Laboratory-Specific Chemical Hygiene Plan

Date prepared:

Introduction

This is the "laboratory-specific" part of the Chemical Hygiene Plan (CHP), and provides information and specifies procedures that are specific to the laboratory. It is the responsibility of the Principal Investigator (PI) or Laboratory Chemical Hygiene Officer to compile, review, and update this information. Sections not relevant to work in the lab may be deleted. The Office of Environmental Health and Safety (OEHS) will verify completeness during annual laboratory audits.

Identification of Laboratory Unit Covered by this Laboratory-Specific Plan

Laboratory Unit: (Building and Room Number)

Principal Investigator or Laboratory Director: (First and Last Name)
Office Location: (Building and Room Number)
Work Phone Number: (xxx) xxx-xxxx Alternate Phone Number: (xxx) xxx-xxxx

Department Chair: (First and Last Name)
Office Location: (Building and Room Number)
Work Phone Number: (xxx) xxx-xxxx Alternate Phone Number: (xxx) xxx-xxxx

Laboratory Safety Officer (LSO): Dr. Malaisamy Ramamoorthy
Office Location: G018, L.K. Downing Hall
Work Phone Number: (202) 806-6583 Alternate Phone Number: (202) 806-6624 (Dept Office)

Laboratory Chemical Hygiene Officer: Dr. Malaisamy Ramamoorthy
Title: (Lab Supervisor and Safety Officer)
Office Location: G018, L.K. Downing Hall
Work Phone Number: (202) 806-6583 Alternate Phone Number: (202) 806-6624 (Dept Office)

Checklist for documents to be appended to plan, if applicable:

Check below all items that are appended to this plan. Unless otherwise indicated, copies of appended documents should be sent to OEHS when this plan is requested.

☐ List of particularly hazardous and high risk chemicals (Required unless listed on page 2, or unless page 2 indicates that there are no particularly hazardous or high risk chemicals in the lab)
☐ Customized SOPs noted on pages 4 and 5, if any
☐ Summary of Chemical High Risk Procedures and Documentation of Approval, and hazard assessments or lab-specific SOPs for each high-risk procedure (Required unless page 6 indicates no High Risk Procedures)
☐ Laboratory Emergency Response materials (Required unless listed on page 9)
☐ Laboratory-specific chemical hygiene training documentation (to be kept in lab only – copies do not need to be sent to OEHS)

Safety Data Sheets (SDSs)

Every lab employee and student should be instructed on how to access and understand Safety Data Sheets.

SDSs for our chemicals can be found:

☐ In this laboratory, located or,

☐ In the departmental file, located or,

☐ On a personal or networked computer, located .

☐ Using the internet Safety Data Sheet database service

☐ Other: .

Backup plan for electronic SDSs: In the case of power or internet outage, contact the manufacturer to have an SDS faxed

Chemical inventory for particularly hazardous and high risk chemicals

Attach a list below the particularly hazardous and high risk chemicals used in this lab.

☐ The list of particularly hazardous and high risk chemicals is attached.

☐ We have reviewed our inventory, SDSs, and other relevant sources of information, and the GHS criteria for particularly hazardous and high risk chemicals, and have determined that our lab has no particularly hazardous or high risk chemicals.

Controlling Exposures & Hazards – Lab-Specific strategies

General strategies for controlling chemical exposures are described in the University Chemical Hygiene Plan, found in the following ORRC web page.

http://www.orrchoward.com/2_8_Chemical_Hygiene_Plan.pdf

*List below any **general** lab guidelines that are more stringent than the above-referenced section:*

Indicate below strategies for safe use of engineering controls in the lab:

☐ Our lab has a chemical fume hood.

- Look for certification date within the last year on sticker located on the sash or on the side of the hood.
  - ☐ Other:
- Position sash correctly for work:
  - ☐ Hood sash moves vertically – keep sash in lowest practical position while working. Sash must come down to shoulder height or lower.
  - ☐ Hood has combination sash.
    - For maximum flexibility, route tubes and cords under airfoil or through access at side of hood. If this is not possible, route these connections under the sash. Avoid running tubes or cords between horizontal sash panels.
    - Keep horizontal panels closed and move sash vertically during work. Keep sash in lowest practical position while working. Sash must come down to shoulder height or lower.

      OR
    - Close sash vertically. Place one sash panel between body and the work in the hood. Work with arms reaching around this sash panel.

☐ Our lab uses a biological safety cabinet for handling of powdered chemicals or water-based solutions/suspensions. Look for certification date within the last year on sticker located on sash.

☐ Our lab has "snorkel" exhaust to remove hazardous vapors from the benchtop. The snorkel must be placed as close as possible to the point of contaminant generation (generally within 4 – 6").

☐ Our lab has other local exhaust. Safe use instructions are included below.

Controlling Exposures & Hazards – Standard Operating Procedures (SOPs) and Safety Guidelines

Refer to the Howard University Safety Manual, Chemical Safety Section, "Chemical Hygiene Plan" chapter and sub-section, 2.8.5. Identification and Classification of Hazardous Chemicals, for requirements for Standard Operating Procedures.

http://www.orrchoward.com/Laboratory-Safety.html

Mark below the generic and/or lab-customized SOPs that are relevant for this lab. Generic or customized SOPs must be prepared, appended to this document and made available at the lab.

Type of SOP		**Chemical Name or *Hazard Class***	**Notes**
Generic SOP or Guide-line	Custom SOP		☐ Chemicals covered by *Hazard Class* SOPs are listed below ☐ See inventory to determine which SOP(s) apply for which chemicals
	☐	Aqua Regia	
☐		*Asphyxiants*	
☐ *(gels ONLY)*	☐ *(used in chemical reactions)*	Acrylamide	*(☐ precast polyacrylamide gels only – no SOP needed)*
	☐	*Biologically-Derived Toxins*	
☐		Bleach	
☐		b-Mercaptoethanol	
	☐	Chloroform	
☐		Compressed Gases	
☐		*Corrosives*	
☐	☐ *(high risk - see p.6)*	*Cryogens*	
☐		Diethyl Ether	
☐		Ethidium Bromide	
	☐	*Explosives*	
☐		*Flammables*	
	☐	Formalin and paraformaldehyde (PFA) solutions, PFA powder	
☐	☐	*Hazardous Drugs*	
☐	☐	Hydrofluoric Acid	*Also see p 7.*
	☐	Methylene Chloride/ Dichloromethane	
	☐	*Nanomaterials (if synthesizing particularly hazardous/high risk nanomaterials, also see p.7)*	
	☐	Nitric Acid	
☐		*Oxidizers*	
☐		*Organic Peroxide-Formers*	
	☐	Osmium Tetroxide	
	☐	Perchloric Acid	*If heated, also see p 7.*

Type of SOP		Chemical Name or *Hazard Class*	Notes
Generic	Custom		
	☐	Phenol	
	☐	Piranha	
☐	☐ *(high risk - see p.8)*	*Pressure and Vacuum*	
	☐ *(high risk - see p.7)*	*Pyrophoric and other highly reactive materials*	
☐ *(preserv-ative ONLY)*	☐ *(used in chemical reactions)*	Sodium Azide	*(☐ sodium azide present at <1% as a preservative in a pre-made kit only – no SOP needed)*
	☐	Sulfuric Acid	
☐		Tetrahydrofuran	
	☐	*Toxic Gases*	
☐	☐	*Toxic Liquids*	
☐	☐	*Toxic Powders (& suspensions or solutions)*	
	☐ *(high risk - see p.7)*	*Water Reactives*	
	☐	Other	or ☐ List is attached.

☐ This lab does not have or need any generic or customized SOPs.

Controlling Exposures & Hazards – Chemical High Risk Procedures

Chemical high risk procedures are lab procedures that pose significant risk of serious injury or major property damage if a malfunction were to occur (such as a utility outage, runaway reaction, container failure, or chemical spill/release) and/or which require any of the following:

- Engineering controls more specialized than good room ventilation, chemical fume hoods, biological safety cabinets and/or local exhaust such as snorkel or canopy hoods.*
- Personal protective equipment in addition to gloves, lab coats, eye/face protection and/or chemical or thermal protective aprons or sleeves.
- Chemical-specific first aid treatments or antidotes.

Contact the Office of Research and Regulatory Compliance at 202-806-8597- if you have questions regarding Chemical High Risk Procedures or if you need OEHS permission (as indicated in list below).

☐	Our lab does not perform any chemical high-risk procedures based on the definition above and the examples listed below. Name of person making this determination: Signature and date:_____

The following Chemical High Risk Procedures require written approval from the PI and OEHS. The date and form of this written approval must be noted below. A written hazard assessment or lab-specific SOP, approved by the PI and kept with this plan, is required for all high risk procedures.

	Chemical High Risk Procedure	**Date of PI approval**	**Date & form of written approval, Name of OESO approver**
☐	Use of liquid nitrogen or other cryogens in large quantities or in a manner that could displace oxygen. Specify cryogen(s), amount(s), task (if applicable), location (Building and Room number) and approximate room dimensions: "Large quantities" include any cryogen piped in from a tank located outside the building. For Liquid Nitrogen, "large quantities" would be more than one freezer and one attached liquid cylinder per room. Filling a cryocart or cooler is a task that could displace oxygen. Re-evaluation is required if the above-mentioned quantities or tasks move to a different room, or if there is a significant change in procedures or ventilation.		

* More specialized engineering controls include (but are not limited to) inert-atmosphere glove boxes used for employee safety, ventilated gas cabinets, oxygen monitors, and/or toxic gas monitors.

☐	Heating of concentrated perchloric acid (60% or more) Indicate location, concentration, amount, and frequency of use:		
☐	Use of chemicals that are acutely toxic category 1 by inhalation or skin contact in the concentration purchased. List acutely toxic chemicals in the lab: At the discretion of the OEHS reviewer, DEPARTMENTAL review and approval may also be required.		If departmental review was required by OEHS, indicate date and form of this review:
☐	Creation or synthesis of nanomaterials where the nano-sized compound is particularly hazardous or high risk. List materials created, including size of particles, and indicate if materials are created as a powder or in suspension:		
☐	Use of MPTP or other chemicals for which an antidote or specific first-aid treatment is required. (Note: Use of hydrofluoric acid does NOT require OEHS approval and is listed in next section.) List chemical and antidote/first aid, indicate if it is on hand, and indicate if Employee Occupational Health and Wellness is aware:		

The following Chemical High Risk Procedures require a hazard assessment and written approval from the PI. In some cases, the PI may seek or the Department may require Departmental review. This review/approval must be documented in writing on the hazard assessment/lab-specific Standard Operating Procedure and summarized below.

		PI Approval Date and Information about Departmental Review/Approval (if required)		
		PI Approval Date	Dept. review/approval	
	Chemical High Risk Procedure		Required?	(Date&form of review)
☐	Use of hydrofluoric acid. List quantities and concentration:)		Generally not	
☐	Use of reactive, pyrophoric & explosive chemicals that are considered high risk. (List materials or classes of materials:)			
☐	Chemical procedures involving pressure, vacuum, or heat when failure of the container could result in significant physical hazards, exposure to toxic materials,			

	or fire. List procedures:)			
☐	Other chemical high risk procedures meeting the definition at the top of page 6. (List specific procedures/equipment and hazards:)			

In addition, any scale-up of a previously approved high-risk procedure will require a new hazard assessment or new lab-specific SOP and written approval by the PI. This section of the lab-specific Chemical Hygiene Plan must be updated when scale-ups have been approved. OEHS review/approval will be required for scale-ups of procedures that originally required their approval. The need for Departmental review/approval will be based on Departmental criteria.

Controlling Exposures & Hazards – Work Practices Requiring Prior Approval

Some laboratory work may not meet the definition of "high risk procedures" above, but may introduce additional risk because of when and/or how the work is conducted.

The following work practices require prior approval of the principle investigator or Laboratory Safety Officer /Chemical Hygiene Officer. Detail here if these scenarios are applicable and, if so, how approval will be documented in this lab:

Working alone:

Unattended Experiments:

(Other, if any)

Lab-Specific Information for Chemical Waste Disposal

☐ Our laboratory is a registered chemical waste generator and

- Chemical waste labels are available with the LSO office (G018-LKD).
- Large Waste Containers are stored (G029).
- Secondary Containers are stored in G029 (Contact: LSO)
- When waste needs to be submitted, the following person(s) can submit a waste pickup request through the Laboratory Safety and Waste Management System:
  Dr. Malaisamy Ramamoorthy

☐ Our laboratory does not generate chemical waste that needs to be picked up by OEHS

☐ Our laboratory is off-site and chemical waste is handled as follows:

Emergency Response

For general emergency procedures for on-campus labs, see the Laboratory Emergency Plan, Large Chemical Spills Contingency Plan and the Emergency response contact poster at the lab door.

http://www.orrchoward.com/IBC_Emergency_Plan.pdf

List below or attach any specific emergency procedures for this lab. (For example, powering off certain equipment, different chemical spill instructions for off-campus labs, etc.)

☐ Lab Emergency Procedures are attached.

Spill clean-up supplies and instructions:

Spill cleanup supplies are located:

Types available (acid, base, solvent, combo, etc.):

Usage information: (Refer to instructions in prepared kits or SOPs, or provide instructions here.)

Certification

By signing and dating here the Laboratory Chemical Hygiene Officer and Principal Investigator certify that this Laboratory-Specific Chemical Hygiene Documentation is accurate and that it effectively provides for the chemical safety of employees and students in this laboratory.

Principal Investigator or Laboratory Director

_____

Signature Printed Name Date

Laboratory Chemical Hygiene Officer (if other than PI)

_____

Signature Printed Name Date

Annual Review and Updates

By signing and dating here, the Laboratory Chemical Hygiene Officer certifies that the required annual review (and update, if needed) of the Laboratory-Specific Chemical Hygiene Plan has been completed, and that it continues to be accurate and to effectively provide for the chemical safety of employees in this laboratory.

Lab Chemical Hygiene Officer Signature	Lab Chemical Hygiene Officer Printed Name	Date	Lab CHP Updated? (Y/N) *(Note minor updates below.)*

Laboratory-specific chemical hygiene training documentation
(Copy this form and have each member of your lab sign one before beginning work with chemicals.)

I have received information and training on the subject of chemical hygiene, including:

- ☐ I have read the Howard University Chemical Hygiene Plan (Section 2.8 of the Howard University Laboratory Safety Manual) available at http://www.orrchoward.com/Laboratory-Safety.html.
- ☐ I am familiar with the Howard University Safety Manual (http://www.orrchoward.com/Laboratory_Safety_Management_Manual-Clean_Feb_24_2016_Logo.pdf) and have reviewed the Hazard Communication (Chapter 2.9) in that manual.
- ☐ I have read the Laboratory-Specific Chemical Hygiene Plan for my laboratory, including the generic SOPs/guidelines and customized SOPs indicated in this plan. I am familiar with the contents of relevant SOPs and guidelines and agree to follow the written procedures.
- ☐ I have been given the opportunity to read the OSHA Lab Standard, 29 CFR 1910.1450 (OSHA Standard 1910.1450) and its appendices.
- ☐ I have been instructed on how to locate important reference materials, such as those containing hazard information about chemicals and safe handling, storage, and disposal practices for the chemicals found in this laboratory.
- ☐ I know where/how to locate Safety Data Sheets for chemicals in this laboratory.
- ☐ I have been apprised of the physical and health hazards of chemicals in this laboratory, and am aware of the
  - ☐ Permissible Exposure Limits (or, if there is no PEL, other recommended exposure limits), and
  - ☐ Signs and symptoms associated with exposures to chemicals used in this laboratory.
- ☐ I am aware of the engineering controls, work practices, emergency procedures, and personal protective equipment needed to protect myself from the hazards in the laboratory.
- ☐ I am aware that Howard's Office of Environmental Health & Safety (OEHS) may be contacted to evaluate chemical exposure if needed.

Print Name: _____ Date: _____

Signature: _____

Review of laboratory-specific chemical hygiene documentation

Laboratory-specific chemical hygiene documentation should be reviewed by each member of the lab at least every year, or whenever there is a revision to the documentation (such as a new or revised SOP). This signature page certifies review of the following:

☐ New or revised SOPs or guidelines: (list)
☐ Updates to Chemical Hygiene Plan: (summarize updates)
☐ Annual review of Chemical Hygiene Plan and relevant SOPs (list changes from last year, if any)

Last Name	First Name	Duke ID	Signature	Date