

Department of Chemistry
Chemical Hygiene Plan

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Date

TABLE OF CONTENTS

CHEMICAL HYGIENE RESPONSIBILITIES	3
CURRENT TITLES AND TELEPHONE NUMBERS	5
EMPLOYEE TRAINING	6
EVACUATION PROCEDURES	7
FIRE ALARMS, TORNADO ALARM	7
EMPLOYEE HEALTH MONITORING	8
BASIC RULES & PROCEDURES	10
EMPLOYEE DECONTAMINATION PROCEDURES	12
EYE CONTACT	12
INGESTION OF CHEMICAL.....	12
SKIN CONTACT	12
CLEANUP	12
INCIDENT/SPILL REPORT	12
SPECIFIC SAFETY PROCEDURES	13
TOXIC CHEMICALS:.....	13
FLAMMABLE CHEMICALS:.....	13
REACTIVE CHEMICALS:.....	13
CORROSIVE CHEMICALS:.....	13
LABORATORY HOUSEKEEPING REQUIREMENTS	14
GENERAL HOUSEKEEPING	14
MAINTENANCE	14
CHEMICAL PROCUREMENT, DISTRIBUTION AND STORAGE	15
STOCKROOM PROCEDURES	16
LABELING OF CHEMICALS	17
DEFINITIONS	17
LABELS	19
PERSONAL PROTECTIVE EQUIPMENTWASTES	20
WASTES	21
GENERAL WASTE HANDLING PROCEDURES	21
SPILL RESPONSE - CHEMISTRY LABORATORIES	22
MINOR SPILLS	22
MAJOR SPILLS	23
CHEMICAL LABORATORY INCIDENT/SPILL REPORT	24
ENVIRONMENTAL MONITORING	25
RECORDS	25

CHEMICAL HYGIENE RESPONSIBILITIES

Responsibility for implementing this Chemical Hygiene Program in the Department of Chemistry involve all levels of management at UT-Tyler including:

1. President of UT-Tyler, who has ultimate responsibility for institute-wide compliance with employee health and safety regulations;
2. Provost and Vice-President for Academic Affairs, who oversees all academic components of UT-Tyler;
3. Dean of the College of Arts and Sciences;
4. Chairman of the Chemistry Department, where the plan will be implemented;
5. Director of Environmental Health and Safety (EH&S), who is the designated Emergency Response Coordinator for UT-Tyler and is responsible for institute-wide regulatory compliance.
6. Chemical Hygiene Officer (CHO), appointed by the Chemistry Department Chair, who must:
 - ◇ Ensure development and modification of the Chemical Hygiene Plan as necessary in conjunction with the Director of Environmental Health and Safety;
 - ◇ Monitor procurement, use and disposal of all chemicals used in the Department of Chemistry;
 - ◇ Maintain appropriate laboratory audits;
 - ◇ Help instructors and researchers develop adequate safeguards for experiments;
 - ◇ Know current legal requirements concerning regulated substances; and
 - ◇ Continually seek ways to improve the Chemical Hygiene Plan;
7. Laboratory Supervisor who must:
 - ◇ Ensure that workers know and follow the chemical hygiene rules,
 - ◇ That protective equipment is available and in working order and appropriate training is provided;
 - ◇ Provide for regular, formal chemical hygiene and housekeeping inspections including routine inspections of emergency equipment;
 - ◇ Know the current legal requirements concerning regulated materials; and
 - ◇ Ensure that the facilities and training for use of hazardous materials are adequate.
8. Laboratory Technician, who is responsible for:
 - ◇ Planning and conducting operations in accordance with the chemical hygiene procedures;

◇ Developing good personal chemical hygiene habits.

CURRENT TITLES AND TELEPHONE NUMBERS

President	Rodney Mabry, Ph.D.	ext. 7999
Provost & Vice President for Academic Affairs	David O'Keeffe, Ph.D.	ext. 7103
Dean, College of Arts and Sciences	Donna Dickerson, Ph.D.	ext. 7397
Chairman, Department of Chemistry	Donald McClaugherty, Ph.D.	ext. 7196
Chemical Hygiene Officer	Ladona Nall Cook, B.S.	ext. 5525
Director, Environmental Health & Safety	Barbara N. O'Keeffe, M.S.	ext. 7011

EMPLOYEE TRAINING

Each employee of the Chemistry Department who may be involved in any of the chemistry laboratories shall be informed as to the contents of the Chemical Hygiene Plan. The Chemical Hygiene Officer shall coordinate and maintain records of training conducted for each employee.

1. Before starting work or as soon as reasonably possible thereafter, each new employee will attend a training class (current employees will attend a class at the onset of this program). In that class, each employee will be given information on:
 - ◇ Chemicals and their hazard in the workplace.
 - ◇ How to lessen or prevent exposure to these chemicals.
 - ◇ How to read and interpret labels and Material Safety Data Sheet, (MSDS).
 - ◇ Where to locate Material Safety Data Sheets and from whom they may obtain copies.
2. The employee will be informed that:
 - ◇ The employer is prohibited from discharging or discriminating against an employee who exercised their rights regarding information about hazardous chemicals in the workplace.
 - ◇ As an alternative to requesting an MSDS from the employer, the employee may obtain a copy from the Department of Public Health. A sign will be posted with the address and telephone number of the department responsible for such requests.
3. Attendance will be recorded for all training sessions. These records will be kept in the worker's personnel files.
4. Before any new hazardous chemical is introduced into the workplace, each employee who works with the chemical will be advised as to its potential hazards.
5. All employees will be advised when new or revised MSDS sheets are received.
6. No work will be done alone in the laboratory area if the procedures being conducted are hazardous. When working outside of normal working hours a telephone call to the UT Police will be made so that periodic checks may be made on individuals working in the laboratory.
7. All employees who routinely handle chemicals in the laboratory will receive training in the spill response procedures followed by the Chemistry Department.
8. When employees are required to perform hazardous non-routine tasks (e.g. use of new or unfamiliar instruments or techniques, intermediate synthesis steps involving the production of unstable compounds) a special training session will be conducted to inform them regarding the hazardous chemicals to which they might be exposed and the proper precautions to take to reduce or avoid exposure.

EVACUATION PROCEDURES

Fire Alarms, Tornado Alarm

In the event of an evacuation from the facility, the following procedures will be in force once the alarm sounds:

1. Students will be instructed to stop experiments, turn off equipment and leave the area through the appropriate exits.
2. All ignition sources will be turned off.
3. All bottles will be capped.
4. All burners, heaters and other equipment will be turned off whenever possible.
5. Hood sashes will be lowered if possible.
6. All personnel will evacuate the area.
7. No employee is allowed to return until the "all clear" signal is given.
8. No burners, heaters or other equipment will be turned on until the contents of flasks, beakers, or other vessels have been examined. If polymerization or other problems are apparent, the experiment will be terminated.

Fire evacuation

Laboratory evacuation shall be accomplished by exiting through the main laboratory entrances to the designated departmental meeting area. Laboratory supervisor or instructor shall be responsible for verifying that all personnel (faculty, staff, students) have reported to the meeting area.

Tornado Evacuation

Laboratory evacuation shall be accomplished by exiting through the main laboratory entrance to the designated storm shelter closest to the laboratory. Laboratory supervisor or instructor shall be responsible for verifying that all personnel (faculty, staff, students) have reported to the meeting area.

EMPLOYEE HEALTH MONITORING

Any employee who is subject to an exposure that is above the listed OSHA limit shall undergo a medical evaluation as prescribed via standards indicated in the Code of Federal Regulations (29 CFR Part 1910).

It is the policy of UT-Tyler to promptly investigate incidents in which there is even a remote possibility of employee over exposure to a toxic substance. The following list includes events or circumstances that might reasonably constitute an over exposure:

1. A hazardous chemical leaked, was spilled, or was otherwise rapidly released in an uncontrolled manner outside of a working fume hood.
2. A laboratory employee had direct eye or skin contact with a hazardous chemical.
3. A laboratory employee shows signs of overexposure such as headache, coughing, tearing, irritation or redness of the eyes, rash, irritation of the nose or throat area, nausea, dizziness, loss of coordination or judgment.
4. Two or more persons in the same general area of a laboratory have similar complaints.
5. Symptoms disappear when employee leaves exposure area and reappear when employee re-enters the exposure (laboratory) area.

All complaints and their disposition, no matter what the ultimate disposition may be, are to be documented. All memos, notes and reports related to a complaint of actual or possible exposure to hazardous chemicals are to be maintained as part of the record. A copy of all complaints and their disposition will be forwarded to the Director EH&S. If no further assessment of the event is deemed necessary, the reason for the decision should be included in the documentation. If a decision is to investigate, a formal exposure assessment will be done by the EH&S Director. A copy of any formal assessment will be sent to the Chemical Hygiene Officer.

The following procedures and types of questions will be used to assess whether an over exposure is likely to have occurred. In cases of emergency, the exposure assessments are to be conducted after the victim has been treated.

1. The complainant and victim (if not the same person) will be interviewed.
2. Essential information will be collected which will include:
 - ◇ chemicals being used by the victim
 - ◇ all chemicals being used by others in the immediate area
 - ◇ other chemicals stored in the immediate area
 - ◇ symptoms exhibited or claimed by the victim
 - ◇ symptoms listed on the MSDSs for the chemicals involved
 - ◇ what types of control measures were in place

- ◇ what types of PPE was being used
 - ◇ was any air sampling done
3. Air from the surrounding work area will be monitored for suspected chemical agent.
 4. Victim(s) complaints will be compared with the MSDSs symptoms and warning indications.
 5. The Director of EH&S will decide if more stringent control measures should be instituted when working with this chemical.
 6. The results of any monitoring or other tests will be given to those employees who may have been in the area when the overexposure occurred.
 7. When an over exposure is deemed possible, the following information will be supplied to the physician conducting the medical evaluation of the employee:
 - ◇ The identity of the chemical(s) to which the employee may have been over exposed.
 - ◇ The conditions under which this over exposure took place.
 - ◇ A copy of the MSDS for the chemical(s) in question, which will include signs and symptoms of over exposure as well as a 24-hour emergency telephone number for the manufacturer of the chemical(s).
 8. The physician will be asked to furnish the following information in written form to the Director, EH&S where it will be reviewed.
 - ◇ Any recommendations for follow-up studies/visits.
 - ◇ The results of the examination and any laboratory or other tests that were preformed.
 - ◇ Conclusions concerning the possibility of any other medical condition increasing the risk to the employee in the case of an over exposure.
 - ◇ Conclusions regarding any exposure related injury that the employee might have suffered.
 - ◇ A statement that the employee has been informed both of the results of the consultation or examination and of any medical condition that may require further examination or treatment.
 - ◇ These statements and records will not include or reveal any specific findings that are not related to an occupational exposure.

BASIC RULES & PROCEDURES

1. Eye Protection shall be worn by all employees, students & visitors, at all times in laboratory rooms and in the chemical stockroom.
2. No eating, drinking or smoking is permitted in the laboratory areas. No foodstuffs or beverages will be stored in the laboratory area or the laboratory refrigerators or freezers.
3. Lab coats/aprons will be worn when deemed appropriate by supervisors. Laboratory coats should be cleaned immediately upon significant contamination.
4. Appropriate gloves will be available at all times.
5. If the chemicals are capable of significant skin damage, (or have LD₅₀(dermal) of less than 50 mg/Kg), or are readily absorbed through the skin, gloves must be worn when working with the chemical.
6. Only those chemicals for which the ventilation system is adequate shall be used in a laboratory.
7. The use of excess chemicals will be avoided whenever possible.
8. No chemical is to be tasted or inhaled deeply. Any apparatus that may discharge toxic chemicals must be vented into a hood.
9. Laboratory personnel before use in an experiment will inspect equipment for cracks, frayed cords, etc.
10. Equipment will only be used for designed purpose. If an apparatus should fail, a large warning sign will be placed on the equipment and a repair order submitted.
11. All glassware will be inspected before use. No damaged glassware (internal cracks, stars, blisters) will be used. All chipped and cracked are to be fire-polished before use.
12. Proper safety techniques will be followed for insertion of glass tubing or thermometers through stoppers and corks.
13. Ventilation hoods will be checked at the beginning of each day when the laboratories are in use. All hoods will be checked annually by EH&S. Laboratory hoods will remain on whenever chemicals with toxic vapors are present in the hood. Hood doors should be lowered when not being actively used. Do not block vents or airflow with stored material.
14. When exiting laboratory, all areas of exposed skin should be washed, especially the hands and forearms if they were unprotected.
15. No horseplay of any type is allowed in the laboratory.
16. No mouth pipetting is permitted in the laboratory.
17. If an employee becomes pregnant, the department should be notified immediately. A review of the chemicals the fetus might be exposed to should be completed by the attending physician as soon as possible, and alternative arrangements made if these chemicals are deemed teratogenic.

18. Before Embryotoxins (examples: organomercurials, lead compounds, formamide), Moderate Chronic or High Acute Toxicity (examples: diisopropylfluorophosphate, hydrofluoric acid, hydrogen cyanide) or High Chronic Toxicity (examples: dimethylmercury, nickel carbonyl, benzo-a-pyrene, n-nitrosodiethylamine) chemicals are used specific personnel protective equipment and handling rules will be written and implemented.

EMPLOYEE DECONTAMINATION PROCEDURES

Eye Contact

If chemical is splashed into the eyes, flush with water for a minimum of 15 minutes and transport to the nearest emergency room.

Ingestion of Chemical

Refer to specific MSDS for appropriate action.

Skin Contact

Flush affected area with water for 15 minutes while removing contaminated clothing. If symptoms persist after flushing, seek medical attention. If spilled chemical was hydrofluoric acid or another fluoride compound, prompt medical attention is required.

Cleanup

See specific spill procedures beginning on page 22

Incident/Spill Report

Incident/Spill Report on page 24 must be completed.

SPECIFIC SAFETY PROCEDURES

TOXIC CHEMICALS:

When working with any chemical that is listed on the MSDS as being highly toxic or toxic, the material should be handled in a fume hood, glove box or area with local exhaust ventilation in order to assure that the PEL (permissible exposure level - OSHA mandated) or TLV-TWA (threshold limit value-time weighted average, suggested by ACGIH) are not exceeded.

FLAMMABLE CHEMICALS:

Chemicals with a flash point below 94 C are regarded as fire-hazard chemicals. All such chemicals will be stored in a flammable-solvent storage area or in storage cabinets designed for flammable materials. All such materials will be stored in the laboratories in the fume hood when they are being dispensed. The amount of flammable material used at any one time will be kept to the minimum amount needed to performed the experiment. No open flames will be used around any flammable materials.

REACTIVE CHEMICALS:

Reactive chemicals such as oxidizers, explosives and water-reactives will be segregated in storage. The mixing of these chemicals with other chemicals, even in small quantities, is forbidden without prior approval of the supervising faculty member and appropriate personal protective equipment must be used.

CORROSIVE CHEMICALS:

Corrosive chemicals will be segregated from other chemicals in the storage area. When using any corrosive or contact-hazard chemical, the appropriate protective equipment must be used.

LABORATORY HOUSEKEEPING REQUIREMENTS

GENERAL HOUSEKEEPING

1. Floors should be cleaned at regular intervals.
2. Trash containers should be emptied each day.
3. Broken glassware will be collected in a specially designated container. When full, this container will be packaged for disposal in puncture proof wrappings.
4. Passageways will not be used for storage. Access to exits, emergency equipment and utility controls should not be blocked.
5. All chemicals and equipment not in current use will be stored in appropriate containers until needed.

MAINTENANCE

1. Laboratory safety checks will be conducted by Laboratory Safety Committee or Chemical Hygiene Officer (as designated by the Chairmen of the Chemistry Department) and EH&S personnel at intervals of not less than every three (3) months and will include (but are not limited to) the following:
 - ◇ Eye washes (will be flushed weekly)
 - ◇ Safety showers
 - ◇ Fire extinguishers
 - ◇ Alarms
 - ◇ Respirators
2. Maintenance/Safety check log will be kept in the Laboratory and will be reviewed on a regular basis.






CHEMICAL PROCUREMENT, DISTRIBUTION AND STORAGE






1. In order to assure that adequate safeguards are in effect a list of all chemical purchases shall be maintained by the CHO.
2. When a chemical is received, it will be inspected for proper labeling and packaging. No new chemical will be accepted without proper manufacturers labeling or if the package shows signs of leakage or other damage.
3. When a chemical is received, the amount, hazards, and storage room location will be entered into the chemical inventory program.
4. When a chemical is received, the receiving date will be entered on the label.
5. When a chemical is received, a check will be made to make sure a current MSDS is on file. Any discrepancy is to be reported to the CHO.
6. Any MSDS that accompanies a chemical will be sent to the CHO.
7. When hand carrying extremely hazardous chemicals such as strong acids, bases or highly toxic chemicals, the container should be placed in a secondary container or bucket.
8. In order to avoid the possibility of contamination, once a chemical is dispensed, it cannot be returned to the original container. Any excess should be placed in a properly labeled bottle and used before more is taken from the original container.

LABELING OF CHEMICALS

Whenever a chemical solution is made (or when a chemical is poured from a larger container to a smaller container) correct labeling is essential to avoid injury.

Definitions

Visual Label	Hazard Category	Definition
	FLAMMABLE LIQUID	Any liquid having a flash point below 60 C (141F).
	FLAMMABLE SOLID	Solid materials that burn vigorously, ignite readily, and are liable to cause fire by friction, spontaneous chemical change or retained heat.
	POISON	All materials whose toxicity values are classified as Highly Toxic . (See toxicity values determination under Stockroom Procedures) <ul style="list-style-type: none"> ➤ Acute - effects occur within ~ 72 hours ➤ Chronic - effects occur after numerous exposures over a long period of time.
	CORROSIVE	All materials that can cause visible destruction or irreversible alterations in human skin tissue at the site of contact.
	OXIDIZER	All materials that yield oxygen readily when involved in a fire.
	ORGANIC PEROXIDE	Organic compounds containing the bivalent O-O-structure and those that may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals. These materials are unstable and highly reactive.

	<p>CANCER HAZARDS</p>	<p>Those materials that are human carcinogens and on those materials that are suspected as being cancer-causing agents in humans as documented in the MSDS for the chemical.</p>
	<p>WATER REACTIVE</p>	<p>Those materials that react violently when exposed to moisture.</p>
	<p>REACTIVE</p>	<p>Chemicals that react violently with other specific compounds and give off excess heat or fumes</p>
	<p>IRRITANT</p>	<p>Chemicals that can cause temporary, reversible damage to tissue.</p>
	<p>SENSITIZER</p>	<p>Sensitizers - cause usually reversible, temporary damage to tissues; usually no problem with the first contact but can cause an allergic reaction on later exposures</p>

Labels

1. HMIS label will be filled out

- ◇ Chemical name and/or formula
- ◇ Concentration
- ◇ Hazard - flammable, oxidizer, corrosive, toxic, carcinogen, irritant
- ◇ Date prepared
- ◇ Course designation
- ◇ Who prepared the chemical

2. All chemicals in the storeroom must either retain their new label or have a replacement label attached indicating:

- ◇ Identity of the chemical
- ◇ Appropriate hazard warning
- ◇ Name and address of the chemical manufacturer
- ◇ Health hazards

3. Waste Bottles

- ◇ For temporary storage until full: Waste labels will be attached to bottles in the hoods denoting what is stored in the bottle.
- ◇ When full, EH&S is notified for pickup.
- ◇ Use only proper names on the label.
- ◇ There can be more than one hazard per bottle.
- ◇ Wastes will be segregated by compatibility groupings so that no undesired combinations occur.
- ◇

4. Hazard Warning Labels

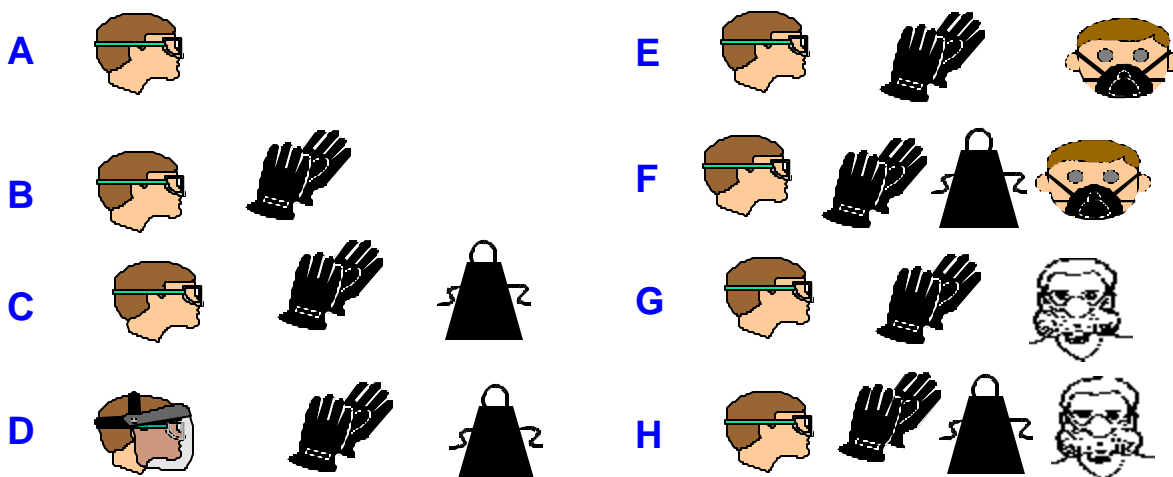
The HMIS/HMIG labels are used in the laboratory areas along with visual symbols. The user will keep in mind that:

- ◇ The absence of a warning label does not imply that no hazard exists.
- ◇ Chemicals with different hazard classes are to be stored separately.
- ◇ Chemicals are hazardous depending upon usage and concentration.
- ◇ Not all possible hazards can be covered with labels.
- ◇ Label warnings are no substitute for reading the Material Safety Data Sheet.

2	Health
3	Flammability
0	Reactivity
B	Protective Equipment

Rank	Health	Flammability	Reactivity
4 Extreme	Highly Toxic – fatal on short exposure. Special PPE required	Extremely flammable gas or liquid. Flash point (FP) is below 20 C	Explosive at room temperatures.
3 Serious	Toxic – avoid inhalation or skin contact	Flammable – FP is higher than 20 C but less than 38 C	May exploded when shocked, heated when enclosed or mixed with water.
2 Moderate	Moderately toxic -may be harmful if inhaled or absorbed.	Combustible. Requires moderate heating to ignite. FP between 38C and 93C	Unstable, may react with water.
1 Slight	Slightly toxic - may cause slight irritation.	Slightly combustible - requires strong heating to ignite.	May react if heated or mixed with water.
0 Minimal	All chemicals will be toxic at some level.	Will burn under normal conditions.	Normally stable, does not react with water.

PERSONAL PROTECTIVE EQUIPMENT



WASTES

All wastes streams will be evaluated by EH&S to determine proper handling, storage, and disposal requirements.

General Waste Handling Procedures

1. All acidic/basic solutions **containing NO** heavy metal ions or organic compounds should be neutralized and then disposed of down the drain.
2. **NO** organic compounds will be sink-disposed unless approved by laboratory instructor (with concurrence of EH&S).
3. Experiments utilizing heavy metals (chromium, nickel, copper, lead, barium, silver, arsenic), sulfides, cyanides, oxidizers, and peroxides will be minimized.
4. Whenever possible, any leftover chemical (that is not contaminated) should be recycled into the laboratory experiments, possibly as an unknown.
5. All other wastes will be collected with a minimum amount of handling. If consolidation of waste must be done, the chemicals must be compatible and all vessels must be bonded and grounded before transfer. If a volume greater than 4 liters of waste is anticipated (such as non-halogenated solvents), a larger container (20 liter can/carboy) should be used for collection.

SPILL RESPONSE - CHEMISTRY LABORATORIES

MINOR SPILLS

Non-flammable, 500 ml to four (4) liters	<ol style="list-style-type: none">1. Move students out of affected area.2. If corrosive, neutralize with appropriate agent from the lab bench spill kit.3. Soak up material with absorbent from lab Spill Station4. Place contaminated materials in appropriate disposal bag.5. Wash area with water.6. Fill out spill report.
Flammable, under one (1) liter but greater than 100 ml	<ol style="list-style-type: none">1. Move students out of affected area.2. Turn off ignition sources.3. Open hood sash doors.4. Notify emergency Coordinators5. Soak up material with absorbent from lab Spill Station6. Place contaminated materials in appropriate disposal bag.7. Wash area with water.8. Fill out spill report.
Flammable, one (1) liter to four (4) liters	<ol style="list-style-type: none">1. Move students out of room.2. Turn off ignition sources.3. Open hood sash doors.4. Leave room and notify Chemical Hygiene Officer and/or UT-Tyler Emergency Coordinator. After hours, notify Campus Police at 7302.5. DO NOT RE-ENTER UNTIL HELP IS AVAILABLE. (minimum of two people for clean up).6. If chemical vapor is a problem, do not enter without respirator7. Soak up material with absorbent from lab Spill Station8. Place contaminated materials in appropriate disposal bag.9. Wash area with water.7. Fill out spill report.

MAJOR SPILLS

<p>CYANIDE OR SULFIDE SOLUTION/GAS [any amount]</p>	<ol style="list-style-type: none"> 1. Evacuate ALL PERSONS from all connecting laboratory areas. 2. Open Hood Sashes if possible, and make sure to close doors. 3. Notify Campus Police at 7302. 4. DO NOT enter until help is on-site 5. DO NOT enter without a respirator. 6. Make sure spill area is basic. 7. Use Spill material to surround and absorb spill. 8. Place contaminated materials in disposal bags. 9. Wash area with basic solution. Repeat washing area with water. 10. Fill out Spill Report.
<p>NON-FLAMMABLE (greater than 4 liters)</p>	<ol style="list-style-type: none"> 1. Evacuate the area. 2. Notify Chemical Hygiene Officer and/or UT-Tyler Emergency Coordinator. After normal hours, notify Campus Police at 7302. 3. Neutralize corrosives, if possible. 4. Soak up material with absorbent from lab Spill Station 5. Place contaminated materials in appropriate disposal bag. 6. Wash area with water. 7. Fill out spill report.
<p>FLAMMABLE LIQUIDS Greater than four (4) liters</p>	<ol style="list-style-type: none"> 1. Evacuate the laboratory 2. Evacuate surrounding areas if low flashpoint or greater than eight (8) liters have spilled. 3. Turn off ignition sources 4. Open hood sash doors 5. Leave room and notify Chemical Hygiene Officer and/or UT-Tyler Emergency Coordinator. After normal hours, notify Campus Police at 7302. 6. If greater than five (5) gallons or if material has a very low flash point, notify fire department. (911) 7. DO NOT RE-ENTER UNTIL HELP IS AVAILABLE. 8. DO NOT ENTER WITHOUT RESPIRATOR IF AIR IS SATURATED WITH VAPOR. 9. Use Spill material to surround and absorb spill. 10. Use non-sparking tools and have a fire extinguisher ready. 11. Place contaminated materials in disposal bags. 12. Wash area with basic solution. Repeat washing area with water. 13. Fill out Spill Report.

CHEMICAL LABORATORY INCIDENT/SPILL REPORT

DATE: _____

LABORATORY: _____

TIME: _____

INSTRUCTOR: _____

CHEMICAL _____

AMOUNT SPILLED: _____

SPILL CLEANUP METHODS:

Chemical Hygiene Officer Notified?

YES ___ NO ___

WAS AN INJURY SUSTAINED IN THE INCIDENT?

YES ___ NO ___

IF YES, WAS AN ACCIDENT REPORT FILED?

YES ___ NO ___

INCIDENT DESCRIPTION/COMMENTS:

Send Copies of this report to EH&S (Barbara O'Keeffe)

ENVIRONMENTAL MONITORING

If a change in hood design occurs or if there is the introduction of a highly toxic substance in an experiment, specific monitoring of air contaminants will be undertaken on a regular basis.

RECORDS

The following records will be maintained by the Chemical Hygiene Officer.

1. All accident/spill reports.
2. Attendance at all employee-training sessions.
3. Inventory and usage of high-risk substances (for example, hydrogen cyanide, hydrogen fluoride).
4. Medical records will be maintained by UT-Tyler's Human Resources Department.