



Chemical Hygiene Plan GEN.2034

1.0 Introduction

Baptist Health Sciences University is committed to providing a healthy and safe working environment for the campus community, free from recognized hazards in accordance with the University General Safety policy, GEN.2034. This Chemical Hygiene Plan was developed in support of the federal Occupational Health and Safety Administration (OSHA) regulation on Occupational Exposures to Hazardous Chemicals in the Laboratory (29 CFR 1910.1450), commonly referred to as the "Laboratory Standard".

The purpose of the Chemical Hygiene Plan (CHP) is to establish a formal written program for protecting laboratory personnel against adverse health and safety hazards associated with exposure to potentially hazardous chemicals and must be made available to all employees working with hazardous chemicals. The CHP provides guidelines for prudent work practices and procedures for the laboratory use of chemicals, and to protect laboratory workers from the potential health hazards of the chemicals they encounter in the workplace and is based upon best practices identified in recognized sources which include "Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards," published by the National Research Council and the American Chemical Society's "Safety in Academic Chemistry Laboratories."

All laboratory workers must be made aware of the CHP. New employees should review the CHP and receive safety training before beginning work with hazardous chemicals or working in areas where hazardous chemicals are handled.

2.0 Scope and Application

The Laboratory Standard covers employees who work with hazardous chemicals in laboratories. At Baptist University, this program applies to all individuals working with hazardous chemicals in GEHS, Allied Health, and Nursing laboratories. Work with hazardous chemicals outside of laboratories is covered by the Hazard Communication Standard (29 CFR 1910.1200). See Hazard Communication Plan for more information.

3.0 Rights and Responsibilities

Employees, students, and other personnel who work in laboratories have the right to be informed about the potential hazards of the chemicals in their work areas and to be properly trained to work safely with these substances. This includes environmental services and other personnel who work to clean and maintain laboratories. Employees have the right to file a complaint with OSHA if they feel they are being exposed to unsafe or unhealthy work conditions and cannot be discharged, suspended, or otherwise disciplined by their employer for filing a complaint or exercising these rights. All personnel working with potentially hazardous chemicals are encouraged to report any concerns about unsafe work conditions to their supervisor or the campus Safety Officer. At Baptist University, safety is everyone's responsibility. All personnel including Laboratory Supervisors, faculty and staff, and students have a duty to fulfill their responsibility of maintaining a safe work environment.



The following sections, based on the user's role within the laboratory, list out specific responsibilities and expectations for contributing to a safe work environment.

3.1 Laboratory Supervisors/Coordinators

The Laboratory Supervisor (LS/LC) is responsible for the health and safety of all personnel working in his or her laboratory who handle hazardous chemicals. The LS/LC may delegate safety duties, but remains responsible for ensuring that the delegated safety duties are adequately performed. The LS/LC is responsible for:

- Ensuring laboratory workers attend general lab safety training.
- Ensuring laboratory workers understand how to work with chemicals safely and providing chemical and procedure-specific training, as needed.
- Providing laboratory workers with appropriate engineering controls and personal protective equipment needed to work safely with hazardous materials and ensuring such equipment is used correctly.
- Reviewing and approving work with particularly hazardous substances.
- Reviewing and maintaining Chemical Inventory Lists.

3.2 Laboratory Workers

All personnel who handle potentially hazardous chemicals in the laboratory are responsible for the following:

- Attending laboratory safety training.
- Reviewing and being familiar with the Chemical Hygiene Plan.
- Following procedures and laboratory practices outlined in the Chemical Hygiene Plan.
- Adhering to all University and divisional safety policies and procedures and comply with safety directives issued by supervisors and Safety Officer
- Using engineering controls and personal protective equipment, as appropriate.
- Reporting all incidents, accidents and potential chemical exposures to your supervisor.
- Documenting specific operating procedures for work with particularly hazardous substances, including carcinogens, reproductive toxins and chemicals with high acute toxicity.

3.3 Safety Officer/Safety Committee

Safety Officer is responsible for administering and overseeing institutional implementation of the Laboratory Safety Program and the Chemical Hygiene Plan. The Safety Officer's role within the CHP is responsible for the following:

- Providing consultation for safe work practices for hazardous chemicals
- Providing general training.
- Providing safe working guidelines for laboratory workers.
- Inspecting fume hoods annually.
- Developing and maintaining the Laboratory Safety Manuals.
- Conducting exposure monitoring, as needed.
- Reviewing the Chemical Hygiene Plan at least annually.












- Conducting laboratory safety inspections annually.

4.0 Chemical and Hazard Identification

Principal investigators and laboratory supervisors are responsible for verifying if any chemicals or reagents are considered a hazardous chemical. A hazardous chemical means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or a hazard not otherwise classified in accordance with the Hazard Communication Standard (29 CFR 1910.1200). The Hazard Communication Standard is now aligned with the Global Harmonized System of Classification and Labeling of Chemicals (GHS). GHS provides a common and coherent approach to classifying materials and communicating hazard information through labels and safety data sheets.

GLOBAL HARMONIZATION SYSTEM (HAZARD COMMUNICATION STANDARD PICTOGRAMS)

Health Hazard  <ul style="list-style-type: none">• Carcinogen• Mutagenicity• Reproductive Toxicity• Respiratory Sensitizer• Target Organ Toxicity• Aspiration Toxicity	Flame  <ul style="list-style-type: none">• Flammables• Pyrophorics• Self-Heating• Emits Flammable Gas• Self-Reactives• Organic Peroxides	Exclamation Mark  <ul style="list-style-type: none">• Irritant (skin and eye)• Skin Sensitizer• Acute Toxicity• Narcotic Effects• Respiratory Tract Irritant• Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  <ul style="list-style-type: none">• Gases Under Pressure	Corrosion  <ul style="list-style-type: none">• Skin Corrosion/Burns• Eye Damage• Corrosive to Metals	Exploding Bomb  <ul style="list-style-type: none">• Explosives• Self-Reactives• Organic Peroxides
Flame Over Circle  <ul style="list-style-type: none">• Oxidizers	Environment (Non-Mandatory)  <ul style="list-style-type: none">• Aquatic Toxicity	Skull and Crossbones  <ul style="list-style-type: none">• Acute Toxicity (fatal or toxic)

4.1 Container Labels for Hazardous Chemicals

The purpose of container labeling is to provide an immediate warning to employees of the hazards that they may be exposed to and through the use of chemical identity. Labeling of containers of hazardous chemicals is an essential element of the hazard communication.



4.1.1 General Requirements Substances that meeting the criteria of a hazardous chemical shall meet the following general container labeling requirements:

- The manufacturer's original labeling on incoming containers shall be preserved and protected against removal or defacement.
- Secondary containers (such as spray bottles) must be labeled with the identity of the substance and appropriate hazard warnings.
- When possible the original manufacturer's label of the substance should be duplicated for the secondary container.
- Prepared mixtures and/or buffers must be labeled with the appropriate hazard warnings based on the knowledge of the chemical and physical properties of that substance.
- New synthesized compounds must be labeled with employee's information and chemical name or structure if known or at a minimum a chemical identification number derived from the employee's lab book.
- If the newly synthesized compound is known to or reasonably anticipated to meet a hazard classification, that hazard should be indicated. EHS can provide assistance in helping to characterize newly synthesized compounds.

4.1.2 User Generated Labels

The following labeling requirements and recommendations are applicable when a laboratory worker generates a label for a hazardous chemical being prepared in the laboratory.

- Labels must be legible, in English, and prominently display.
- Label must contain the identity (name) of the hazardous chemical(s).
- Use of abbreviations are permitted provide that keys that related the abbreviation to the full name are available and laboratory workers are trained to understand the abbreviations.
- Considerations should be made when using abbreviations that are common used to represent other materials.
- The label must contain the appropriate signal word: DANGER or WARNING.
- The label must contain all applicable DANGER hazard statements. When possible, should contain all applicable hazard warning statements.
- The label should include GHS pictograms for hazards present.
- The label shall contain the name of the laboratory member preparing the container or responsible person.
- The label should include the date the container was prepared.
- For materials that have established intervals for testing (such as peroxide forming chemicals) or expiration dates, the label shall include the date prepared and the test-by or expiration date.
- Use of GHS compliant labels is recommended for all user generated labels.
- Training and assistance on using tools to quickly author high-quality GHS labels is available on request from EHS.



- Materials that will be transported, shipped, or distributed shall meet the labeling requirements of 29 CFR 1910.1200(f).

4.2 Safety Data Sheets SDS (formerly known as MSDS)

SDSs must be available for each hazardous chemical present in the laboratory. LS/LCs are responsible for keeping SDSs current and making them available to all laboratory employees throughout the workday. SDSs must be in a central location that can be accessed immediately by all laboratory members in the event of an emergency.

Access SDS through <https://msdsmanagement.msdsonline.com/3c3e3e2e-c32f-4a4e-837f-550c3f29cd92/ebinder/?nas=True>

Location: <https://pawprints.bchs.edu/Pages/portalhome.aspx>

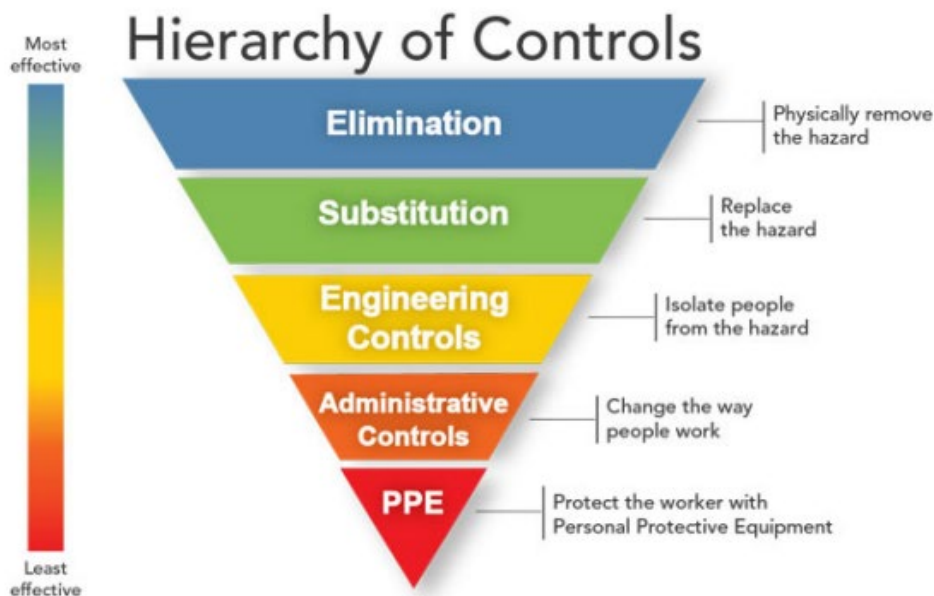
All labs have hard copies of Chemical Inventory List located in their Lab Safety Manuals.

5.0 Controlling Chemical Exposure

Chemical exposures occur via four primary routes:

1. Inhalation;
2. Ingestion;
3. Absorption (through skin, eyes, or mucus membranes);
4. Injection (skin being punctured or uptake through an open wound).

To mitigate the risk of suffering a harmful chemical exposure, carefully considered, multi-tiered system of safety controls should be utilized, frequently referred to as the Hierarchy of Controls.



5.1 Elimination and Substitution

Elimination and substitution involves removes the potential hazard, making it the most effective at reducing hazards. However, finding effectively strategies to remove or substitute hazards without affecting the experimental outcome can be very challenging but certainly worth considering when planning a new experiment or conducting risk assessments.

5.2 Engineering Controls

When elimination or substitution of a hazardous chemical is not possible, engineering controls are the primary means of control for exposure to hazardous chemicals. Engineering controls are intended to provide a robust and reliable system for isolating the user from the hazard. The most common types of engineering controls include local ventilation, including fume hoods, ducted biosafety cabinets, glove boxes, vented storage cabinets, and vented canopies. Upon request, EHS provides assistance in determining the appropriate type of engineering controls for specific operations.

5.3 Administrative Controls

Administrative controls are policies and procedures used in conjunction with available engineering controls to ensure effective use of the engineering controls and to ensure that work is conducted in a manner such that the risk of exposure is minimized to levels not anticipated to be harmful. Some examples of administrative controls are standard operating procedures, laboratory specific procedures, approval/authorization practices for working with highly hazardous materials, minimum PPE policies for entry or working, and work restrictions when working alone or during non-standard hours. In order to be effective, users must be fully trained, aware, and adherent to administrative controls in order to benefit from their risk reduction.



5.4 Personal Protective Equipment

Personal protective equipment (PPE) serves as the last line of defense against a chemical exposure. PPE is the least effective element of the hierarchy of control, but provides a critical protection in the event of an accident. Protective equipment, including gloves, face shields, safety glasses, safety goggles, lab coats and aprons, are used when engineering controls are not sufficient to adequately control exposure. Specifically, this equipment is used to prevent exposure to the skin or eyes.

Personal protective equipment is carefully selected to ensure that it is compatible with the chemicals used. Information about selection of appropriate protective equipment is available on the EHS Website. When feasible engineering controls are not adequate to reduce inhalation exposure to acceptable levels, a respirator may be used to minimize exposure to airborne contaminants.

6.0 Fume Hood Performance Evaluation

Laboratory fume hoods are evaluated at least annually by the Safety Officer. An inspection tag is affixed to each hood to document the evaluation and to provide information to the hood user regarding the measured performance of the hood. Each fume hood is equipped with at least one type of continuous monitoring device designed to provide the user with current information on the operational status of the hood.

Prior to use, it is the user's responsibility to assess and confirm that the fume hood appears to be operating properly and does not indicate any error or alarm or have any other damage or defect that would prevent the hood from being safely operated. In the event that a hood does not appear to be operating properly, hood users may contact the LS/LC for a performance evaluation.

7.0 Information and Training

All laboratory workers must receive laboratory safety training when they are first assigned to a work area where hazardous chemicals are present and before assignments involving new exposure situations. General laboratory safety training is provided by the Safety Officer.

7.1 Laboratory Safety Training

General Laboratory Safety Training for employees are provided during site specific safety training during annual mandatories. The general safety training covers the following topics:

- An overview of the OSHA Laboratory Standard. Full text of the standard is available on the web at OSHA Laboratory Standard;
- The content and availability of the Chemical Hygiene Plan and Laboratory Safety
- The availability of Safety Data sheets and how to use them;
- Hazardous Communication;
- An overview of methods to recognize hazards, how to evaluate hazards, and common methods to prevent and control exposure;
- The use, function and selection of personal protective equipment;
- Emergency procedures for fire, injury, chemical exposure, and chemical spill situations;
- Waste disposal procedures at Baptist University;



- Application of risk assessment techniques to laboratory operations.

7.2 Laboratory Safety Training for Supervisors and Coordinators

Faculty are provided lab specific training by the Safety Officer. This training module includes the following:

- Review of the Chemical Hygiene Plan
- Roles and responsibilities
- Elements of the Laboratory Safety Manual

7.3 Recordkeeping

- Human Resources maintains records of annual mandatory training within HealthStream.
- Student records of safety information documents are maintained in either Canvas or hard copies with lab course faculty.
- In-house safety training provided by Campus Safety is maintained by the Safety Officer.

7.4 Laboratory Safety Manual

All campus laboratories have Laboratory Safety Manuals, which include:

- Chemical Hygiene Plan
- Lab Chemical Inventory List
- Job Hazard Analysis
- Lab specific course training modules

8.0 Incident Reporting

In the event of any incident that results in a possible overexposure to a chemical, regardless of whether any signs or symptoms of exposure are noted, the laboratory worker should notify their supervisor and report to Campus Security at 2-2468 or 2-2911 on a campus telephone. If after hours, report the incident to Campus Security and the Safety Officer will be contacted.

9.0 Laboratory Inspections and Audits

Campus Safety Officer accompanied by the lab supervisor perform annual laboratory inspections. A summary of the inspection results and copies of the inspection forms are provided to the Safety Committee and Dean of each division.

10.0 Emergency Measures

10.1 All campus buildings have emergency response plans located throughout the building.

10.2 Each campus lab have workplace hazard certificates that identify hazards, PPE, and emergency contacts.



- 10.2.1 Examples of risk include: use of flame or hot plate, broken glass, radiation exposure, chemical contact or splash, inhalation of particulate or fumes.

APPENDIX A – Laboratory Safety Management

Purpose: The purpose of this appendix is to document responsibilities for lab safety compliance, which includes management of safety related activities to either divisional lab safety supervisors or designated lab faculty. Depending on the activity, support from safety, environmental services, and/or maintenance may be provided; however, the responsibility of overall compliance and completion of activities will be owned by the designated faculty or lab supervisor.

Activities included in lab safety management requirements include but are not limited to; eyewash station inspection and tagging, equipment calibrations and inspections, as well as chemical and regulated medical waste management.

Responsible personnel for lab safety management as of 2/24/2022:

Area	Responsible
EVS	Brittany Bailey
Facilities	Scott Gilmore
Chemistry	Christina Herring
Medical Laboratory Sciences	Darius Wilson
Respiratory Therapy	Antoinette Buckley
Nuclear Medicine Technology	Nikki Robinson
Diagnostic Medical Sonography	Mary Grace Renfro
Medical Imaging Sciences	Thomas Wolfe
Radiation Therapy	Lauren Brown
Nursing	Cheryl Scott
Patient Care Labs	Nikki Robinson
Neurodiagnostic Technology	Maggie Marsh-Nation
IPE	Cheryl Scott
Research	Christina Herring
Anatomy and Physiology I lab (219)	Christina Herring
Anatomy and Physiology II lab (218)	Christina Herring
Microbiology lab (425)	Christina Herring

Responsibilities for lab safety management include:

Regulated Medical Waste

- Stericycle training – at least one faculty of the lab completing Biohazardous Waste and DOT training modules through Stericycle packaging
- Monitor waste levels
- Package waste
 - Once set for pickup – notification to safety@baptistu.edu



Eyewash Stations

- Weekly inspections and signature
- WO for non-compliant stations

Safety Showers

- Complete WO through CBRE for annual flow test and inspections
- WO for non-compliant showers

Equipment calibration and inspection

- Ensure all lab equipment that has inspection and calibration requirements are completed annually
- Proof of inspections on equipment

Additional requirements that many of you all are already managing and will continue to oversee include:

- Chemical Inventory List
- Providing safety training within coursework
- Complete annual lab safety inspections with Safety Officer