

CHP FORMS

Each laboratory on campus that has chemicals must have a Chemical Hygiene Plan (CHP) which addresses **two main questions**:

- (1) What are the hazards present?
- (2) How are the hazards controlled?

Lab CHPs are commonly divided into **two major formats**:

- (1) General-Level Safety Information
- (2) Lab-Specific Safety Information

As such, a lab's CHP is composed of the *Chemical Safety Guide* and a completed version of this document, the *CHP Forms*. For assistance in compiling lab-specific safety information, the CHP Notebook is available in Word or PDF formats. Please visit <http://www.dr.illinois.edu/css/safety.aspx> for more information.

It is the responsibility of the PI to review the *Chemical Safety Guide* and to use it in the development of a complete plan – specific to each laboratory.

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NOTE: This is a major revision of the content and organization of this document. Please take some time to review the changes and additions. Especially note changes to Section 6 (SOPs) and Section 7 (Training).

ACKNOWLEDGEMENTS:

For most of this information and its format, we are indebted to the **University of Michigan Department of Occupational Safety & Environmental Health**.

For the Reaction Risk Assessment Form (see Section 6) and the Reaction Safety Training Record we are indebted to the **Imperial College London, Department of Chemistry**.

Section 1 – Safety Program Key Personnel

In addition to the following contact information, please include your department's safety program key personnel.

Emergency Assistance	9-911 (campus phone)	
	911 (off campus)	
Division of Research Safety	333-2755	http://www.drs.illinois.edu
Biological Safety		
Chemical Safety		
Radiation Safety		
Division of Safety & Compliance	265-9828	http://www.fs.uiuc.edu/sac.cfm
Environmental Compliance		
Occupational Health & Safety		
Division of Public Safety	333-1216	http://www.dps.uiuc.edu
Campus Emergency Planning		
Campus Risk Management		
University of Illinois Police		

Department Safety Contact:

(Name) (Position) (Phone) (Email)

Lab Safety Contact:

(Name) (Position) (Phone) (Email)

Section 2 – Laboratory Contact Information

This Chemical Hygiene Notebook pertains to the laboratories and the research facilities of:

Laboratory Room(s) and Building:

Laboratory Phone Number(s):

Name of Principal Investigator:

Emergency Phone Number(s):

Name of Lab Safety Contact (*if different than PI*):

Emergency Phone Number(s):

Names of Other Lab Personnel and Users:

Emergency Phone Number:

List all rooms related to the above mentioned laboratory / research facility. Include all rooms such as temperature controlled rooms, storage closets, and animal facilities associated with laboratory activities. Indicate the faculty who currently direct the indicated rooms.

Related Room(s):

Faculty Supervisor:

Phone Number(s):

Emergency Contact Sign

(active PDF available at <http://www.dr.s.illinois.edu/gls/forms/pdf/emergencycontactsign.pdf>)

Place in MIDDLE section of a 3-slot sign holder (if available.)

IN CASE OF EMERGENCY CALL 9-911

ROOM No. _____	Lab Supervisor/PI _____
BLDG NAME _____	Office Location _____
DEPARTMENT _____	Campus Phone _____
	Home Phone _____

EMERGENCY CONTACTS

Name & Office Address	Office Phone	Home Phone

SPECIAL HAZARDS

LOCAL ALARM(S)

Instructions: _____	Is local alarm present? Y <input type="checkbox"/> N <input type="checkbox"/>
_____	Explain what alarm indicates.
_____	_____
_____	_____

Campus Division of Research Safety 333-2755

Prepared By _____
Date Posted/Updated _____

Update annually or when
information changes

This side should face the REAR of the signholder.



Check here if none of the following hazards are present at this location (in quantities greater than indicated.)

Potential Hazards (Mark only those hazards present above threshold amounts listed)

- Compressed Gases (larger than lecture bottle size)
 - Poison Gas (also labeled Inhalation Hazard)
(include lecture bottle size for this category only)
 - Corrosive Gas
 - Oxidizing Gas
 - Flammable Gas
 - Nonflammable Gas or Inert Gas
- Flammable Liquids (greater than 10 gallons)
- Corrosive Liquids (greater than 10 gallons)
- Water Reactive Chemicals (greater than 100 grams)
- Electrical Hazards (any open wiring/connections)
- Mercury (greater than 250 milliliters)
- Other (specify: _____)

Lab and Building-Specific Evacuation Worksheet

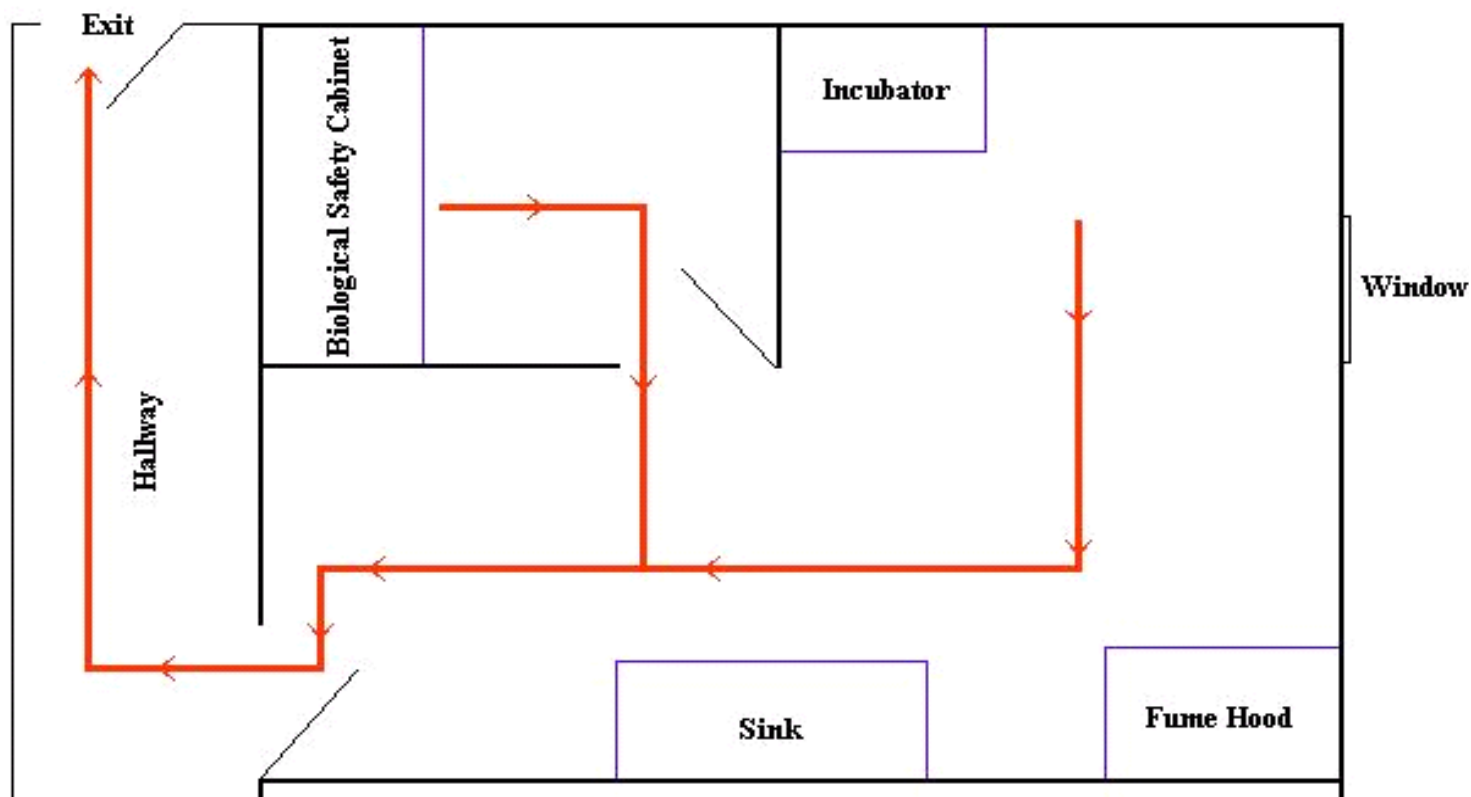
To report an emergency: dial **9-911 from a campus phone**
(911 from a cell phone)

Building Manager / Emergency Coordinator: _____

Floor Marshal(s) for this area: _____

Designated assembly areas: _____

Example Emergency Egress Map



Section 4 – Chemical Inventory

Each laboratory is responsible for taking and maintaining its own chemical inventory. A copy of the annual inventory is to be placed in this section.

A chemical inventory should have a clear title and heading, which includes the following information:

- Room number and building name
- Department
- Name of person taking inventory
- Date of inventory

There is no specific required format for the information provided in the Chemical List, although a format is provided on the following page. Principal Investigators should also consider their own needs for chemical management. A chemical inventory should strive to identify the following:

- Chemical name
- Approximate quantity
- Basic hazard information or classification
- Location
- If chemical is reordered
- If quantity changes significantly

The Hazard Classifications can be identified with notations such as the following (suggested by DRS):

BIO	Biohazard	NON	Non-Hazardous
CARC	Carcinogen	OX	Oxidizer
CG	Compressed Gas	PF	Peroxide-Former
CMB	Combustible	PYR	Pyrophoric
COR-A	Corrosive - Acid	R	Reactive
COR-B	Corrosive – Base/Caustic	RAD	Radioactive
EXP	Explosive	RTX	Reproductive Toxin
F	Flammable	SEN	Sensitizer
HTX	Highly Toxic	TOX	Toxic
IR	Irritant	WR	Water-Reactive

A chemical may belong to more than one Hazard Class. It is the responsibility of the Principal Investigator to determine if chemicals in use or in storage produce a potential hazard that must be identified on the Chemical List.

Chemical Inventory Form

(page ___ of ___)

Location: _____

Name: _____

Department: _____

Date: _____

Chemical Name (*)	Quantity	Hazard Class(es)	Location	Date Received	Date Removed

(* Asterisk identifies a chemical as one of the laboratory's "Top 20" chemicals (see Section 5 of the CHP Notebook).

Section 5 – Material Safety Data Sheets (MSDSs)

This section should contain MSDSs for the laboratory's "Top 20" chemicals – the 20 most hazardous, largest volume, or most frequently used materials. This section should also minimally include the location of MSDSs for any other special materials or particularly hazardous chemicals – acute toxins, carcinogens and reproductive toxins – used in this laboratory.

Each lab is responsible for obtaining and maintaining copies of relevant MSDSs. Make sure MSDSs correlate to the chemical manufacturer and composition. Most MSDSs can be quickly found through links on the DRS website: <http://www.drs.uiuc.edu/>. DRS can assist in obtaining MSDSs that are difficult to find. If there are a large number of MSDSs, then it may be appropriate to place them in a separate MSDS Notebook, to be kept in a specified location (noted below).

The MSDS Notebook is located: _____

Section 6 – Laboratory Safety Standard Operating Procedures (SOPs)

Each laboratory working with hazardous chemicals should include their own specific Standard Operating Procedures (SOPs) here. This section can include laboratory-specific procedures for the following subjects, as they apply for each laboratory.

- Working with carcinogens or reproductive toxins
- Chemical procurement, distribution, and storage
- Housekeeping, maintenance, and inspections
- Selection, use and disposal/laundrying of protective apparel and equipment
- Dealing with hazardous procedures, substances, and/or equipment
- Working with radioisotopes
- Working with biologically hazardous materials
- Operations requiring special approval prior to being conducted
- Any additional materials, special equipment instructions, experimental procedures, or precautions/procedures associated with unique hazards

The SOP templates which follow are intended as resources – you may adjust the format for your usage. The underlying rule in writing an SOP is to convey the required information in the most functional way.

Please list the SOP titles pertinent to this laboratory:

Laboratory Safety Standard Operating Procedure (SOP)
(for the use of hazardous materials or equipment)

NAME OF PROCEDURE:

PREPARED BY:

REVISION DATE:

LOCATION – This procedure may be performed at the following location(s):

HAZARDS – The materials and equipment associated with this procedure present the following exposure or physical health hazards. Safety precautions are prudent and mandatory:

ENGINEERING CONTROLS – Prior to performing this procedure, the following safety equipment or device features must be available and ready for use (e.g., chemical fume hood, glove box, gas cabinet, pressure-relief valve, automatic shut-off, intrinsically safe hot plate):

ADMINISTRATIVE CONTROLS – This procedure requires the following training (e.g., pyrophorics handling, corrosive gas techniques), techniques (e.g., use spatula when weighing powder, warm cryogenically cooled material in stages), work practices (e.g., attended operation only, working alone prohibited, notify lab occupants), and warning devices (e.g., toxic gas detection, smoke detectors):

PROTECTIVE EQUIPMENT – Prior to performing this procedure, the following personal protective equipment must be obtained and ready for use (e.g., safety eyewear, acid resistant gloves, lab coat, chemical splash apron, closed toed shoers, long pants):

See PPE Selection Worksheet for more detailed information.

WASTE DISPOSAL – This procedure will result in the follow regulated waste which must be disposed of in compliance with environmental regulations:

ACCIDENTAL SPILL – In the event that a hazardous material spills during this procedure, be prepared to execute the following emergency procedure:

PRIOR APPROVAL – This procedure is considered hazardous enough to warrant prior approval from the Principal Investigator.

- YES -

- NO –

CERTIFICATION – I have read and understand the above SOP. I agree to contact my Supervisor or Lab Manager if I plan to modify this procedure.

Signature

Name (Print)

Date

Building & Room #

Personal Protective Equipment (PPE) Selection Worksheet (to be completed after Laboratory Safety SOP)

Job Title: _____

Date: _____

Department: _____

Supervisor: _____

Location: _____

Analysis By: _____

Employee Name(s): _____

Signature: _____

Tasks	Hazards	Required PPE

NOTE: For glove selection for a particular hazard, please refer to the specific glove manufacturer’s selection chart.

Personal Protective Equipment (PPE) Selection Worksheet
 (to be completed after Laboratory Safety SOP)

Job Title: Laboratory Worker Date:
 Department: All Supervisor:
 Location: Research Buildings Analysis by:
 Employee Name(s): All Signature:

Tasks	Hazards	Required PPE
Working with small volumes of corrosive liquids < 1 liter	Skin and eye damage	Safety glasses, goggles (if splash hazard), Light chemical resistant gloves, Lab coat, closed shoe
Working with large volumes of corrosive liquids > 1 liter, acutely toxic corrosives or work which may create a splash hazard	Large surface area skin and eye damage, poisoning, or great potential for eye and skin damage.	Safety goggles & face shield Appropriate heavy resistant gloves Above clothes and chemical resistant apron
Working with small volumes of organic solvents < 1 liter	Skin and eye damage Slight poisoning potential through skin absorption	Safety glasses, goggles (if splash hazard), Light chemical resistant gloves, Lab coat, closed shoe
Working with large volumes of organic solvents > 1 liter, very dangerous organic solvents or work which may create a splash hazard	Major skin and eye damage, poisoning through skin absorption	Safety goggles & face shield Appropriate heavy resistant gloves Above clothes and chemical resistant apron

NOTE: For glove selection for a particular hazard, please refer to the specific glove manufacturer's selection chart.

S A M P L E

Personal Protective Equipment (PPE) Selection Worksheet
(to be completed after Laboratory Safety SOP)

Job Title: Laboratory Worker Date:
 Department: All Supervisor:
 Location: Research Buildings Analysis by:
 Employee Name(s): All Signature:

Tasks	Hazards	Required PPE
Working with small volumes of human blood, body fluids or other Bloodborne Pathogens (BBP)	Potentially infectious disease (BBP) Potential spread of infectious disease	Safety glasses, latex gloves Lab coat, closed shoe
Working with large volumes of human blood, body fluids or other Bloodborne Pathogens (BBP) and/or splash hazards	Increased potential of becoming infected with infectious disease (BBP) Increased potential spread of infectious disease	Safety goggles & face shield Latex gloves Lab coat, closed shoe coveralls and foot covers may be necessary
Working with hazardous powders	Potential skin and eye damage, Potential for poisoning through skin absorption	Safety glasses Goggles for large quantities Chemical resistant gloves Lab coat, closed shoe
Working with acutely toxic hazardous powders	Great potential skin and eye damage Great potential for poisoning through skin absorption	Safety goggles Appropriate heavy resistant gloves Lab coat, closed shoe Coveralls and booties if necessary
Working with radioactive materials	Potential cell damage. Potential spread of radioactive materials	Safety glasses, goggles (if splash hazard), Latex gloves, Lab coat, closed shoe
Working with radioactive chemicals (corrosives, solvents, powders, etc.)	See appropriate chemical section above Potential cell damage. Potential spread of radioactive materials	Safety glasses, goggles (if splash hazard), Chemical resistant gloves, Lab coat, closed shoe Use PPE for applicable tasks above
Working with radioactive human blood, body fluids or other BBPs	Potential cell damage Potential spread of radioactive materials Potential BBP exposure	Safety glasses, goggles (if splash hazard), Latex gloves, Lab coat, closed shoe

NOTE: For glove selection for a particular hazard, please refer to the specific glove manufacturer's selection chart.

S A M P L E

Personal Protective Equipment (PPE) Selection Worksheet
 (to be completed after Laboratory Safety SOP)

Job Title: Laboratory Worker Date:
 Department: All Supervisor:
 Location: Research Buildings Analysis by:
 Employee Name(s): All Signature:

Tasks	Hazards	Required PPE
Working with cryogenic liquids	Major skin, tissue and eye damage	Safety glasses or goggles for large volumes or splash hazards Heavy insulated gloves Lab coat, closed shoe
Working with very cold materials and equipment (freezers, dry ice)	Skin damage	Safety glasses Insulated gloves Lab coat, closed shoe
Working in cold environments (walk-in cold rooms or freezers)	Frostbite (skin damage) Hypothermia	Safety glasses Insulated gloves and warm clothing Lab coat, closed shoe
Working with hot liquids, equipment and/or open flames (autoclave, Bunsen burner, waterbath, oil bath)	Skin damage Eye damage	Safety glasses or goggles for large volumes or splash hazards Insulated gloves Lab coat, closed shoe
Working with large volumes of hot, cold, or cryogenic liquids	Major skin and eye damage Frozen or burned body tissues	Safety glasses or goggles and face shield Heavy insulated gloves Above clothes and apron or coveralls
Working with Ultraviolet Radiation	Conjunctivitis Corneal eye damage Erythema	UV face shield and goggles Lab coat, closed shoe
Working with LASER radiation	Retinal eye damage Skin damage	Appropriate shaded goggles with optical density based on individual beam parameters Lab coat, closed shoe No jewelry/reflective items allowed

NOTE: For glove selection for a particular hazard, please refer to the specific glove manufacturer's selection chart.

S A M P L E

Personal Protective Equipment (PPE) Selection Worksheet
 (to be completed after Laboratory Safety SOP)

Job Title: Laboratory Worker Date:
 Department: All Supervisor:
 Location: Research Buildings Analysis by:
 Employee Name(s): All Signature:

Tasks	Hazards	Required PPE
Working with Infrared (IR) emitting equipment (glass blowing)	Cataracts and flash burns to cornea	Appropriate shaded goggles Lab coat, closed shoe
Arc/TIG welding	Conjunctivitis Corneal damage Erythema	Appropriate shaded goggles and face shield Work gloves
Instrument or equipment repair/service	Eye damage from foreign objects	Safety glasses No loose clothing or jewelry
Metalworking/Woodworking shop	Eye damage from foreign objects	Safety glasses No loose clothing or jewelry
Glassware washing	Skin lacerations	Heavy rubber gloves Lab coat, closed shoe
Working in industrial lab with potential injury from falling equipment or tools, e.g., Earthquake lab, Structural Engineering lab, etc.	Head injury, foot injury	Hard-hat Steel toe boots
Spill clean-up	See potential hazards for applicable task section	See applicable individual task section
Changing cryostat knife blade	Skin lacerations, Infection by BBP	Steel mesh glove

NOTE: For glove selection for a particular hazard, please refer to the specific glove manufacturer's selection chart.

S A M P L E

Reaction Risk Assessment Form

Acknowledgment: Imperial College London, Department of Chemistry

Write all your reaction here including work-up and purification method (e.g., chromatography). Use the form below to risk assess ALL associated reaction and process conditions (e.g., heating, cooling, vacuum), particular hazards (e.g., exotherm, gas evolution, flooding, asphyxiation, burns – hot or cold, explosion), quench procedures, and waste disposal as well as the chemicals to be used, including your expected product, solvents, and known byproducts.

Reaction ID:

Chemical hazards and routes of exposure										
Route of exposure: 1 – Inhalation 2 – Skin / eye contact 3 – Ingestion	Carcinogen / teratogen / mutagen	Very toxic / toxic	Harmful / Irritant	Explosive	Pyrophoric	Highly flammable / Flammable	Oxidizer	Corrosive	Lachrymator	Other (specify):

Compound	FW	d	Quantity	mmols	equiv									

Repeat experiment (select one) **No** / **Yes** – previous assessment located at:

Reaction Category (select one): **A** **B** **C** **D**

Standard protocol followed (give reference):

Reaction conditions and associated processes (heat, cooling, pressure, vacuum, etc.) and hazards:

Control Measures: (select all that apply)	Safety glasses: <input checked="" type="checkbox"/>	Lab coat: <input checked="" type="checkbox"/>	Chemical Fume Hood:	Glove Box:
	Gloves (type):	Nitrile:	Other:	
	Scrubber (type):	Other:		

Special emergency procedures for this process:

Reaction and/or reagent quench:
(Give quench type and possible hazard)

Waste disposal (select as appropriate) Chlorinated Waste Hydrocarbon Waste Silica Waste Other (specify):

Co-worker signature Date: Designated Supervisor Signature Date:

Completing the Reaction Risk Assessment Form

The Risk Assessment Form contains space in which all hazardous substances being used may be listed, and the associated hazards noted by selecting the appropriate column. Safety data and hazard information may be obtained from several sources, including the following useful web sites:

<http://www.sigma-aldrich.com>

<http://physchem.ox.ac.uk/MSDS/>

<http://www.msdssearch.com/DBLinksN.htm>

The form also contains space for any special containment, work-up or emergency procedures to be recorded.

Reaction Categories

Risk assessments require reactions to be placed into categories **A-D** as follows, requiring decreasing levels of supervision:

- A** This activity **must** be directly supervised.
- B** The advice and approval of your supervisor must be sought before the task is started.
- C** The work involves risks requiring careful attention to the safety related aspects of it.
The worker has been trained in the task and has demonstrated competence.
- D** Tasks in this category carry no undue risks.

Reactions involving substances which are carcinogens, mutagens or teratogens; pose risk of serious eye damage; are pyrophoric, highly toxic, or pose an explosion risk **are by default placed in category A**. A list of specific substances likely to be in this category is given on the back of the Reaction Safety Training Record.

Once a researcher has demonstrated competence in the use of these substances, the Principal Investigator has the discretion to amend their category (e.g., **A** to **B** or **C**) by signing the appropriate place on the back of the Reaction Safety Training Record.

Which category should be used?

For the reagents and procedures listed on the back of the Reaction Safety Training Record, the category is clear - they are category **A** unless the supervisor has downgraded them by signing the back of the Reaction Safety Training Record. For other reactions, the choice of category may be subjective and will depend on the worker's experience. In the early stages of a PhD, and for undergraduate project students, most reactions (apart from those involving category **A** procedures) will be in category **B**. As the researcher's experience increases, some reactions can be placed in lower categories. In all cases, the supervisor should check that the appropriate category is chosen.

Clearly, postdoctoral workers may already have significant experience in performing category **A** procedures prior to joining the University, and the Principal Investigator may downgrade these immediately to **B** or **C** by signing the appropriate places on their Reaction Safety Training Record.

Who should sign Risk Assessments?

One sensible policy is that postdoctoral workers are allowed to sign their own risk assessments and those of other workers provided that (a) their supervisor has signed their Reaction Safety Training Record to indicate their competence (i.e., has downgraded the relevant procedures to category **C**); and (b) provided that they are willing to do so. Graduate students, however, should not be allowed to sign risk assessments.

By definition, risk assessments for category **A** and **B** reactions must be checked and signed **before** experimental work is performed. For category **C** and **D** reactions, risk assessments should still be completed before the experimental work is performed, but the assessments need not be signed beforehand. However, they must be checked and signed regularly by a competent person and supervisors are responsible for ensuring this is done.

Section 7 – Training

The Principal Investigator / Laboratory Supervisor is responsible for ensuring that all laboratory personnel get the appropriate safety training. This may be achieved by using the “Chemical Management for Laboratories” training from DRS (see: www.drs.uiuc.edu/training), supplemented with further instruction on site-specific chemical hazards and safety procedures, as determined by the Principal Investigator / Laboratory Supervisor.

By law all laboratory personnel should receive training on how to protect themselves from the hazards present at their locations. Research laboratories are hazardous workplaces where highly skilled personnel carry out finely detailed work. As such it is important that all laboratory personnel are competent to perform their research activities effectively, and competent to do so safely – without damaging equipment, without harming themselves and without harming their neighboring researchers.

Documented training serves as one building block of competence, together with verbal and hands-on instruction. Documentation is a necessary part of an effective training program, although it is no guarantee of personnel competence. Naturally, on-going interaction with knowledgeable researchers should continue beyond the documented phases of training to ensure the proper skills are imparted to new research personnel.

Safety training records should be kept in this section for each person using the laboratory, including the Principal Investigator. Records should minimally include the person trained, the type of training (e.g., General Lab Safety Lecture, a laboratory-specific training topic), the trainer (e.g., DRS, Principal Investigator), and the training date. Training certificates provided by DRS may also be added to this section.

As examples of lab-specific training records, four different forms are provided on the pages which follow. These forms serve slightly different functions and may be used as needed:

Chemical Hygiene Training Record

The concept behind this form is the personal training file, a collection of the training received by an individual. Under “Description of Training” reference can be made to other documentation if more than a short description is desired. However, if training records are organized only by person, it becomes difficult to search training records by topic.

Reaction Safety Training Record

Another piece of the personal training file, this specialized form can be used to document a researcher’s increasing competence with hazardous processes, and therefore reduced supervision, over time.

New Orientation Checklist

The Safety Training Checklist provides a structure for covering a set of predetermined topics in a training program. It is particularly useful for conducting orientation training, as it helps remind the trainer about topics to cover. Each item on the checklist can point to other documents which describe the training content. If the checklist provided here is used, trainer and trainee can initial and date points as they are completed.

Additionally, not all points of the checklist need apply to all personnel, and certain points may be reserved until they are applicable for an individual.

Session Record

A sign in sheet is appropriate for recording all attendees at a large training session. However, if training records are organized only by topic, it becomes difficult to answer the question, “What training has a given person received?”

Laboratory Safety Training – Chemical Hygiene Training Record

Name _____ Department _____

Campus Location _____ Campus Phone _____

Employee Classification _____ Supervisor _____

OSHA's Laboratory Standard (29 CFR 1910.1450) 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 employee's supervisor is required to provide training on specific topics as described under the "Information and Training" section of the Lab Standard. This training must be provided at the time of the employee's initial assignment, on a refresher basis as determined by the employer, and upon updating procedures. Document specific employee training below:

Description of Training

Date

Provided By

Description of Training	Date	Provided By

Laboratory Safety Training – Reaction Safety Training Record

Acknowledgment: Imperial College London, Department of Chemistry

Name:	Supervisor:
Project Title:	Alternate Supervisor:

All experiments must be assessed as being in one of the following four categories:

- A** This activity **must** be directly supervised.
- B** The advice and approval of your supervisor must be sought before the task is started.
- C** The work involves risks requiring careful attention to the safety related aspects of it.
The worker has been trained in the task and has demonstrated competence.
- D** Tasks in this category carry no undue risks.

Category **A** covers use of all compounds which present any of the following hazards:

Carcinogen

Mutagen or teratogen

Risk of serious eye damage

Pyrophoric

Very highly toxic

Explosion risk

This will include some of the specific activities shown on the following page, which must therefore be directly supervised. Your supervisor has the discretion to amend the category for these activities from **A** to **B** or **C** *once you are sufficiently trained and have demonstrated competence in them*. Where this is the case, your supervisor must sign and date the appropriate space on the following page.

I have read this form.

Worker's signature: _____

Date: _____

Supervisor's signature: _____

Date: _____

Category A Activity	Standard Procedure reference	Amended Category	Supervisor Signature / Date
Organolithiums, organozincs, and other pyrophoric reagents			
Organoaluminiums			
Use of UV light			
Hydrogenation			
Peroxides (including 30% H ₂ O ₂)			
Liquid ammonia			
Ozone			
Toxic, corrosive or vesicant gases (e.g., HCl, NOCl, COCl ₂ , Cl ₂ , CO, H ₂ S, HCN, NO, F ₂ , butadiene)			
Beryllium			
Inorganic cyanides			
HF			
Alkylating agents (e.g., MeI, R ₂ SO ₄ , CF ₃ OSO ₂ R, HCHO, ethylene oxide, ClCH ₂ OMe etc.)			
Diazomethane			
Highly toxic solvents (e.g., benzene, CCl ₄ , CS ₂ , HMPA, 1,4-dioxane, etc.) and human carcinogens			
Highly toxic volatile metallic substances, (e.g., OsO ₄ , metal carbonyls, etc)			
Potentially hazardous operations: 1. Sealed tube reactions 2. Use of perchlorates, azides, or acetylides 3. Use of K; prep. of Na sand 4. Large scale use of flammable solvents			
Other			

Laboratory Safety Training – New Orientation 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
- Review Chemical Inventory.
- Review location of MSDSs.
- Review emergency information: Spills, Personal Injury, Fire, and Power Failure.
 - Fire extinguisher
 - First aid supplies
 - Safety shower
 - Eye wash
 - Evacuation plans
- Basic Safety Rules
 - Note rules with special importance for your laboratory.
 - Identify specific areas for food consumption outside of the lab.
 - Review procedures for working after hours.
- Review Waste Handling Procedures.
 - Labeling
 - Packaging
 - Pick-ups
- Review procedures for chemical procurement, distribution, and storage.
- Review Standard Operation Procedures for use of hazardous materials
 - Storage (acid cabinet, flammable liquid storage cabinet, flammable liquid storage refrigerator, etc.)
 - Personal Protective Equipment (PPE)
 - Location where certain procedure(s) may be performed (e.g., mechanical ventilation required)
 - Waste Disposal (aqueous, solid, biohazardous, and radioactive)
- 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.

- Exposure Monitoring
 - Discuss PEL and TLV for chemicals in use and how to reduce employee exposure.
 - Discuss building ventilation.
 - Discuss use of fume hoods, biological safety cabinets or other mechanical ventilation systems.

- Review SOP for working with Biologically Hazardous Materials
 - Review Exposure Control Plan if working with human blood or other potentially infectious materials.
 - Discuss Biosafety Manual if working with recombinant DNA or infectious agents.
 - Review Hepatitis B Vaccination Program.
 - Review PPE, Housekeeping and Waste Disposal Procedures.

- Working with Radioisotopes
 - Review Radiological Safety Practices.
 - Review Dosimetry Program.

- Medical Program
 - Review criteria for medical surveillance, as found in the UIUC Chemical Safety Guide.

- Training Program
 - Discuss Unit-Specific, DRS and other training sessions.

- Additional Safety Session Topics
 - Review recent incidents/accidents/injuries and how to prevent recurrence.
 - Review new equipment at least annually.
 - Review new procedures at least annually
 - Review results of recent inspections and how to correct problem areas.

Laboratory Safety Training – Session Record

I, _____ (*print full name*), certify that the following affected employees have received and understood the following training (please describe training content below):

Name	UIN	Signature	Date

(signature)

(date)

Section 9 – Incidents, Injuries, and Corrective Actions

Include in this section a description of laboratory incidents and corrective actions taken to prevent them in the future. It is always important to take a careful look for all underlying and precipitating causes. Copies of any University of Illinois incident-related forms should be maintained here.

Please note: An Injury or Illness Report Form must be completed for all workplace injuries and illnesses. See <http://www.legal.uillinois.edu/wc/reports.html> to download forms and for more information.

Section 10 – Safety Program Correspondence

Copies of correspondence to Principal Investigators from DRS, safety-related memos within laboratory groups, requests for safety information, and other correspondence that may be important to safety management should be maintained in this section.
