Chemical Hygiene Plan

Audience All personnel in the Pulmonary Laboratories: Pulmonary Function Clinics, and Center for Pulmonary Rehabilitation.

Purpose The purpose of the Chemical Hygiene Plan (CHP) is to define work practices and procedures to help ensure that employees of the Pulmonary Laboratories are protected from health hazards associated with hazardous chemicals with which they work.

Policy Compliance with the Chemical Hygiene Plan is required to ensure that all staff is protected from health hazards associated with hazardous chemicals in their workplace. Laboratory workers are required to know and follow the rules and procedures of the plan. The Pulmonary Function Clinic plan will comply with the University's Environment of Care Plans and Safety Manual.

Definition

Acute **–** An adverse effect with symptoms of high severity coming quickly to a crisis.
Carcinogen – A substance capable of causing cancer.
Chemical Agents – A wide variety of fluids that have a high potential for body entry by various means. Some are more toxic than others and require special measures of control for safety and environmental reasons.
Combustible – Able to catch on fire and burn.
DOT – Department of Transportation.
EPA – Environmental Protection Agency.
Flammable – Capable of being easily ignited and of burning with extreme rapidity.
Hazardous Chemicals – Any chemical that poses a physical and/or health risk.
Health Hazard Chemicals – A chemical that is a health hazard that has statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed individuals.
Infectious Agents – Microorganisms capable of causing infections either by inhalation, ingestion, direct contact or inoculation.
Laboratory Scale – Work with chemicals that can easily and safely be manipulated by one person excluding the commercial production of chemicals for sale.
Laboratory Use – A workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.
LC 50 – The concentration of a substance in 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.
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.

HSS – Health and Safety Services at UTMB.
OSHA – Occupational Safety and Health Administration, the regulatory branch of the Department of Labor concerned with employee 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.
pH – A measure of how acidic or caustic a substance is on a scale of 1 to 14. A pH less than 7 indicates that a substance is acidic. A pH greater than 7 indicates that a substance in basic.
PPE – Personal Protective Equipment.
Physical Chemical Hazards – A chemical that is a physical hazard that has scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, unstable or water-reactive.
Sensitizers – Agents to repeated exposure over time creating an allergic reaction at some point in time.
Sterility – Changes made in male or female reproductive systems resulting in inability to reproduce.
Teratogens – 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 an employee in an 8-hour day.

Responsibilities

Safety Officer (Director) responsibilities include:

- Ensuring each new employee receives appropriate training and completes Pulmonary Function Laboratory Safety training.
- If appropriate EHS will ensure employees are trained on the use of chemicals in their division.
- If appropriate working with Managers and other employees to develop and implement appropriate chemical hygiene policies and practices.
- If appropriate monitoring procurement, use and disposal of chemicals used in the lab and seeing that appropriate chemical audits are conducted.
- If appropriate identifying appropriate legal requirements concerning regulated substances.

Directors, Managers and Supervisors have the primary responsibility for the health and safety of their staff. Specific responsibilities regarding the implementation of the Chemical Hygiene Plan include:

- Collaborating with faculty and staff to tailor the Model Chemical Hygiene Plan to include lab-specific guidelines and to develop strategies to implement the Plan;
- Making budget arrangements for health and safety improvements;
- Informing and training employees concerning chemical safety as required by this Plan;
- Implementing and enforcing rules and standards concerning health and safety for laboratories under supervisor's jurisdiction;

- Ensuring compliance of laboratory workers with this Plan;
- Ensuring the availability and enforce the use of appropriate personal protective equipment;
- Remaining cognizant of chemicals stored and used in labs and their associated hazards;
- Conducting internal inspections of labs for health and safety concerns;
- Requesting assistance from the Environmental Health and Safety as needed; and,
- Requesting allocation of funds from superiors for health and safety improvements as needed.

Employee responsibilities regarding implementation of CHP:

- Employees must follow all of the following health and safety standards and rules:
- Report all hazardous conditions to the supervisor.
- Wear prescribed protective equipment.
- Report any job-related injuries or illnesses to the supervisor and seek treatment immediately.
- Refrain from the operation of any equipment without proper instruction and authorization.
- Remain aware of the hazards of the chemicals in the clinic and how to handle hazardous chemicals safely.
- Request information and training when unsure how to handle a hazardous chemical or procedure.

Chemical Safety Standards

General Chemical Safety Rules

- At a minimum, a disposable lab coat, gloves, and eye protection is required when handling chemicals.
- Keep chemicals properly labeled and stored.
- Understand the hazards associated with each chemical used and take appropriate precautions.
- Tighten caps securely on all bottles and jars after use.
- Chemical storage is kept as small as practical.
- Alternative non-hazardous chemicals should be used whenever possible.
- Before handling any chemical, read the container label the appropriate SDS.
- Do not smell or taste chemicals.

Corrosive/Caustic Materials, Flammables and Combustible Liquids, Reactive Substances, Carcinogens, and Cytotoxic Drugs are not part of the Pulmonary Function Clinic or required for operation.

Safety Data Sheets (SDS)

SDS (also called Material Safety Data Sheets – MSDS) will be available in department or electronically in the Department Drive for Quality Assurance. SDS

can be obtained from the chemical manufacturer, Environmental Health and Safety (EHS), or internet to ascertain a chemical's hazardous properties.

Chemical Spills

The following should be done in the event of an accident:
Eye Contact – Promptly flush eyes with water for a **prolonged** period (20minutes) and seek medical attention.
Ingestion – Seek medical attention immediately.
Skin Contact – Promptly flush the affected area with water 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 PPE and equipment. Follow procedures for proper disposal of hazardous waste. Document major spills of hazardous chemicals by completing the Workers Compensation form.

1. Don the appropriate PPE including disposable lab coat, gloves, eye protections, and N-95 mask (if needed).
2. Use. Absorbent granules or absorbent chemical spill pillows/pads/ to absorb chemical spill. Granules can be obtained from EHS.
3. Sweep up granules once liquid is absorbed.
4. Discard granules and spill pillows/pads in the regular trash.

Avoid unnecessary exposure to chemicals.

Training The Pulmonary Function Lab does not operate using hazardous chemicals. If applicable EHS will conduct a chemical safety inspection. Employees will review Pulmonary Function Laboratory Safety training. Attestation of training will be filed in Employee record.

Chemical Waste Reduction

A. Use minimal volumes necessary to perform the procedure.
B. When possible, reuse chemicals before discarding.
C. Do not purchase reagents/chemicals in large volumes if there is a chance it will not be used before the expiration date.
D. Relocate surplus or unwanted chemicals to divisions that can use them.

Chemical Waste Removal and Disposal

Environmental Health and Safety (EHS) determines what chemicals are permissible for drain disposal according to city and state regulations. Only those chemicals reasonably soluble in water are suitable for drain disposal. A compound is considered water soluble if it dissolves to the extent of at least 3%. These compounds are flushed with at least 100 volumes of excess water.

Environmental Health and Safety (EHS) removes chemical waste from the laboratories to a central waste storage area. EHS is responsible for removing the waste from the central waste storage area at regular intervals. EHS is responsible

for disposal, storage and transportation of chemical waste according to local, state, and federal laws.

Medical Consult & Examination

Any employee needing medical attention because of exposure to a chemical should go to the Employee Health Clinic during its hours of operation or the Emergency Room for after hours and weekends for the Galveston Lab. ADC and LCC will go directly to the Emergency Room for medical attention as there are no Employee Health Clinics on-site. All medical examinations and consultations are requested using the Injury Report Form for Workers Compensation. The exams are performed by or under the direct supervision of a licensed physician without cost to the employee and without loss of pay.

The employee is sent for medical evaluation:

1. Whenever signs and symptoms associated with a hazardous chemical exposure develop
2. When environmental monitoring reveals an exposure level routinely above the action level
3. Whenever an event takes place in the work areas such as a spill, leak or explosion resulting in hazardous chemical exposure.

The employee (with optional input form Division Leadership, Safety Office, or others) provides the following information to the physician:

1. Identify the hazardous chemical to which the employee may have been exposed.
2. A description of the conditions under which the exposure occurred, including quantitative exposure date if available.
3. A description of the signs and symptoms of exposure.

The physician provides a return to work certification in the Injury Report Form.

Record Keeping

The laboratory maintains accurate records for laboratory accidents and environmental monitoring. Employee Injury Reports are confidential and only available to the employee and the HR Employee Management Office.

A. The Injury Report Form is used for Worker's Compensation claims. The employee is responsible for completing the form and submitting a copy to the HR-Employee Injury Management Office. Route 0159. The employee should keep a copy for their records. This form contains protected health information. Managers should not have a copy of the form and do not place the form in the employee's departmental folder.
B. The employee is responsible for completing the IV.1.03.01 Lab Accident Report Form and submitting the form to the division Safety Officer within two (2) working days. Refer to policy IV.1.03.01 Reporting of Lab Accidents and Unusual Events for more information. The Safety Officer will submit the Lab Accident form to the Lab Safety Committee and Quality Management.

References

- 2019 UTMB EHS Safety Manual
- Centers for Disease Control and Prevention, the National Institute for Occupational Safety and Health (NIOSH)
- National Toxicology Program
- World Health Organization – International Agency for Research on Cancer (IARC)
- Occupational Safety and Health Standards Hazard Communication 29CFRPart1910, 1200
- Occupational Exposures to Hazardous Chemicals in the Workplace, 29CFRPart1910,1450

Forms Reporting of Lab Accidents and Unusual Events
Lab Accident Report Form
Pulmonary Function Laboratory Safety Training

This form documents the approval and history of the policies and procedures for the Pulmonary Function Laboratory. The Medical Director signs all policies verifying initial approval. Annually thereafter, the Director and/or designee may approve reviews and revisions.

Date	Approved by:	Signature
11/07	**V. Cardenas, MD** **Medical Director Pulmonary Laboratory**	
6/09	**V. Cardenas, MD** **No changes to the policy**	
7/10	**V. Cardenas, MD** **No changes to the policy**	
2/12	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **No changes to the policy**	
5/14	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **No changes to the policy**	
8/16	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes to the policy**	
11/17	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes to the policy**	
8/19	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **No changes to the policy**	
11/20	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes to the policy**	

9/21 **A. Duarte, MD**
Medical Director Pulmonary Laboratory
No Changes to the policy

8/22 **A. Duarte, MD**
Medical Director Pulmonary Laboratory
Changes to the policy

8/23 **A. Duarte, MD**
Medical Director Pulmonary Laboratory
No changes to the policy