

# **CHEMICAL HYGIENE PLAN**

**(November 2019)**

**FOR COMPLIANCE WITH  
29CFR 1910.1450**

**FOR**

**THE FINGER LAKES INSTITUTE  
HOBART AND WILIAM SMITH COLLEGES  
GENEVA, NY 14456**

**Adapted from Chemical Hygiene Plans of the Chemistry and Biology Departments  
of Hobart & William Smith Colleges and PARS Environmental Services, Hamilton  
Square, NJ**

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## **1.0 INTRODUCTION AND PURPOSE:**

The Occupational Safety and Health Administration's (OSHA) Occupational Exposure to Hazardous Chemicals in Laboratories Standard, 29 CFR 1910.1450, requires all laboratories to develop a Chemical Hygiene Plan outlining the risks and procedures involved with handling chemicals found in their individual laboratories. The Plan should include procedures for employee training, inspections, hazard identification and handling, and when applicable, medical consultation and treatment.

This document describes the Chemical Hygiene Plan (CHP) for the Finger Lakes Institute (FLI) at Hobart and William Smith Colleges (HWS) located at 601 South Main Street, Geneva, NY as required by 29 CFR 1910.1450. This CHP describes the establishment and implementation of policies, procedures, and regulations necessary to comply with the following OSHA Code of Federal Regulations:

Inform students and employees working in laboratories (as defined by 29 CFR 1910.1450) of the potential health and safety hazards present in their workplace.

Minimize student and employee exposures to hazardous chemicals below the limits prescribed in 29 CFR 1910 Subpart Z.

Inform laboratory students and employees of the precautions and preventive measures that have been established by HWS to protect employees from a workplace illness or injury.

Inform laboratory students and employees of the required safety rules and procedures established by this organization to meet the requirements of 29 CFR 1910.1450 and 29 CFR 1910.1200.

Establish “Designated Areas” as needed for managing risks associated with exposure to highly hazardous chemicals.

In order to comply with the Standard, staff at the FLI has established this Plan to ensure our workplace is capable of protecting individuals from health hazards associated with hazardous chemicals in the laboratory. It is intended to serve as a baseline for good practices and does not intend to serve as legal standards. Not all warning and precautionary measures are contained in this document and additional information or precautions may be required. Questions regarding this plan should be directed to the FLI Director.

## **2.0 RESPONSIBILITIES**

### **2.1 CHEMICAL HYGIENE OFFICERS**

HWS has Chemical Hygiene Officers (CHO) who are responsible for the implementation of the provisions of this CHP. Certain aspects of the program may be delegated to others as indicated throughout this document. However, the overall responsibility for the execution of the CHP rests with the CHOs. All students and employees are also expected to actively participate in the program to ensure its success. The head CHO for HWS is:

Jason Woodruff  
Chemical Hygiene Officer  
Greystone Environmental Management  
(C) 315-212-4053 (F) 518-682-2202  
jwoodruff@greystone-env

## **2.2 CHEMICAL HYGEINE COMMITTEE**

The Chemical Hygiene Committee (CHC) is responsible for providing technical guidance in the development and implementation of the CHP for the FLI. The Committee is comprised of the following faculty and staff members of the FLI.

Lisa Cleckner  
Director of Finger Lakes Institute  
Hobart and William Smith Colleges  
Geneva, NY 14456  
[cleckner@hws.edu](mailto:cleckner@hws.edu)

Trevor Massey  
Finger Lakes Institute Laboratory Manager  
Hobart and William Smith Colleges  
Geneva, NY 14456  
[massey@hws.edu](mailto:massey@hws.edu)

Evan Helming  
Finger Lakes Institute Laboratory Chemist  
Hobart and William Smith Colleges  
Geneva, NY 14456  
[helming@hws.edu](mailto:helming@hws.edu)

## **2.3 FACULTY RESPONSIBILITY**

It is the FLI policy for all employees and students to follow the safe work practices and standard operating procedures (SOPs) described in the preceding and following sections of this CHP, and to comply with any additional practices

deemed necessary by the individual in charge of the laboratory space. The person responsible for ensuring that students follow the established procedures is the professor/faculty/staff member working with the students. Faculty are also responsible for ensuring that all hazardous materials submitted to HWS for procurement or disposal have been identified for their specific hazardous properties and characteristics. They are also responsible for routine laboratory inspections and ensuring that all new chemicals formed in a laboratory are reported to the FLI Director for entry into the FLI chemical inventory.

### 3.0 CHP ACCESSIBILITY

The CHP and associated components are available to any FLI employee or HWS affiliate engaged in the laboratory use of hazardous chemicals. A copy of the CHP will be located in hard copy in the FLI lab (stored near laboratory computer), FLI Director's office (Room 209), and online at the HWS N Drive and FLI's Drive (<https://drive.google.com/folderview?id=0B5hXC9W3YULNV0RZVmJtR1M0Wjg&usp=sharing>). It is required to be available upon request as specified by the Assistant Secretary for OSHA and the Director of the National Institute for Occupational Safety and Health (NIOSH).

### 4.0 CHP REVIEW

The CHP will be reviewed and updated annually by members of the CHC. Members should initial in the appropriate place following their review of the Plan.

	2014	2015	2016	2017	2018	2019
Cleckner	X	X (11/19/15)	X	X	X	X
Massey	-	-	X	X	X	X
Helming					X	X

### 5.0 LABORATORY USE POLICY

The FLI Director, or the individual delegated as laboratory supervisor, is responsible for determining whether or not work performed in a laboratory alone requires any special safety measures. Generally, individuals working alone with hazardous chemicals should notify the supervisor responsible for the laboratory before commencing any work with those chemicals. All doors (1<sup>st</sup> floor & both basement exits) entering the FLI laboratory will remain locked from the exterior at all times when personnel are not present. However, emergency exit from the interior of the lab will be possible at all times.

## **6.0 LABORATORY CHEMICAL INVENTORY**

It is the FLI's policy to develop and maintain a list of hazardous chemicals used in the laboratory area. This list is provided at the end of this plan and should be augmented upon procurement of all new chemicals

The FLI Laboratory Manager is responsible for maintaining the overall inventory of the laboratory. Each laboratory user is also responsible for assisting Lisa with this task by informing her when chemicals are to be procured or permanently transferred to another location.

Safety Data Sheets (SDS) are available in the FLI laboratory, in the labeled drawer below the DMA-80, on the Access Database, and on the FLI Google Drive as previously referenced in CHP Accessibility (section 3.0). An up to date chemical inventory is also present with the SDS hardcopies and on the Google Drive.

## **7.0 HAZARDOUS MATERIALS**

It is the FLI's policy to follow safe work practices whenever hazardous substances are used. FLI faculty, staff, and students will use chemicals inside a laboratory fume hood, and the hood will have appropriate maintenance conducted per the

CHO. All faculty, staff, and students will utilize proper PPE as set forth by this plan, and otherwise defined by the FLI Director.

## **7.1 IDENTIFICATION OF HAZARDOUS MATERIALS**

The Laboratory Manager is responsible for identifying hazardous chemicals. A chemical may also be considered a hazardous waste if exhibits one of the following characteristics defined in 40 CFR Part 261 Subpart C: ignitability, corrosivity, reactivity, and toxicity. Brief descriptions of these characteristics are included below.

Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include waste oils and used solvents. Corrosive wastes are acids or bases (pH < 2 or > 12.5) that are capable of corroding metal containers.

Reactive wastes are unstable and can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water.

Carcinogens are substances which are regulated by OSHA as a carcinogen, listed under the category, "known to be carcinogen," in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) or listed under Group one ("carcinogen to humans") by the International Agency for Research on Cancer (IARC) under another category listed as "reasonably anticipated to be carcinogens."

Reproductive toxins are chemicals that affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). Embryotoxins, which are substances that act during pregnancy to cause adverse effects on the fetus, are also included in this category.



If the composition of a chemical substance produced exclusively for the laboratory's use is known, the laboratory supervisor shall determine if it is a hazardous chemical as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200. If the chemical is determined to be hazardous, the laboratory supervisor shall provide appropriate handling procedures. If a chemical produced is a byproduct whose composition is not known, the professor shall assume that the substance is hazardous and shall implement precautions recommended by this Plan. Proper labeling is ultimately the responsibility of the FLI Director; however, it is expected that all others working in the laboratory will follow proper labeling procedures. The laboratory will have signage posted on interior laboratory doors indicating the person(s) responsible for the area and the location of the CHP & SDSs.

## **7.2 ORDERING AND PROCUREMENT**

Faculty or staff members are authorized to order chemicals for the FLI. Before any ordering takes place, individuals should examine the chemical inventory to determine if the chemical is already available. If they wish to acquire new and/or unfamiliar hazardous chemicals, they should complete the chemical procurement form before placing the order. An appropriate waste disposal method must be identified in accordance with the SDS before introducing a new chemical into Hobart and William Smith College's chemical waste flow.

With respect to labels and SDSs, the FLI ensures that labels on incoming containers of hazardous chemicals are not removed or defaced and that the SDSs received with incoming shipments of hazardous chemicals are maintained and readily accessible to those working in the laboratory. Chemicals delivered to FLI without proper labeling or the accompanying SDS will be rejected.

### **7.3 STORAGE**

The FLI Laboratory Manager will be responsible for assuring proper chemical storage in the laboratory; however, all others working in the laboratory are expected to return chemicals to their proper storage locations after use. Chemicals are stored in the laboratory, in proper storage containers, segregated by class. The laboratory will be locked at all times as it serves as a chemical storage space. Individuals accessing chemicals will follow all the proper material handling techniques and use proper PPE. Storage is based on compatibility and individual storage requirements. Food is not allowed in the laboratory. All refrigerators used to store chemicals will have warning signs. Flammable chemicals will be stored and locked in vented cabinets. Corrosive chemicals will be stored and locked in appropriate corrosives storage cabinets. Unknown substances shall be assumed toxic and must be stored and disposed of accordingly.

### **7.4 TRANSPORT**

Only upon approval by the Director of FLI may chemicals be checked out of the laboratory for use in other departments. When transporting chemicals outside the laboratory, individuals must avoid dropping or spilling chemicals. Appropriate carrying mechanisms such as carts or totes must be used whenever chemicals are transported. Avoid exposing others to chemicals in transport.

**FINGER LAKES INSTITUTE  
CHEMICAL PROCUREMENT FORM**

If the chemical is not new to the laboratory, answer only questions 1-7. If the chemical is new to the laboratory, answer all the questions.

1. Person responsible for this chemical \_\_\_\_\_
2. Name of chemical \_\_\_\_\_
3. CAS # \_\_\_\_\_ (unique identifier for this compound)
4. Supplier \_\_\_\_\_
5. Catalog # \_\_\_\_\_
6. Quantity to be ordered \_\_\_\_\_
7. Specific location in which it will be stored. \_\_\_\_\_
8. Attach the SDS. Circle your answer to the following questions about the nature of this substance:

Is it a strong corrosive?	Yes	No
Is it highly flammable?	Yes	No
Is it a strong oxidizer?	Yes	No
Is it water reactive?	Yes	No
Is it shock sensitive?	Yes	No
Does it form peroxides?	Yes	No
If ingested, inhaled or contacts skin, is it lethal?	Yes	No
Is it a known or anticipated human carcinogen?	Yes	No

Describe any other significant health or physical hazards associated with this chemical.

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Describe proper disposal procedure necessary for chemical.

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What emergency processes/systems do we need in place when using? (eye wash, fire extinguisher, shut down of sprinklers as it is water reactive)?

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Does handling of the chemical require a designated area? If so, what are the requirements of this designated area?

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Is any special training necessary for handling the chemical? If so, what does the training entail?

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## **8.0 EXPOSURE MINIMIZATION**

It is the FLI policy to keep faculty, staff, student and other laboratory worker exposures to substances regulated by OSHA below the exposure limits established in 29 CFR 1910 subpart Z, through the use of engineering controls and personal protective equipment. The exposure limits include Permissible Exposure Limits (PELs), Short Term Exposure Limits and Ceiling Values. The substances regulated by OSHA fall into one of the following lists:

List of Air Contaminants with a Permissible Exposure Limit (Table Z-1)

List of substances regulated by a specific standard (Table Z-2)

Furthermore, the substances regulated by a specific standard, as well as listed as a known or suspected carcinogen, are flagged in the inventory. For laboratory uses of OSHA regulated substances, the laboratory supervisor is to ensure that individual exposure to such substances does not exceed the permissible exposure limits specified in 29 CFR part 1910, subpart Z. If the supervisor cannot be confident in the engineering controls (e.g. fume hoods) and/or the effectiveness of PPE, the procedure should be evaluated to ensure no overexposure.

In order to use particularly hazardous substances, the individual must be familiar with the associated SDS. It is the responsibility of the laboratory supervisor to identify particularly hazardous substances and substitute for them when possible. Hazardous materials will only be handled inside fume hoods, or in a designated area in accordance with the established SOP, if required for the material in question. It is the responsibility of the laboratory supervisor to guarantee that hazardous materials are handled inside fume hood with appropriate PPE during any laboratory processes. The laboratory supervisor is also responsible for

ensuring that appropriate PPE such as safety goggles, laboratory coats, gloves and proper footwear, is worn while working with chemicals that are determined to be hazardous.

When working with hazardous chemicals, faculty, staff, and students shall wear closed toe/closed heel shoes, lab coats, and safety glasses/goggles as needed.

## **8.1 DESIGNATED AREAS FOR HAZARDOUS CHEMICALS**

All faculty, staff, students, and other individuals must only work with select carcinogens, reproductive toxins, or substances which have a high degree of acute toxicity in appropriate designated areas. These designated areas in FLI will be marked with:

DANGER  
DESIGNATED AREA  
FOR SELECT CARCINOGENS, REPRODUCTIVE TOXINS AND  
HIGH ACUTE TOXICITY CHEMICALS  
AUTHORIZED PERSONNEL ONLY

FLI currently does not work with any chemicals requiring a designated area.

In the case a designated area is required, all chemicals used in designated areas shall have safe standard operating procedures developed and followed. These procedures will include engineering controls, PPE requirements, training requirements, and established authorized personnel.

## **9.0 WASTE DISPOSAL**

The FLI Laboratory Manager shall manage the FLI laboratory waste stream until the CHOs have been notified to pick up the waste for additional segregation and final disposal. All laboratory waste must be accompanied by the FLI's Hazardous Waste Disposal Request form. Original labels on incoming containers of hazardous chemicals are not to be removed or defaced. When anyone transfers chemicals to a new container, he/she must label the new container with name of chemical, date, and appropriate hazard warning(s). All hazardous wastes shall be labeled as such with an FLI hazardous waste label. The container must be in good condition, meaning no cracks, no rust, and no leaks. It must be compatible with the waste and any waste mixtures in that container must also be compatible. The container holding the hazardous waste must also be closed at ALL TIMES. The only exception to this is when waste is being added to or removed from the container. An updated hazardous waste log must accompany the hazardous waste holding container. Accumulation of hazardous waste in any satellite accumulation area cannot exceed 55-gallons at any time

Bonding and grounding procedures shall be used whenever transferring flammable or combustible liquid wastes to prevent the buildup of static electricity.

Sharps disposal containers should be present for the proper disposal of laboratory sharps. The Institute's fish waste is typically handled and disposed of as general solid refuse, as it is neither chemically nor biologically manipulated during the current analysis processes.

The FLI Laboratory Manager shall coordinate with the CHO to complete hazardous waste disposal.



## FINGER LAKES INSTITUTE HAZARDOUS WASTE LABELS

FLI HAZARDOUS WASTE	
315-781-3000	
Hazardous Constituents	Est%
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Hazard(s) – Check all that apply**

<input type="checkbox"/> Ignitable	<input type="checkbox"/> Corrosive
<input type="checkbox"/> Reactive	<input type="checkbox"/> Oxidizer
<input type="checkbox"/> Toxic	<input type="checkbox"/> Halogen

Container Start Date \_\_\_\_\_  
Container Fill Date \_\_\_\_\_  
Generated by \_\_\_\_\_  
Generated by \_\_\_\_\_

### 10.0 ACCIDENT RESPONSE

#### 10.1 ACCIDENT RESPONSE PROTOCOL

**Campus Safety** must be alerted immediately (either by calling x3333 (315-781-3333) or by activating fire alarm) if any of the following apply:

- a. **A fire.**
- b. A spill of more than 50 mL of any chemical that is rated 3 or 4 in any category
- c. A spill in which students or faculty may be exposed to levels that may exceed the OSHA Permissible Exposure Limits (PELs), for example spills of volatile hazardous material outside the fume hood.
- d. A student or faculty needs medical attention.
- e. The professor or student feels it is appropriate to call security. In addition, the Provost Office must be alerted immediately at x3304 if any of the following apply:
  - a. A student or faculty needs medical attention.



b. The professor or student feels it is appropriate to call the Provost Office. The Colleges provide employees and students who work with hazardous chemicals an opportunity to receive free medical attention when:

- 1) The student complains of symptoms resulting from an exposure.
- 2) The professor or lab supervisor is advised of an abnormal exposure (e.g. spillage on skin) of a hazardous substance and deems a medical examination desirable. In either event, the student or employee should go to the emergency room at Geneva General Hospital. It is important to provide the physician with the information on the appropriate forms.

### **Accident Reporting Protocol**

There are three forms for reporting accidents: Initial Investigation of Possible Overexposure, Physician's Written Opinion for Medical Consultation, and Accident Report Form (see forms section of the CHP). The first is required for accidents in which employees or students have been exposed to sufficient quantities of hazardous materials that there may be significant damage. The second form is required if the exposure merits medical attention (see Section 11.0). The third form is required whenever the first two forms are required as well as any time there is a significant accident that may not involve chemical exposure. Minor accidents involving restricted spills, broken glassware, or small cuts, burns, or abrasions require completion of the forms only at the professor's discretion. When necessary, form(s) should be completed as promptly as possible without hindering rapid response to the problem. In any event, the form(s) should be completed before the end of the next working day. The hard copy should be filed in the Department's CHP. A hard copy or electronic version should be sent to the Associate Dean responsible for Sciences in the Provost Office. Faculty may also want to retain a hard or electronic copy. When accidents involve particularly hazardous materials (see Section 7.0), a copy of the Hazardous Chemical Procedure Form (which will have been completed before the particularly hazardous materials were handled) should be attached to the other forms. The purpose of these forms is to provide critical information in the event of an accident, to help the chemical hygiene committee formulate improvements in our

practices to avoid accidents in the future, and to inform appropriate administrators. The Hazardous Chemical Procedure Form contains information that will be useful in the chemical hygiene committee's evaluation of any accidents involving particularly hazardous compounds.

## **10.2 FLAMMABLE SPILL RESPONSE**

Spill supplies for flammable liquids shall have the capability to control the liquid portion of the spill and minimize the production of flammable vapors. For small acid spills (<4 liters) consult the Acid Spill Cleanup SOP in Appendix A. In the event of a large chemical spill (>4 liters), all personnel in the area should be either alerted or evacuated depending on the chemical involved. Faculty, staff and students should not attempt to handle extremely large releases of flammable or extremely hazardous liquids (e.g., >4 liters of cyanide, sulfide solutions, concentrated acids). Instead, they should turn off all ignition sources, vacate the laboratory immediately, activate the building's fire alarm by pulling the fire alarm pull station. Once outside call campus safety (x3333 or 315-781-3333). The FLI Director (585-755-3038) should also be notified immediately in the event of an accident or emergency.

HWS Campus Safety: (315) 781-3333

## **11.0 MEDICAL ATTENTION**

### **11.1 EVALUATION FOLLOWING A HIGH EXPOSURE**

HWS provides employees and students who work with hazardous chemicals an opportunity to receive free medical attention or, in some cases, surveillance if an individual complains of symptoms resulting from an exposure after the laboratory supervisor is advised of an abnormal exposure (e.g. spillage on skin) of a hazardous substance and deems a medical examination desirable. After any acute exposure event, the

faculty, staff or student should call Campus Safety (x3333 or 315-781-3333), who will call the Finger Lakes Ambulance and the Geneva Fire Department for on scene medical treatment. If needed the patient will be transported to Geneva General Hospital. It is important to provide the physician with the following information:

The identity of the substance(s) to which the patient has been exposed. An SDS sheet for each substance should be included.

A description of the conditions, time, and date of the exposure. This should include all pertinent information including quantity of hazardous substance, duration of exposure, route of exposure, location of injuries or sites of contact.

A description of the symptoms the exposed person is experiencing. This should include an indication of the time elapsed from exposure to the first appearance of the symptoms.

This information should be provided to the physician by completing the form entitled "Initial Investigation of Possible Over-Exposure Form." A copy of this form should remain on file in the FLI for at least three years. The physician will be requested to provide a written report to the patient as well as to the Director of Campus Security. The patient should be provided with the form "Physician's Written Opinion for Medical Consultation." HWS notifies employees of these results in writing either individually or by posting results within fifteen working days after receipt of monitoring results.

**FINGER LAKES INSTITUTE INITIAL INVESTIGATION OF POSSIBLE  
OVER-EXPOSURE FORM (Page 1 of 2)**

Date of incident: \_\_\_\_\_ Date of interview: \_\_\_\_\_

Name of Exposed Individual: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

Course (if applicable): \_\_\_\_\_ Faculty: \_\_\_\_\_

Name of chemical(s) in use: \_\_\_\_\_

\_\_\_\_\_  
(Attach SDS to this report)

Time of incident: \_\_\_\_\_

Duration of exposure: \_\_\_\_\_

Amount of chemical involved: \_\_\_\_\_

Control measures used at time of incident: \_\_\_\_\_

Personal protective equipment: \_\_\_\_\_

Description of incident: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witnesses: \_\_\_\_\_

Location of injuries or sites of contact, e.g. eyes, skin: \_\_\_\_\_

\_\_\_\_\_

Signs and symptoms developed, if any: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Elapsed time for signs and symptoms to develop: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Are signs and symptoms same as indicated on SDS? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

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**INITIAL INVESTIGATION OF POSSIBLE OVER-EXPOSURE FORM (Page 1 of 2)**

Conclusions of investigation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Medical examination recommended: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Name of Investigator                      Signature                      Date

**NOTE:** This information should be provided to the examining physician and returned to the FLI Director.

**PHYSICIAN'S WRITTEN OPINION FOR MEDICAL CONSULTATION**

Physician's Name: \_\_\_\_\_  
Employee's Name: \_\_\_\_\_  
Date of Visit: \_\_\_\_\_  
Description of incident: \_\_\_\_\_  
\_\_\_\_\_

Results of medical examination and any associated tests: \_\_\_\_\_  
\_\_\_\_\_

Medical conditions revealed upon examination that may place the employee at increased risk as a result of exposure to a hazardous chemical in their workplace:

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Additional recommended follow-up: \_\_\_\_\_

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Comments: \_\_\_\_\_

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The above referenced employee has been informed by me of the results of this consultation and any medical condition that may require further examination or treatment.

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Date

Physician's Signature

NOTE: This written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure. Return to the Finger Lakes Institute, Hobart and William Smith Colleges, Geneva, NY 14456.

**ACCIDENT REPORT FORM**

Staff Name: \_\_\_\_\_

Supervisor Name: \_\_\_\_\_

Course (if applicable): \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Description of

Incident: \_\_\_\_\_

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Chemicals involved: \_\_\_\_\_

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Physician consulted:            Yes        No

Corrective measures taken:

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## **12.0 FUME HOOD PROGRAM**

The CHP requires proper functionality of fume hoods and other personal protective equipment and that specific measures shall be taken to ensure proper and adequate performance of such equipment per 29 CFR 1910.1450 (e) (3) (iii). Fume hood maintenance and repair is ultimately the responsibility of the CHOs. The fume hood will be inventoried and inspected annually. The operating and testing procedures are as follows:

### **12.1 SAFE OPERATING PROCEDURES**

Personnel required to conduct procedures within the fume hood should be familiar with and practice the guidelines outlined below. See Appendix A for the complete SOP for operation of the AC632TA fume hood located in the FLI laboratory.

- Take note of the chemical and physical properties of the materials being handled by consulting the SDSs and other available resources.
- Do not assume that the fume hood is operating properly. Always refer to the results of the most recent fume hood survey by consulting the maintenance sticker or service report.
- Check the continuous flow monitoring device on the hood display (e.g. static pressure gauge), and compare the current reading with the established value recorded on the hood maintenance sticker or service report, to confirm that the hood operation is consistent with the results of the latest survey. The FLI hood is a Variable Air Volume (VAV) hood, which will maintain the set face velocity at any sash height.
- The fume hood in the FLI lab is outfitted with a bonded carbon filter specifically designed for handling acid fumes (ACF400.)



Confirm that any chemicals to be handled under the fume hood are compatible with the current filter configuration. Safe operating face velocities for the hood are 90 to 120 linear feet per minute (LFM). The maximum face velocity should not be exceeded to avoid turbulent flow.

- Based upon the hazards posed by the substances being handled and the results of the most recent hood survey, determine whether the hood is adequate for the work planned.
- Perform all chemical manipulations at least six inches inside the hood face. A line drawn on the work surface six inches inside the face can be an effective reminder.
- Place all laboratory equipment as far back in the hood as practicable and make certain that hood flow path is not blocked.
- Elevate large pieces of equipment off the work surface to reduce turbulence and improve airflow characteristics, thus optimizing hood performance.
- Avoid cross drafts in front of the hood from supply air ducts or pedestrian traffic within the hoods vicinity. Rapid movements by the user also may disrupt the airflow into the hood and reduce the hoods overall effectiveness.
- Minimize chemical storage in the fume hood to avoid impairing flow. This will also reduce the risk and magnitude of spills, and reduce any complications caused by a fire, minor explosion, or other incident.
- Avoid placing your head inside hood while performing chemical manipulations. Lowering the hood sash will provide some protection to the user in the event of splashes or a minor explosion.
- It is the responsibility of the faculty to assure that those working in the laboratory use the hood properly.

- Nonfunctional hoods should be reported immediately to CHOs and not used until repaired.

\* Note: All procedures involving the handling of acids and/or other hazardous chemicals must be conducted inside of the fume hood.

## **12.2 ANNUAL FUME HOOD INSPECTION & TEST PROCEDURES**

The CHP requires that fume hoods and other protective equipment are functioning properly and that specific measures shall be taken to ensure proper and adequate performance of such equipment.

The CHOs are ultimately responsible for fume hood inspections and flow testing. They are also responsible for documenting installation of any new fume hoods in the CHP. Nonfunctional or poorly performing hoods should be reported immediately to the CHOs and not used until repaired. The CHOs, or subcontractors, shall follow the inspection and testing procedures outlined below.

1. Schedule annual test. Certification of fume hoods for proper exhaust airflow to be conducted by a certified testing and balancing contractor.
2. Take airflow readings at every ten square inches of hood face.
3. Measuring probe should be held by a ring stand in plane of sash perpendicular to opening, taking care not to stand in front of opening.
4. Each reading should be averaged over a period of at least five seconds or a minimum of four readings taken at each point.
5. Readings should be averaged and no reading should deviate  $\pm 20\%$  from average. Acceptable average flow rate is 90 to 120 linear feet per minute (LFM).

6. The FLI hood is a Variable Air Volume (VAV) hood, which maintains the set face velocity at any sash height, however, for safe function the folding hood sash must be in the closed position while in use.
7. Fume hood must be labeled with test date, name of tester, sash position, and average. Reports are submitted to CHOs and kept on file.

More important factors:

- Minimize cross drafts. Air currents may draw contaminants from hood. Check supply air vents, open windows or doors, or rapid movements in front of hood.
- Laboratory work requiring the hood should be conducted at least six inches behind the hood face.
- Fan should be on high speed while in use.
- Unnecessary objects within the hood may cause turbulent flow, resulting in sub-optimal outflow of contaminants

### **12.3 FUME HOOD MAINTENANCE PROCEDURES**

Visual inspections by hood users and/or laboratory staff should be performed periodically using smoke or plastic ribbons.

- Preventive maintenance should be performed on exhaust fans, filters, and/or other controls.

### **13.0 GENERAL LABORATORY INSPECTION**

The lab shall be inspected every month by the laboratory director for safety compliance per the form listed below.

Monthly inspections and annual maintenance checks of fire extinguishers, as per 29 CFR 1910.157, are to be completed by Buildings and Grounds. Fire drills are to be performed at least twice each year. A New York State Fire Marshall performs fire inspections of the buildings annually.

### **13.1 SAFETY SHOWER & EMERGENCY EYEWASH TESTING**

An eyewash and safety shower are both located in the FLI laboratories. The eyewash/safety shower is located adjacent to the laboratory sink and the basement safety shower is located on the lakeside wall of the laboratory adjacent to the fire extinguisher. The CHOs are responsible for maintaining and testing safety showers and emergency eyewash stations in the FLI laboratory at least every month. Eye washes shall be flushed weekly. Faculty, staff, and students must ensure that the stations are readily accessible and must never be blocked by furniture or equipment.

**FINGER LAKES INSTITUTE  
GENERAL LABORATORY INSPECTION FORM**

Date														
Inspector														
Safety Glasses Stocked														
Gloves Stocked														
Chemicals Labeled														
Areas Organized														
Inventory Updated														
Cylinders Secured														
Hoods Functioning														
Volatiles Sealed														
Hazardous Materials Stored Properly														
Exit Accessible														
Eyewash & Shower Accessible														
Waste Labeled and Ready for Pickup														
No Food or Spills Present														

## 14.0 Training

The FLI provides employees with information and training on hazardous chemicals in their work area, at time of initial assignment, and prior to assignments involving new exposure situations to ensure employees are apprised of the hazards of chemicals present in their work area. The FLI Director, or a suitable delegated member of the CHC, is to conduct initial information and training sessions for new employees. The following information is conveyed to employees:

1. The contents of the Occupational Exposure to Hazardous Chemicals in Laboratories Standard 29CFR1910.1450 and its appendices.
2. The location and availability of the CHP
3. The signs and symptoms associated with exposures to hazardous chemicals used in the laboratory; and
4. The location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including but not limited to SDSs received from chemical suppliers.

In addition to above information, employees are trained on the following:

1. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area. (Monitoring methods and devices, visual appearance and/or odor, etc.)
2. The physical and health hazards of the chemicals.
3. The measures employees can take to protect themselves from these hazards, including specific procedures to protect employees from exposure to hazardous chemicals such as appropriate work practices, emergency procedures, and identification of necessary PPE.

**FINGER LAKES INSTITUTE EMPLOYEE CHEMICAL HYGIENE TRAINING  
FORM**

Name \_\_\_\_\_ Department \_\_\_\_\_  
Campus Location \_\_\_\_\_ Campus Phone \_\_\_\_\_  
Employee Classification \_\_\_\_\_ Supervisor \_\_\_\_\_

OSHA's Laboratory Standard (29CFR1910.1450) requires that each laboratory employee be made aware of the location and content of the laboratory's Chemical Hygiene Plan. By your signature below, you acknowledge that you have read and understood the contents of this Plan and know its location within the laboratory.

---

**Employee Signature**

**Date**

The Laboratory Safety Standard further requires that the employee's supervisor provide training, which covers the specific topics described in the "Information and Training" section of the Chemical Hygiene Plan. This training must be provided at the time of the employee's initial assignment, on a refresher basis at least annually and upon updating procedures. Document specific employee training below:

<b>Description of Training</b>	<b>Date</b>	<b>Provided By</b>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____






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**Supervisor Signature**

**Date**




## Training Checklist

This checklist may be used to assist employers with the laboratory specific training requirements outlined in the Laboratory Safety Standard.

 **Introduction to laboratory specific Chemical Hygiene Plan (CHP): Location and contents**  **Introduction to laboratory specific Standard Operating Procedures (SOP's)**  **Review Chemical Inventory**  **Review Location of SDS's**  **Review emergency information: Spills, Personal Injury, Fire, Power Failure**




-  Fire extinguisher
-  First Aid Supplies
-  Evacuation Plans

 **Basic Safety Rules**





-  Note rules with special importance for your laboratory.
-  Identify specific areas for food consumption.
-  Review procedures for working after hours.

 **Review the Chemical Inventory for your laboratory** 




**Review the HWS Waste Handling Procedures**

-  Labeling
-  Packaging
-  Pick-ups

 **Review procedures for chemical procurement, distribution, and storage**   
**Review Standard Operation Procedures for use of toxic materials**








-  Storage (acid cabinet, flammable liquid storage cabinet, etc.)
-  Personal Protective Equipment (PPE)
-  Location of procedure (mechanical ventilation required)
-  Waste Disposal (aqueous, solid, biohazardous, radioactive, etc.)

 **Review procedures for use of compressed gas cylinders**  **Protective Apparel and Equipment**









-  Discuss when safety glasses, goggles, or face shields are required.
-  Discuss any need for other protective equipment
-  Discuss selection of gloves.



### **Housekeeping, Maintenance, and Inspections**

-  Discuss materials stored or frequently present on the floor.
-  Discuss maintenance items for scientific equipment.
-  Discuss formal and internal inspection programs.  **Environmental Monitoring**
-  Discuss PEL's and TLV's for chemicals in use and how to reduce employee exposure.
-  Discuss building ventilation.
-  Discuss use of fume hoods or other mechanical ventilation systems.

### **Medical Program**

-  Discuss need for any medical surveillance (Respirator use, Potentially Hazardous Materials, Heat Stress, Noise, etc...)  **Training Program**
-  Discuss Departmental Specific training sessions (if available)  **Additional Safety Session Topics**
-  Review recent incidents/accidents/injuries and how to prevent reoccurrence.
-  Review new equipment at least annually.
-  Review new procedures at least annually
-  Review results of recent inspections and how to correct problem areas

## **14.1 GENERAL STUDENT TRAINING REQUIREMENTS**

Students and users of the laboratory shall be informed of the following components:

The contents of this CHP and its Appendices.

The location and availability of the Institute's CHP.

The PEL for OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard.

Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.

The location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including, but not limited to, SDSs received from the chemical supplier.

Methods and observations that may be used to detect the presence or release of a hazardous chemical (such as visual appearance or odor of hazardous chemicals when being released, etc.).

The physical and health hazards of chemicals in the work area.

The measures students can take to protect themselves from these hazards, including specific procedures the faculty has implemented to protect students from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used.

Training varies according to the laboratory supervisor's estimation of need. Whenever a new hazard is introduced, students will be informed of the new hazard and receive the appropriate training. Additional training is

provided immediately prior to every chemical procedure when deemed advisable by the laboratory supervisor. Safety training for staff (e.g. maintenance, housekeeping) is the responsibility of the CHOs.

#### **15.0 Record Keeping:**

The FLI establishes and maintains for each employee an accurate record of any measures taken to monitor employee exposure and any medical consultation and examinations including tests or written opinions as required by the standard. These records are kept, transferred, and made available in accordance with 29 CFR 1910.20, Access to Employee Exposure and Medical Records. Access to these records can be achieved through the HWS Human Resources Department.