ Date: _____
Safety Officer: _____ Date: _____

SEND COPIES OF THIS FORM TO: AU Personnel Office, Department Office, Employee/Student File

Revised: 6/2019

Glossary

ACUTE - An adverse effect with symptoms of high severity that quickly leads to a crisis.

BIOSAFETY LEVEL (BL) - Associated risks with microorganisms (e.g., BL1—minimal disease in healthy adults such as *Bacillus subtilis*, BL2—moderate risk associated with human diseases such as Hepatitis B virus, BL3—microorganisms that may cause serious diseases such as *Mycobacterium tuberculosis*, and BL4—microorganisms that are high risk and considered lethal such as Lassa Fever Virus).

BLOOD - Human blood, human blood components, and products made from human blood.

BLOODBORNE PATHOGENS - Microorganisms present in human blood that can cause disease in humans. These pathogens include Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

CARCINOGEN - A substance capable of causing cancer.

CHEMICAL AGENTS - A wide variety of fluids have a high potential for body entry by various means. Some are more toxic than others and require special control measures for safety and environmental reasons.

CHRONIC - An adverse effect with symptoms that develop slowly over a long period of time or that frequently recur.

CLINICAL/MEDICAL LABORATORY - A workplace, including student laboratories, where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

COMBUSTIBLE - Able to catch on fire and burn.

CONTAMINATED SHARPS - Any contaminated object that can penetrate the skin, including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

CONTAMINATED LAUNDRY - Laundry soiled with blood or other potentially infectious materials.

CONTAMINATED - Marked by the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

DECONTAMINATION - The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

DOT - Department of Transportation.

ENGINEERING CONTROLS - Devices or equipment for isolating or removing hazards from the workplace.

EPA - Environmental Protection Agency.

EXPOSURE INCIDENT - A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials as a result of a student performing their duties.

FLAMMABLE - Capable of being easily ignited and of burning with extreme rapidity.

GLOBAL HARMONIZATION SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) - A worldwide harmonized system for hazard classification criteria and chemical hazard communication elements.

HAND WASHING FACILITIES - Locations that provide an adequate supply of running potable water, soap, and single-use towels or hot-air drying machines.

HBV - Hepatitis B Virus.

HEPA FILTERS - High-efficiency particulate air filters.

HIV - Human Immunodeficiency Virus.

INFECTIOUS AGENTS - Sources that cause infections by inhalation, ingestion, or direct contact with the host material.

LABORATORY - A workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

LC 50 - The concentration of a substance in the air that causes death in 50% of the animals exposed by inhalation. A measure of acute toxicity.

LD 50 - The dose that causes death in 50% of the animals exposed by swallowing a substance. A measure of acute toxicity.

LICENSED HEALTH-CARE PROFESSIONAL - A person whose legally permitted scope of practice allows them to independently perform the activities required for Hepatitis B vaccination and post-exposure evaluation and follow-up.

PARENTERAL - Exposure occurring as a result of piercing the skin barrier (e.g., subcutaneous, intramuscular, intravenous routes) through such events as needle sticks, bites, cuts, and abrasions.

MSDS - Material Safety Data Sheets.

MUTAGEN - Capable of changing cells in such a way that future cell generations are affected. Mutagenic substances are usually considered suspect carcinogens.

NFPA - National Fire Protection Agency, an organization of firefighters that seeks to improve safety, particularly for firefighters.

OCCUPATIONAL EXPOSURE - Skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties (In the context of this Handbook, this may also include a student participating in a lab exercise).

OSHA - Occupational Safety and Health Administration, the regulatory branch of the Department of Labor concerned with student safety and health.

PEL - Permissible Exposure Limit. This is the legally allowed concentration in the workplace that is considered a safe level of exposure for an 8-hour shift, 40 hours per week.

PERSONAL PROTECTIVE EQUIPMENT - Specialized clothing or equipment worn by a student to protect against a hazard.

LABORATORY EXPOSURE - Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from students performing their assignments.

pH - A measure of how acidic or caustic a substance is on a scale of 1 to 14. A pH of 1 indicates that a substance is acidic; a pH of 14 indicates that a substance is basic.

PHYSICAL AGENTS - Workplace sources recognized for their potential effects on the body. Heat exposure or

excessive noise levels are examples of this risk group.

POTENTIALLY INFECTIOUS MATERIALS - Body fluids such as semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, and any body fluid that is visibly contaminated with blood. Any unfixed tissue or organ (other than intact skin) from a human (living or dead). Any sample (culture media or other solutions such as test controls, containing viral or bacterial components).

PRODUCTION FACILITY - A facility engaged in industrial-scale, large-volume, or high-concentration production of HIV or HBV.

REGULATED WASTE - Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

RESEARCH LABORATORY - A laboratory producing or using small but significant amounts of potentially infectious materials. Research laboratories may produce high concentrations of infectious materials, but not in the volume found in production facilities.

SENSITIZERS - An agent that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure.

SHARPS - Any object that can penetrate the skin, including, but not limited to, needles, scalpels, and broken capillary tubes.

SOPs - Standard Operating Procedures.

SOURCE INDIVIDUAL - Any individual, living or dead, whose blood or other potentially infectious materials may be a source of laboratory exposure to the student. Examples include but are not limited to, hospital and clinic patients, clients in institutions for the developmentally disabled, trauma victims, clients of drug and alcohol treatment facilities, residents of hospices and nursing homes, human remains, and individuals who donate or sell blood or blood components.

STANDARD PRECAUTIONS - The minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered. These practices are designed to both protect DHCP and prevent DHCP from spreading infections among patients.

STERILITY - Changes made in male or female reproductive systems resulting in an inability to reproduce.

STERILIZE - To use a physical or chemical procedure to destroy all microbial life, including highly resistant material endospores.

TB - Tuberculosis - causative organism, *Mycobacterium tuberculosis*.

TERATOGEN - A substance that causes a deformity in newborns if a significant exposure exists during pregnancy.

TLV - Threshold Limit Value. The amount of exposure allowable for a student in an 8-hour day.

UNIVERSAL PRECAUTIONS - An approach to infection control to treat all human blood and certain human body fluids as if they were known to be infectious for HIV, HBV, and other blood-borne pathogens (Bloodborne Pathogens Standard 29 CFR 1910.1030(b) definitions).

WORK PRACTICE CONTROLS - Mandated procedures or policies that reduce the likelihood of exposure by altering how a task is performed (e.g., by prohibiting the recapping of needles using a two-handed technique).

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APPENDICES

APPENDIX A

PERSONAL PROTECTIVE EQUIPMENT

Area: Safety

Philosophy:

The risks present when working in a laboratory setting can be greatly reduced or eliminated when proper precautions and practices are observed in the laboratory. The use of Personal Protective Equipment (PPE) is necessary to manage, prevent and minimize, to the fullest extent practical, all risks to the health, safety, and well-being of students and instructors participating in student laboratory activities.

Policy:

All instructors and students must wear the proper PPE in the labs. Required PPE includes appropriate clothing, lab coat, goggles (if required), and gloves. Should a student come unprepared to lab (without proper clothing or the required PPE), he/she will be asked to leave and change and/or retrieve their PPE. All laboratory personnel and students must remove all PPE before leaving the lab. Wearing PPE is not permitted in hallways and restrooms.

Laboratory Clothing

Clothing worn in the laboratory should not be loose fitting and should cover and protect as much skin as possible. Clothes should be made of materials that are resistant to chemicals, such as cotton or other natural fibers. Jeans and long-sleeved t-shirts are great examples of appropriate laboratory attire. Long or loose hair must be tied back. Remove jewelry (including necklaces, rings, bracelets and watches) to prevent chemicals from seeping underneath them. Shoes must have closed toes and have soles of a good gripping material. Clogs, perforated shoes, sandals, flip-flops, and cloth shoes do not provide protection against spilled chemicals and are not to be worn in the lab.

Laboratory Coats

Knee-length laboratory coats with long sleeves are required when working in the laboratory. Lab coats must be worn closed (e.g., buttoned, snapped) to protect clothing. Head covering such as scarves or hijabs should be tucked inside the lab coat so they will not come in contact with contaminated material. Laboratory coats must be worn only in the labs. Lab coats are not worn during breaks or in any public areas (e.g., halls, restrooms, classrooms, cafeterias, or dormitories).

The cost of the laboratory coats is the student's responsibility. All students enrolled in fundamental courses are required to purchase a one-semester use lab coat from the Andrews University Bookstore. Students are required to replace their lab coats when they have become compromised and no longer provide adequate protection. Students enrolled in the Clinical Year Program will purchase their cloth lab coats through the Department office. Lab coats that have not been approved are strictly prohibited, with no exceptions.

Laboratory coats are to be removed immediately before leaving the laboratory area and either hung in the appropriate place or placed in a zip-lock plastic bag for storage.

The MLS Department provides lab coats for instructors, graduate/research assistants, and lab workers use only. These lab coats are not to be loaned to students who have forgotten their lab coats. Failure to bring a lab coat constitutes unpreparedness. The student will not be allowed to participate in the lab without their lab coat.

Gloves	<p>Students are required to wear disposable, single-use gloves when they have the potential for direct skin contact with blood and other potentially infectious materials; also when student has non-intact skin (such as cuts and/or abrasions) when touching or handling contaminated items or surfaces.</p> <p>Gloves are removed inside out aseptically and are replaced as soon as possible when visibly soiled, torn, punctured, or any time their ability to function as a barrier is compromised. They are not washed in disinfectant for reuse. Hypo-allergenic gloves, glove liners, or powderless gloves (e.g., Nitrile gloves) are provided to students who are allergic to the regularly provided gloves. Students with contact dermatitis caused by gloves may find protective skin creams helpful in preventing further irritation.</p>
Aprons	<p>Aprons are worn in addition to the laboratory coat when the laboratory coat cannot provide adequate protection (e.g., during pregnancy) or when fluid contamination is likely (e.g., apheresis). Aprons are not substitutes for laboratory coats but serve as additional protection.</p>
Eye Protection	<p>Eye protection may be required while in the laboratory. Eyewear and/or portable deck-top plastic shields are provided to prevent splashes, sprays, spatter, or droplets of blood or infectious materials if there is a potential for eye, nose, or mouth contamination. Protective eyewear, such as goggles, may also be purchased by the student. Eyewear should be appropriately cleaned before use and whenever splashes or contamination is visible. When not in use, protective eyewear should be decontaminated and put in an individual case in contamination-free storage.</p>
Masks	<p>Students are required to wear disposable masks when they are in the lab. Disposable masks will be provided for use during laboratory activities, in accordance with CDC recommendations and university guidelines for SARS-COV-2 safety. Disposable masks must be removed upon exiting the lab and replaced with a personal cloth facemask or face covering while individuals remain in the building (i.e., class time and hallway interactions).</p>

APPENDIX B

LOCKER USE

Area: Safety

Philosophy:

The Department of Medical Laboratory Sciences (MLS) provides lockers for students to have a safe place to store books, coat, and similar personal belongings.

Policy:

The MLS department commits to keeping all lockers secure with a department lock; therefore, we reserve the right to place a lock on any locker that is found open. Additionally, unassigned lockers and lockers that have been surrendered will be secured in like manner.

Access to a locker is a privilege and students accept all responsibility associated with their use, as outlined below.

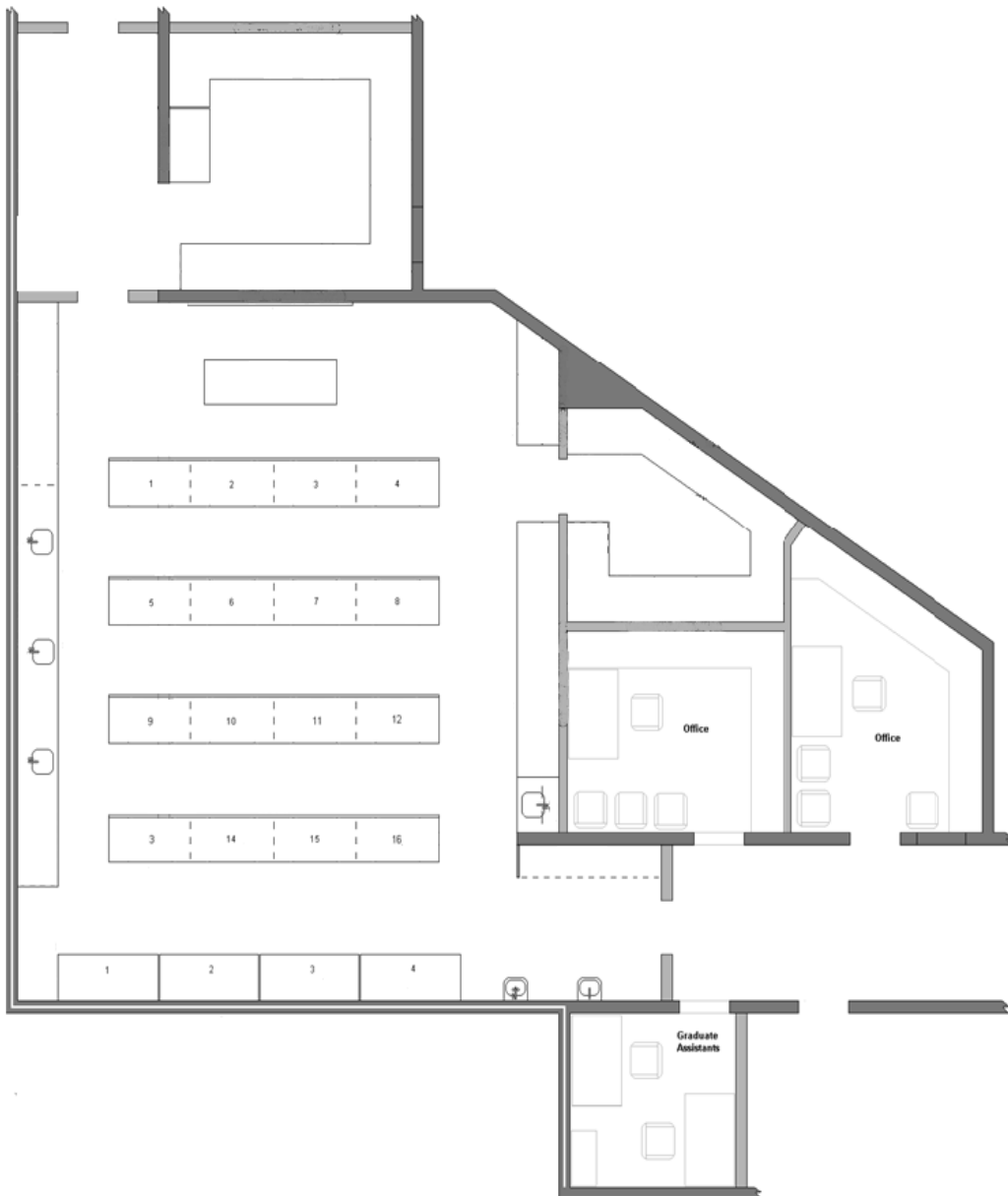
1. All lockers are the property of Andrews University and are managed by the MLS department.
2. Use of a locker by a person other than to whom it is assigned is forbidden. Misuse of a locker may lead to termination of locker privileges.
3. The MLS department faculty and staff reserve the right to open a locker without seeking the consent of the student to whom the locker is assigned in instances where there is suspicion that locker procedures are being abused or in an emergency situation.
4. Flammable materials, dangerous chemicals, explosives, or weapons of any kind are strictly prohibited inside the lockers.
5. Items such as food, illegal/controlled substances such as drugs or alcohol are also strictly prohibited inside the lockers.
6. All students must use locks issued by the MLS department office only. The use of personal locks is prohibited.
7. Upon assignment and during use, students are responsible for reporting any damage or needed repairs to the Department office. Students will assume the cost of any unreported damages.
8. All personal items must be stored completely within a locker. No items are to be left outside of a locker.
9. At the end of the agreed term for locker use, the student is responsible for leaving the locker in clean condition and good repair. No items should be left in the locker and the Department reserves the right to dispose of any such items.
10. Neither the MLS Department nor Andrews University can be held responsible for lost, stolen, or damaged personal property associated with locker use.

APPENDIX C

MLS Student Laboratory (HH111)

Student Name: _____

Date: _____

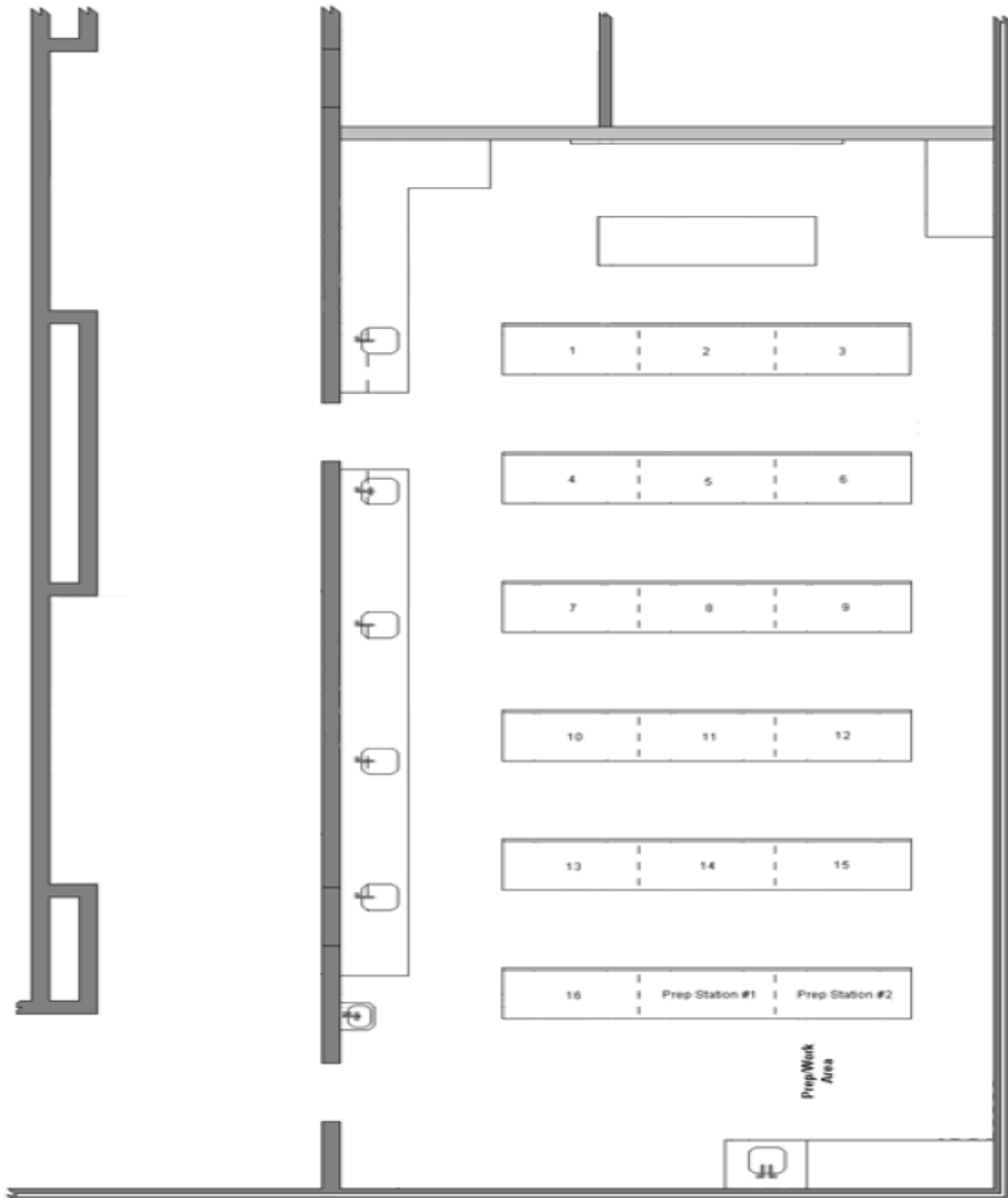


APPENDIX D

MLS Student Laboratory (HH126)

Student Name: _____

Date: _____



Andrews University

Department of Medical Laboratory Sciences

Employee Training Checklist

Employee Safety Orientation Instructions: Employees must undergo a safety orientation before beginning work and annually thereafter. This checklist documents that each required item was explained to the employee. The safety officer or designate is to place a check in each box after the item has been explained. Employees are not to sign this form unless all items have been explained and all questions have been answered satisfactorily.

SAFETY ITEMS	METHOD OF TRAINING	DATE	TRAINER
1. Use of Personal Protective Equipment: <input type="checkbox"/> Gloves, Coats, Aprons, Eye Protection			
2. Biological Safety to include: <input type="checkbox"/> Universal Precautions for Blood and Body Fluids <input type="checkbox"/> Disposal of Contaminated Waste <input type="checkbox"/> Required Vaccinations <input type="checkbox"/> Reporting Exposure Incidents			
3. <input type="checkbox"/> Personal Injury Policy			
4. Chemical Safety to Include: <input type="checkbox"/> Safety Precautions <input type="checkbox"/> Handling of Chemicals <input type="checkbox"/> Protocols for Accidental Exposure and Spills <input type="checkbox"/> Universal Safety Precautions for Chemical Exposure <input type="checkbox"/> Storage <input type="checkbox"/> Labelling <input type="checkbox"/> Safety Data Sheets <input type="checkbox"/> Engineering Controls <input type="checkbox"/> Contaminated Waste Disposal			
5. Fire Safety to include: <input type="checkbox"/> Location of Fire Extinguishers <input type="checkbox"/> Use of Fire Extinguishers <input type="checkbox"/> Emergency Evacuation Routes <input type="checkbox"/> Keeping Walkways Clear & Fire Rated Doors Locked			
6. <input type="checkbox"/> Electrical Safety			
7. Safety Tour of Facilities and Location of: <input type="checkbox"/> Fire Extinguishers <input type="checkbox"/> Fire Alarms			

<input type="checkbox"/> Eye Wash Stations <input type="checkbox"/> Emergency Showers <input type="checkbox"/> First Aid Kits <input type="checkbox"/> Emergency Exits <input type="checkbox"/> Fire Assembly Point			
8. Use of Safety / Emergency Equipment <input type="checkbox"/> Emergency Eye Wash <input type="checkbox"/> Emergency Shower			
9. Employee Reporting Responsibilities <input type="checkbox"/> Unsafe Conditions and/ or Acts <input type="checkbox"/> Filling Out and Filing an Incident Report Form			
OTHER ITEMS			
1. The Employee has been: <input type="checkbox"/> Given access to the department safety manual and verified that he/she has read it. <input type="checkbox"/> Told who the department safety representative is <input type="checkbox"/> Shown where to find Safety Data Sheets (SDS) <input type="checkbox"/> Taught how to read labels and use the SDSs <input type="checkbox"/> Told generally what kinds of chemicals we use and their hazards <input type="checkbox"/> Trained on safe methods to perform the job/task the employee was assigned including any hazards associated with that job/task. <input type="checkbox"/> Provided any formal training required to do his/her job such as proper lifting, washing tubes, etc.			
2. Operation of Lab Equipment <input type="checkbox"/> Autoclave <input type="checkbox"/> Centrifuges <input type="checkbox"/> Freezers (-80 & others) <input type="checkbox"/> Hot Plate <input type="checkbox"/> Incubator <input type="checkbox"/> Other: _____ <input type="checkbox"/> Microscopes <input type="checkbox"/> Pipetter <input type="checkbox"/> Pipette Washer <input type="checkbox"/> Slide Warmer <input type="checkbox"/> Water Baths <input type="checkbox"/> Other: _____			
3. Safety Competencies: <input type="checkbox"/> Has completed and passed the safety quiz <input type="checkbox"/> Read student worker manual <input type="checkbox"/> Lockdown training completed <input type="checkbox"/> Sign-up for AU alerts <input type="checkbox"/> Other: _____			

The signatures below document that the above orientation was completed on the date stated.

Employee (Print Name) _____ Signature _____

Date _____

Safety Officer (Print Name) _____ Signature _____ Date _____

Annual Safety Training (Renewals)

Employee Name (Print)	Employee Signature	Safety Officer/ Trainer	Date

NFPA LABELLING SYSTEM

HAZARDOUS MATERIALS LABEL IDENTIFICATION SYSTEM

HAZARDOUS MATERIALS CLASSIFICATION		HAZARDOUS INDEX RATINGS FOR CONTAINER LABELING			
OXIDIZER	WITH A HAZARDOUS LABEL FOR THE DEGREE OF HAZARD FOR EACH CATEGORY: 4 SEVERE HAZARD 3 SERIOUS HAZARD 2 MODERATE HAZARD 1 SLIGHT HAZARD 0 MINIMAL HAZARD	HEALTH HAZARD	FIRE HAZARD	REACTIVITY	TARGET ORGAN
ACID		4 - EXTREMELY FLAMMABLE FLASH POINT BELOW 23°C	1 - HIGHLY REACTIVE SERIOUS CONDITIONS	H - HAZARDOUS TO HEALTH CORROSIVE TO SKIN	
ALKALI		3 - FLAMMABLE FLASH POINT BELOW 23°C	2 - MODERATELY REACTIVE CONDITIONS	S - IRRITANT CORROSIVE TO METALS	
CORROSIVE		2 - MODERATELY FLAMMABLE FLASH POINT ABOVE 23°C	1 - MODERATELY REACTIVE CONDITIONS	T - TARGET ORGAN TOXICITY CORROSIVE TO METALS	
USE NO WATER		1 - SLIGHTLY FLAMMABLE FLASH POINT ABOVE 23°C	0 - NOT REACTIVE	P - HAZARDOUS TO TARGET ORGAN CORROSIVE TO METALS	
RADIATION HAZARD	0 - NON-FLAMMABLE NO FLASH POINT	0 - NOT REACTIVE	N - HAZARDOUS TO TARGET ORGAN CORROSIVE TO METALS		

PERSONAL PROTECTION, TARGET ORGANS, & INDEX RATINGS							
EXAMPLE:		PERSONAL PROTECTION SYMBOLS		TARGET ORGANS			INDEX RATINGS
METANOL GAS (METH) HEALTH 1 FLAMMABILITY 3 REACTIVITY 0 TARGET ORGAN: SKIN, EYES				RESPIR	EYES	SKIN	4
				CONTAMINANT	RESPIRATORY SYSTEM	EYES	3
				SKIN	RESPIRATORY SYSTEM	SKIN	2
				RESPIR	RESPIRATORY SYSTEM	SKIN	1
				RESPIR	RESPIRATORY SYSTEM	SKIN	0

GHS LABELLING SYSTEM

GHS WORKPLACE LABELLING SYSTEM

WORKPLACE LABELS	SUPPLIER LABELS	SYMBOLS & MEANINGS																																								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">HEALTH HAZARDS</th> </tr> </thead> <tbody> <tr> <td></td> <td>OXIDIZING</td> </tr> <tr> <td></td> <td>EXCLAMATION MARK</td> </tr> <tr> <td></td> <td>HEALTH HAZARD</td> </tr> <tr> <td></td> <td>CORROSION</td> </tr> <tr> <th colspan="2">PHYSICAL HAZARDS</th> </tr> <tr> <td></td> <td>FLAME</td> </tr> <tr> <th colspan="2">PHYSICAL HAZARDS</th> </tr> <tr> <td></td> <td>EXPLOSIVE</td> </tr> <tr> <td></td> <td>FLAMMABLE GAS</td> </tr> <tr> <td></td> <td>FLAMMABLE LIQUID</td> </tr> <tr> <td></td> <td>FLAMMABLE SOLID</td> </tr> <tr> <td></td> <td>CORROSION</td> </tr> <tr> <th colspan="2">TARGET ORGAN EFFECTS</th> </tr> <tr> <td></td> <td>RESPIRATORY</td> </tr> <tr> <td></td> <td>EYES</td> </tr> <tr> <td></td> <td>SKIN</td> </tr> <tr> <td></td> <td>LUNGS</td> </tr> <tr> <td></td> <td>NERVOUS SYSTEM</td> </tr> <tr> <td></td> <td>REPRODUCTIVE</td> </tr> </tbody> </table>	HEALTH HAZARDS			OXIDIZING		EXCLAMATION MARK		HEALTH HAZARD		CORROSION	PHYSICAL HAZARDS			FLAME	PHYSICAL HAZARDS			EXPLOSIVE		FLAMMABLE GAS		FLAMMABLE LIQUID		FLAMMABLE SOLID		CORROSION	TARGET ORGAN EFFECTS			RESPIRATORY		EYES		SKIN		LUNGS		NERVOUS SYSTEM		REPRODUCTIVE
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CANADA 888.977.4834 USA 888.442.9628 www.thecompliancecenter.com

APPENDIX G

Example of a GHS Compliant Label

The Basic Parts of A GHS-Compliant Label

1 → **n-Propyl Alcohol**
UN No. 1274
CAS No. 71-23-8

2 → **DANGER**

3 → Highly flammable liquid and vapor. Causes serious eye damage.
May cause drowsiness and dizziness.

4 → Keep away from heat/sparks/open flames/hot surfaces. No smoking. Avoid breathing fumes/mist/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing.

Fill Weight: 18.65 lbs. Lot Number: B56754434
Gross Weight: 20 lbs. Fill Date: 6/21/2013
Expiration Date: 6/21/2020 See SDS for further information.

5 → Acme Chemical Company • 711 Roadrunner St. • Chicago, IL 60601 USA • www.acmechem.com • 123-444-5567



6 →

1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use "Danger" (severe) or "Warning" (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product's hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.

Sample label courtesy of Weber Packaging Solutions • www.weberpackaging.com