SUNY Cobleskill HAZARD COMMUNICATION PROGRAM

I: General

The purpose of this written program is to ensure that SUNY Cobleskill is in compliance with the OSHA Hazard Communication Standard (HCS) 29 CFR 19 10.1200 and the New York State Right to Know Law 12 NYCRR Part 820 .

The Environmental Health and Safety Officer (EH&S Officer) is the coordinator of the campus program and acts as the representative of the Director of Facilities Management who has overall responsibility for campus-wide compliance. Throughout this document the term employee shall include both full-time and part-time employees, as well as student employees. Every employee of SUNY Cobleskill will be informed of the availability of this written program, the contents of the hazard communication standard (HCS) and the "Right to Know" legislation. Employees will be advised of known hazardous properties in the chemicals they work with and the measures they need to take to protect themselves from these chemicals. Every employee who routinely handles chemicals or substances that meet the OSHA HCS definition of "hazardous" will provided Hazard Communication/Right to Know training in accordance with section VIII of this plan. It is the responsibility of every SUNY Cobleskill employee to become aware of the hazards in their workplace. It is also the responsibility of every employee to request information from supervisory personnel about any product they feel may present a potential health hazard. All information requests must be honored as quickly as possible. Any employee requesting an MSDS in writing shall be provided with the information within 72 hours (3 working days). The employee shall not work with or be exposed to the chemical or substance until the request has been fulfilled.

II: Inventory of Hazardous Chemicals

Each department on campus is responsible for maintaining an inventory list of all hazardous chemicals or substances used in their areas and must update the list as inventory changes. Inventory lists shall be forwarded to the EH&S Office at least annually, and when requested by the EH&S Officer. The Environmental Health and Safety (EH&S) Officer will maintain a current inventory of all hazardous chemicals or substances used or stored at SUNY Cobleskill.

III: Material Safety Data Sheets

Material Safety Data Sheets (MSDS) are available for all employees at SUNY Cobleskill who handle hazardous materials. The Environmental Health and Safety Officer will maintain Material Safety Data Sheet (MSDS) information on every hazardous chemical or substance used at SUNY Cobleskill in a centralized file located in the EH&S Office in the Facilities Management building.

Department supervisors are responsible for ensuring that an MSDS for each hazardous substance or chemical used in their department is maintained in a binder in their area and available for review by any employee within that department who may use the chemical in the course of their job duties. If a department supervisor or chair requires assistance in compiling or updating their MSDS files they may request assistance from the EH & S Officer by calling x5411.

As chemicals are ordered and/or received the original MSDS will be forwarded to the EH&S Officer so that the master inventory can be updated. The MSDS must indicate the department for which the chemical is intended. Department supervisors must ensure that a copy of that MSDS is placed in the departmental binder. The EH&S Officer shall review all MSDS information received by SUNY Cobleskill for accuracy and completeness in accordance with OSHA guidelines (www.osha.gov/dsg/hazcom/msdsformat.html). The EH&S Officer will contact the manufacturer or supplier and/or the local Public Employee Safety and Health (PESH) area office if inaccuracies are noted.

IV: Ordering New Chemicals

Department supervisor shall notify EH&S in advance of ordering any new chemical and shall forward a copy of the MSDS to the EH&S Officer for review prior to ordering. The EH&S Officer will work with department supervisors to assure that substances that are the least hazardous are ordered. MSDS information must be received at SUNY Cobleskill prior to or at the time of receipt of the first shipment of any potentially hazardous substance purchased from a vendor. SUNY Cobleskill reserves the right to discontinue procurements from vendors failing to provide approved MSDS's in a timely manner.

V: Samples and donations

No SUNY Cobleskill employee shall accept “sample” chemicals, free chemicals or demonstration lots of any chemicals or donations of chemicals from other institutions without first notifying the department supervisor and the EH&S Officer in writing. In addition, an accurate and current MSDS for any sample or free chemical must be provided prior to approval of acceptance. Any SUNY Cobleskill employee who accepts samples or demonstration lots of hazardous products or knowingly accepts chemical donations and brings them onto SUNY Cobleskill property without following these procedures may be subject to disciplinary action. It is important to note that disposal of an unwanted “free” sample can be costly.

VI: Labels and Hazard Warnings

It is the policy of SUNY Cobleskill that all chemical containers must be properly labeled at all times. This includes original containers and transfer containers, (e.g. spray bottles, pails, safety cans, lab bottles, flasks, etc.). The EH&S Officer is responsible for ensuring that the overall campus complies with this important component of the hazard communication program. However, each department supervisor is responsible for ensuring that all chemicals used in their area are properly labeled. The EH&S Officer is available to assist department supervisors in meeting their responsibilities under this provision.

Containers received from vendors shall be labeled so that the manufacturer and address, hazard properties, component chemicals and trade names are clearly marked on the container. Transfer containers shall be labeled in accordance with the hazard warnings specified on the product's MSDS and at minimum shall include the trade name, chemical name, hazard warnings (e.g. FLAMMABLE, CORROSIVE, IRRITANT, OXIDIZER, PEROXIDE-FORMER), and supplier or manufacturer (Baker, Fisher, Butchers, State

Chemical, Nalco, John Deere, Agway, etc.). If target organ data (e.g. affects liver and kidneys, can cause skin sensitization, reproductive hazards) is specified on the original container then that information must also be included on the transfer container label. Any individual who removes a label from a container is responsible for immediately replacing it with another one. The EH&S Officer will audit departments at random to verify appropriate labeling of all chemical containers on SUNY Cobleskill property.

VII: Unlabeled Containers or Unknowns

Unlabeled or inappropriately labeled containers are illegal and forbidden. All unlabeled or inappropriately labeled containers must be immediately reported to the EH&S Officer. Any unlabeled or inappropriately labeled containers found on campus will be considered potentially dangerous "unknowns" and may be confiscated or otherwise removed by the EH&S Officer. If it is necessary to sample and/or dispose of unlabeled chemicals then the generating department will be charged for any and all costs. Departments where repeated or flagrant labeling violations are encountered will be required to attend additional Hazard Communication / Right to Know training.

VIII: Training

Every employee who routinely works with or is potentially exposed to hazardous chemicals will receive training on the OSHA Hazard Communication Standard and the New York State Right to Know law upon initial hire and annually thereafter. Such training will be coordinated through the EH&S Office and attendance records will be kept. It is the intent of the EH&S Officer to offer the training within the first two weeks of hire. The department supervisor shall notify the EH&S Officer of all new employees requiring training no later than one week after hire.

The initial and refresher trainings offered by the EH&S Officer will include:

- A summary of the HCS standard and this written program
- Physical and health hazards associated with potential exposure to workplace chemicals
- How to read an MSDS and availability in the work area Inventory of hazardous chemicals in the work area
- An explanation of protective equipment needed to work safely with the product and a review of safe work practices
- Methods and observations that may be used to detect the presence or release of hazardous chemicals in the work area including monitoring devices, visual appearance and odor.
- Emergency response procedures

In addition, training will be offered when new chemicals or hazardous substances are introduced into the work area. These trainings will be conducted by the department or employee supervisor and will include a thorough review of the MSDS information, recognized hazards of the new chemical and personal protective equipment needed. The supervisor may contact the EH&S Officer for assistance in reviewing hazards of any new chemicals or substances.

The Environmental Health and Safety Officer will maintain records of trainings including attendance rosters and training outlines. Departmental supervisors will be advised of outstanding training needs. The EH&S Officer will forward a copy of the training roster(s) to the Human Resources Department. Failure of an employee to complete mandatory Hazard Communication/Right to Know training may result in disciplinary action.

IX: Contractor Employees

The EH & S Officer upon notification from the Director of Facilities Management, designated SUNY Construction Fund site representative or SUNY Site Representative/Project Manager shall advise outside contractors of any hazardous substances they may reasonably encounter in the course of their work at SUNY Cobleskill. Material safety data sheets shall be made available to the appropriate outside contractor representative upon request. SUNY Cobleskill is not responsible for conducting or coordinating the outside contractor's hazard communication program. SUNY Cobleskill reserves the right to request copies of all material safety data sheets from an outside contractor if the EH&S officer or Director of Facilities Management determines that any product used by the contractor may potentially result in an exposure to a campus employee or student.

X: Non-Routine Tasks

Facilities Management and other departmental supervisors contemplating a non-routine task shall consult with the EH&S Officer to ensure that employees are informed of the chemical hazards associated with the performance of the task and of the appropriate personal protective measures. Affected employees shall receive appropriate training before such work begins.

XI: Additional Information

Further information about the SUNY Cobleskill Hazard Communication written program or the Right To Know law is available from the Environmental Health and Safety Office at 119 Schoharie Parkway North, Mackey Service Complex : (518) 255-5411.

XII. References Information

Hazard Communication Standard 1910.1200
Hazard Communication Standard 1910.1200 App. A
Hazard Communication Standard 1910.1200 App. B
Hazard Communication Standard 1910.1200 App C
Hazard Communication Standard 1910.1200 App D
Hazard Communication Standard 1910.1200 App E

New York State Labor Department's Albany office (phone (518) 457-5508) can provide written NYS labor regulations, which are identical to the federal OSHA regulations. To view the State Right to Know poster, visit
www.health.state.ny.us/environmental/workplace/right_to_know/docs/rtk.pdf

CHEMICAL HYGIENE PLAN

PURPOSE AND SCOPE

On January 31, 1990, the Occupational Safety and Health Administration (OSHA) promulgated a final rule for occupational exposure to hazardous chemicals in laboratories. All university laboratories are covered by this ordinance. The compliance date was set to be January 31, 1991. The regulation requires that every laboratory develop a written Chemical Hygiene Plan (CHP). The CHP must include the acceptable work practices, procedures to ensure that employees are protected from all potentially hazardous chemicals in use in their work areas, employee training and information exchange, hazard identification, as well as medical consultation and examination.

SCOPE

The plan, as developed, complies with OSHA 29CFR 1910.1450, "Occupational Exposure to Hazardous Chemicals in Laboratories."

RESPONSIBILITIES

The College is responsible for insuring that employees are protected against hazardous exposure of chemical, biological, and radiological agents. This is accomplished by compliance with the Laboratory Standard. Responsibility for implementation of the Chemical Hygiene Plan rests with the President, Vice Presidents, Department Chairpersons/Supervisors, Chemical Hygiene Officer, and the Laboratory Supervisors. By the same token, laboratory employees are responsible for cooperating with the College by wearing necessary personal protective equipment, handling and storing chemicals properly,attending training seminars, etc.

CHEMICAL HYGIENE OFFICER

The Chemical Hygiene Officer (CHO) for the College is the Environmental Health and Safety Officer.

I. CHEMICAL PROCUREMENT, DISTRIBUTION AND STORAGE

1. Only reasonable safe working amounts of chemicals should be stored in the work area.
2. Storage should be in flammable storage cabinets, explosion-proof or explosion-safe
3. refrigerators, Factory Mutual (FM) or Underwriter Laboratories (UL) approved safety cans. In order to be approved by either of these agencies, the appliances must have systems which prevent spark or open flame from igniting flammable vapors.
4. Bulk storage or chemicals should be in approved chemical storage facilities. One facility is located in the Plant Science area, another on the east side of Wheeler Hall. The facility should have blow-out panel fire rated walls and doors, explosion proof lighting and controls, spill containment, low pressure steam or explosion proof electrical heating, exhaust system, fire alarm, and sprinkler protection.
5. Incompatible chemicals should be separated. Corrosives should not be stored with flammables or flammables with oxidizing agents.

6. Adequate ventilation should be provided in all storage areas. Mechanical ventilation should be at least one cubic foot per minute per square foot of floor area, but not less than 50 cfm.
7. Highly toxic agents (those with Permissible Exposure Limit (PEL) of 50 ppm or less or 100 mg/m^3 or less) where containers have been opened should be placed in properly labeled secondary containers.
8. Containers should be checked semi-annually for condition and labeling.
9. Wherever possible, chemicals should be ordered in small quantities to avoid storage of large quantities that will not be used for extended periods.
10. A chemical listing inventory shall be maintained by the appropriate Department Chairperson or designee. A copy of the inventory will be posted in the same area as the MSDS's and with the Environmental Health and Safety Office. The employee should consult the Department Chairperson and designee on the location of the MSDS's.
11. When chemicals are transported from one lab to another or building to another, they should be on safe transportation devices. When transporting, they should be secured by chains on cylinder trucks. When placed in use, all cylinders must be secured with straps or chains.
12. Hazardous liquids supplied in glass containers should be protected with bottle carriers. This is true for flammable, corrosive, and noxious organic chemicals.
13. When chemicals are being transported, they must always be in approved containers.
14. Fume hoods should not be used to store chemicals.
15. Food or beverages will not be stored in laboratory refrigerators.
16. Laboratory glassware containing hazardous chemicals shall be stored to avoid damage.
17. Damaged glassware should not be used but appropriately discarded.
18. Dewar flasks and other vacuum glass apparatus should be shielded or wrapped to contain chemicals and fragments should implosion occur.
19. It shall be the responsibility of the Department Chairperson/Supervisor or designee to maintain a chemical inventory record and to dispense chemical stocks. Chemical resupply and disposal shall also be the responsibility of the same person.

II. HOUSEKEEPING. MAINTENANCE, AND INSPECTIONS

1. Work area must be kept clean with chemicals properly labeled and stored.
2. Exits and corridors must be kept clean and free of obstructions. Fire extinguishers and other safety equipment must not be obstructed.
3. When an experiment is completed, it is the user's responsibility to clean up promptly any residue and dispose of it properly.
4. All chemical spills must be cleaned up immediately and disposed of properly. The Environmental Health and Safety Office and Public Safety will be notified of any spill deemed significant by the Supervisor.
5. Safety equipment such as eye wash stations, safety showers, fire extinguishers, fire blankets, first aid kits, spill kits, respirators, etc. should be inspected at the start of each semester, but before the end of the first week. These inspections will be conducted by the Department Chairperson, Supervisor, or designee and documented in writing. Any safety

device not in good repair should be promptly reported to the Environmental Health and Safety Office for correction.

6. Fume hoods should operate properly. If an employee suspects a hood is not exhausting properly or it is not working, it should be reported to Environmental Health and Safety Office promptly. All hoods will be tested for air flow by the Environmental Health and Safety Office semi-annually.

III. MEDICAL PROGRAMS

1. Each year employees have an opportunity to participate in the Employee Health Service Program of occupational health examinations. Prior to the appointment, employees are asked to list substances to which they have exposures as a guide to the physicians.
2. Once per year Medical examinations will also be made available at no charge or loss of benefits to any employee who develops signs and symptoms of over-exposure, where monitoring shows an exposure above the action level (1/2 of Permissible Exposure Unit), whenever there is a leak or spill resulting in hazardous exposure.
3. All medical exams/consultations will be performed under the direct supervision of a licensed physician.
4. The employer shall provide the physician the identity of the chemical, description of the incident that caused the exposure, and any signs or symptoms the employee is Experiencing.
5. The physician shall provide a written opinion which includes any recommendation for further medical follow-up, the results of the examination and any associated tests, any medical condition which may be revealed in the course of the examination which may place the employee at increased risk as a result of exposure to a hazardous chemical found in the workplace, a statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require examination or treatment. The written opinion shall not reveal specific findings or diagnosis unrelated to occupational exposure.

IV. PROTECTIVE APPAREL AND EQUIPMENT

1. Employees are expected to use personal protective clothing and equipment. The proper use of these items will minimize exposure to the hazards. Employees must be familiar with the location and proper use of this equipment.
2. There should be in each work site or within close proximity:
    a. Eye Protection - approved goggles for preventing splash and impact to the area are provided and must be worn whenever there is a potential for these hazards. The use of contact lenses is prohibited in the labs. Persons wearing corrective glasses must wear goggles over them.
    b. Eye wash station for flushing the eyes.
    c. An appropriate extinguisher.
    d. A fire blanket.
    e. A fire alarm station
    f. A telephone for emergency use and a list of emergency phone numbers.
    g. A safety shower for flushing chemical splashes.

h. A first aid kit. Kits should be checked periodically to make sure they are properly stocked. Supply items such as disinfectant, bandaids, etc. may be obtained from the Health Center.
i. Waste containers (for paper waste, glass, chemical waste, biological and infectious waste).
j. Absorbent materials for cleaning up small chemical spills.

3. Circuit breaker and master gas shut offs must be readily accessible
4. Sufficient exits from the laboratory and the building to meet requirements of the Life Safety Code 101 and New York State Fire Prevention and Building Code.
5. Lab coat to protect against chemical spill.
6. Proper gloves to prevent chemicals from contacting the hands. Gloves should be selected for the particular chemicals. It may be necessary to consult with the Environmental Health and Safety Office for proper glove selection.
7. Fume Hoods:
    a. Fume hood controls for all hoods must be immediately accessible. Remote hood controls are not permitted.
    b. Should be kept closed when not in use.
    c. Should not be used for storage of chemicals unless absolutely necessary. if they are used for storage, the material should be placed in the hood so as to not adversely affect its efficiency. If it is used for storage, then the exhaust fan must be on at all times. Where a fume hood is used to house equipment which utilizes volatile chemicals, the fume hood need not be running continuously if the equipment is not in use and the volatile chemicals are not present in the equipment.
    d. Fume hoods should be operated with the sashes lowered to the designated and marked level.
    e. If hoods are shut down for repair, work should not be carried out in them. A sign must be posted on the hood stating “Do Not Use”.
8. Proper air purifying respirator for the exposures. An organic vapor/acid gas respirator location will be identified by appropriate signage. NOTE: Before an employee can wear an air purifying respirator, they must obtain a physician's approval to wear the respirator and then be fit tested and trained by the Environmental Health and Safety Officer. The respirator must be approved for the contaminant and also by MSHA or NIOSH approved. A respirator should only be worn if the contaminant cannot be controlled by mechanical ventilation (either local or generally exhaust). This fit test requirement does not apply to emergency rescue respirators.

V. RECORDS

1. The Environmental Health and Safety Office maintains an accurate record of each employee of any measurements taken to monitor employee exposures and any medical consultation and examinations including tests or written opinions. Monitoring and medical records must be kept, transferred, and made available in accordance with OSHA requirements.

2. Records are also kept in the Environmental Health and Safety Office on each employee's training which includes: Chemical exposure, Fire Extinguisher training, Right-To-Know/Hazard Communication, Storage and handling of hazardous waste, Respirator training and fit testing. Training .in the use, handling, and storage of site specific chemicals is a requirement of the OSHA Hazard Communication Standard and the New York State Right-To-Know Law. This specific training and record keeping is the responsibility of each department supervisor where employees use hazardous chemicals.

VI. SIGNS AND LABELS

1. Laboratory areas that have specific hazards must be posted with appropriate warning signs. This includes the OSHA sign to designate biological, radiological, laser, fire hazards, etc.
2. Signs should be posted that show location of safety showers, eye wash stations, fire extinguisher, first aid kit, and respirators.
3. Waste containers must be labeled to show the type of waste that can be safely deposited.
4. It is the responsibility of laboratory instructors and supervisors to ensure that all chemical containers are properly labeled in accordance with the New York State Right-To-Know and Hazard Communication Standard. Each label must have the name and address of the
5. manufacturer, the identity of the material in the container, and appropriate health hazard
6. warnings. Secondary containers must be labeled with the identity of the material and appropriate health hazard warnings. This information is available on the MSDS and the label on the manufacturer's container.
3. Labels should not be removed or defaced.

VII. GENERAL SPILLS AND ACCIDENTS

1. Notify others in the area of the spill and evacuate the spill area. if a volatile or toxic material is spified, immediately warn everyone, if appropriate, to turn off any potential ignition sources and central ventilation.
1. Anyone overcome with smoke or fumes should be removed to clean air and treated for shock. The rescuer should wear appropriate respiratory protection to remove the victim, if the injured person is not breathing, provide mouth-to-mouth resuscitation.
2. If the chemical gets on the skin, get the person to a safety shower immediately. While using the shower, remove all contaminated clothing, jewelry, and footwear. Do not remove goggles until substance has been rinsed out of the hair. This will prevent the substance from getting into the eyes. Flush the skin for at least ten minutes and wash with soap and water. Do not attempt to use neutralizing agents.
3. If the chemical gets in the eyes, immediately flush with copious amounts of water for at least 15 minutes. Hold eyelids open to insure adequate irrigation.
4. Notify the Public Safety at -5555 and the Environmental Health and Safety Office at -5411 of the accident or spill. They will provide assistance as needed.
5. Avoid breathing vapors of spilled material. Do not re-enter the area until you have on the appropriate protective equipment.
6. Personnel involved in clean-up should wear plastic shoe covers, apron, gloves, respiratory and eye protection.

A. Spilled liquids

1. Surround spill with absorbent.
2. If it is very volatile, let it evaporate and be exhausted by the mechanical ventilation system.
3. Carefully pick up and clean any cartons or bottles that have been splashed or immersed.
4. For inorganic acids or bases, use a neutralizing agent (sodium carbonate for acid spills; sodium bisulfate for bases). Thoroughly neutralized acids and bases may be disposed of in the sanitary sewer if followed by copious amounts of water.
5. For small quantities of other materials, absorb with vermiculite, dry sand, or clay and properly dispose of as hazardous waste. Wash the area with soap and water.
6. Mercury spills, because of its high toxicity, should be immediately and thoroughly
7. cleaned up using an aspirator bulb or vacuum device. Mercury spilled in floor cracks can be made non-volatile by amalgamation with zinc dust or calcium polysuffide or sprinkled with polysuffide containing excess sulfur. Vacuum the amalgam with a vacuum cleaner containing a charcoal filter. The vacuumed material must be disposed of properly.

B. Spilled solids

1. Sweep spilled solids of low toxicity into a dust pan and place them in proper container for disposal.
2. For toxic materials of one kilogram or less: Evacuate the area. Put on personal protective equipment, including respirator. Sweep carefully into dust pan. Wash area with a solution that removes residue.
3. A conscious victim should be encouraged to drink large amounts of water if a chemical is ingested. If the victim is unconscious, DO NOT induce vomiting! If a conscious victim has ingested a corrosive, DO NOT induce vomiting!
4. Laboratory coat should be removed immediately on significant contamination.

VIII. INFORMATION AND TRAINING PROGRAM

1. All employees working in laboratories will be informed initially and annually thereafter of the requirements of the OSHA Standard "Occupational Exposure to Hazardous Chemicals in the Laboratory," including the location and availability of the Chemical Hygiene Plan, who is designated as the Chemical Hygiene Officer and the requirements of the College Right-To-Know Policy. Additional information on the hazards, safe handling, storage, and disposal of specific hazardous chemicals will be made available on request through the Environmental Health and Safety Office.
2. The Department Chairperson or designee or Environmental Health and Safety Officer will be responsible for training laboratory personnel in the specific details of the Chemical Hygiene Plan and New York State Right-To-Know Policy. Training shall include: Rights and responsibilities under Right-To-Know/Hazardous Communication Standard and Chemical Hygiene Plan, location and interpretation of Material Safety Data

Sheets (MSDS), use and availability of personal protective equipment, emergency procedures, use of fire extinguishers, proper disposal of chemical waste.
3. All training will be documented with employee's name, address, social security number, date, and type of training.

IX. WASTE DISPOSAL PROGRAM

1. All chemicals shall be placed in appropriate containers for storage while awaiting proper disposal.
2. Large quantities of liquid waste should be placed in proper bung top (closed head) Department of Transportation (DOT) drums . Solid waste should be placed in in proper DOT open head drums.
3. Small individual containers (lab packs) are to be placed in DOT open head drums and packed in an absorbent such as vermiculite. Only compatible chemicals should be stored in the same drum.
4. All drums or individual containers must be labeled as hazardous waste, National Fire Protection Association (NFPA) diamond and the appropriate DOT label (corrosive, flammable, liquid, poison, etc). The NFPA diamond is the Hazard Materials Identification System.
5. All containers of hazardous waste must be stored in areas that are secure and not open to the public.
6. Containers should be visually inspected weekly to insure they are not leaking.
7. Environmental Protection Agency (EPA) requires that all agencies generating hazardous waste develop methods to reduce volume and toxicity. (See Appendices) The Environmental Health and Safety Office can be contacted on -5411 for assistance in reviewing these procedures. When the generating department lists its waste for disposal, it will be given a form that includes information and what was done the previous year to reduce volume and toxicity. This form will be sent by the Environmental Health and Safety Officer. A Generator's Report will then be sent to the Department of Environmental Conservation at the end of the year.
8. Acute toxic substances as defined by the Resource Conservation and Recovery Act (RCRA) should be stored separately. if the amount of acute hazardous waste exceeds one kilogram, it cannot be stored for more than 180 days or 270 days if the disposal site is more than 200 miles from the campus. If storage exceeds 180/270 days, a storage permit must be obtained from EPA.
9. Contaminated clothing must be properly disposed of as hazardous waste.

X. FLAMMABLE CHEMICAL USE AND STORAGE

1. Flammable and combustible liquids present a serious fire and explosion hazard as they are easily ignited, burn with great rapidity, and are often difficult to extinguish. Vapors from these liquids are usually heavier than air and tend to hug the floor undetected.
2. Flammable and combustible liquids in laboratories should be stored in Underwriter Laboratory (UL) or Factory Mutual (FM) approved flammable storage cabinets or safety cans. They should not be stored with corrosives or oxidizers.

3. The amount of Class I and Class II liquids combined which may be stored in a laboratory outside a storage cabinet or storage room and not in safety cans shall not exceed ten (10) gallons.
4. Not more than twenty-five (25) gallons of Class I and Class II liquids combined shall be stored in safety cans outside a storage room or storage cabinet.
5. Not more than sixty (60) gallons of combustible liquids only shall be stored outside of a storage room or storage cabinet. Quantities shall not exceed five (5) gallons per container.
6. Quantities of flammable and combustible liquids in excess of those mentioned above shall be stored in storage rooms or storage cabinets approved by the Environmental Health and Safety Office.
7. Clearly identify all flammable liquid containers as to content.
8. When chemical purity must be maintained, storage in "safe" glass or plastic containers is permissible in quantities of one gallon or less. "Safety" containers are polyvinyl covered glass or glass enclosed metal.
9. Adequate ventilation must be provided in storage rooms. Electrical controls, lights and heating units must be explosion-proof. Walls must be at least two-hour construction with Class B (one and one-half hour) door.
10. Flammable liquids shall be used in an exhaust hood or in a well ventilated area.
11. Flammable liquids shall never be heated over an open flame, hot plate, or un-insulated resistance heaters. Use a heating mantle, steam bath, or hot water bath is acceptable.
12. Dispensing drums shall be grounded and receiving containers bonded to the dispensing drum.
13. Areas where flammable substances are used shall be labeled No Smoking or No Open Flame.
14. If flammable liquids must be stored in a refrigerator, it must be the explosion-proof type.

XI. TOXIC. REACTIVE CORROSIVE. AND OXIDIZING CHEMICALS

A. Toxic Chemicals

1. The Material Safety Data Sheets (MSDS) should be referred to before using any of these chemicals. It will state the threshold limit values (TLV), permissible exposure limit (PEL), and action levels. These levels will determine the control measures and protection that must be implemented. This will include necessary ventilation and personal protective equipment.
2. When the TLV and PEL is less than 50 ppm or 100 mg/m3, the user must work in a fume hood. In such cases, the TLV or PEL shall be indicated on the label.
3. If a TLV or PEL is not listed on the .MSDS for a substance, it shall be used in a fume hood.

B. Reactive Chemicals

1. All reactive chemicals shall be segregated in storage. Mixing even small quantities with other chemicals shall be prohibited.
2. Date all reactive chemicals.

C. Corrosive Chemicals

1. These chemicals cause destruction of living tissue on the site of contact. These are mainly strong acids and bases.
2. Wear adequate protection (gloves, goggles, respirator, lab coat).
3. Always add acid to water in dilution. Allow acid to run down side of container. Mix slowly by gentle rotation.
4. If it gets in the eyes, flush at least 15 minutes with copious amounts of water. An eyewash fountain is preferred, but if one is not near use a sink or eyewash hose. Eye irrigation should be done immediately.
5. Alkali or acid burns should be immediately flushed with water at least 10 minutes, preferably under a safety shower. If one is not near, immediately flush with water from nearest source and remove and discard clothing, including socks and shoes.
6. Consult the MSDS for medical information.

NOTE: If any of the above are specified, follow spill procedure as stated in Section VII and notify Public Safety (-5555) and Environmental Health and Safety Office (-5411).

D. Oxidizing Chemicals

1. Under no circumstances will oxidizers be stored with flammable or combustible materials.
2. Oxidizing agents shall be stored in appropriate containers.

XII. CARCINOGENS, REPRODUCTIVE TOXINS, SUBSTANCES WITH ACUTE TOXICITY, ALLERGENIC SUBSTANCES

1. A person(s) preparing a substance which the MSDS indicates as an allergen, carcinogen, mutagen, teratogen, highly toxic, or embryotoxic shall notify the user of this property. Alternative materials shall be considered. Prior approval by the Chemical Hygiene Officer in consultation with the Department Chairperson or Supervisor shall be obtained prior to use.
2. The Chemical Hygiene Officer will review the proposed use including details of the procedure. The Chemical Hygiene Officer may recommend possible alternatives for use of a substance which is safer, etc.
3. The Chemical Hygiene Officer will designate a safe area where the substance can be used. The area must be posted informing employees what is being used in the area.
4. The Chemical Hygiene Officer will designate use of containment devices.
5. The Chemical Hygiene Officer will outline procedures for safe removal of contaminated waste and decontamination procedures.
6. When the Chemical Hygiene Officer believes the substance or technique is not safe enough for our facilities or experience of the employee, the Chemical Hygiene Officer will confer with the Department Chairperson/Supervisor/Dean before approving the substance or technique. All approvals shall be in writing and signed by the Chemical Hygiene Officer.
7. If the procedures are approved, all appropriate safeguards as indicated on the MSDS must be followed.

8. When substances with these properties are requisitioned, the person ordering the substance shall call to the attention of the Department Chairperson/Supervisor, the hazardous property of the substance.
9. Gloves intended for the purpose shall be worn when handling allergens or substances with unknown allergenic activity.
10. Substances classified as carcinogens, reproductive toxins, acute toxins, and allergens shall be worked on in fume hoods. When using these materials in a fume hood, the face velocity should be at least 80 feet per minute.
11. As part of the chemical inventory, records shall be maintained of the amounts of these materials on hand, amounts used, and the name of the workers involved.
12. At least two people shall be present at all times if a compound is being used that is highly toxic or of unknown toxicity.
13. Breakable containers of highly toxic substances should be stored in chemically resistant trays. Work and mount apparatus above such trays or cover work and storage surfaces with removable, absorbent, plastic backed paper.

XIII. BIOLOGICAL AGENTS

1. Work surfaces shall be cleaned and decontaminated before and after each use, but at least daily.
2. All laboratory waste shall be autoclaved or placed in approved biohazard waste bags.
3. Pipetting by mouth is prohibited. Mechanical pipetting devices shall be used.
4. Eating, drinking, or smoking in an area where biological agents are used is prohibited.
5. Persons working with biological agents will wash hands with soap and water after handling biological agents.
6. A lab coat shall be worn when working with biological agents. Appropriate gloves and respirator shall be used if required.

XIV. RADIATION SAFETY

1. The Radiation Safety Officer (RSO) is responsible for overseeing and enforcing the policies established by the New York State Department of Health and Department of Environmental Conservation concerning radiation safety and radioisotope use. Any questions conerning radiation safety should be directed to the Radiation Safety Officer.
2. The Campus Safety Manual outlines basic safety procedures concerning various types of radiation. Specific guidelines are set forth in the Campus Radiation Safety Manual located in Wheeler Hall, room 147.
3. Under no circumstances shall an individual order or use radioisotopes without prior approval by the Radiation Safety Officer and has further completed the Radiation Safety and Isotope Use training course.
4. Basic Radiation Safety Procedures
    A. All procedures for safe handling of potentially toxic agents should be followed when handling radioisotopes.
    B. Exposures to radiological substances should be kept to a minimum. Experiments should be designed within ALARA (as-low-as-reasonably-acceptable) limits.

C. Radioisotope use is restricted to properly designated and posted radiation areas. All radioisotope work shall be on non-porous surfaces lined with plastic, polymer-backed absorbent paper.
D. Spills should be reported immediately to the Radiation Safety Officer or in his/her absence to the Radiation Safety Office's designee.
E. Appropriate records of ordering, use, and disposal shall be maintained.
F. Periodic wipe surveys will be conducted according to the schedule contained in the campus Radioactive Substances License.
G. Each radiation worker must report promptly to the Radiation Safety Officer, or his/her designee, any conditions which may lead to or cause a violation of regulations or conditions of our license or unnecessary exposure to radiation or radioactive material.
H. The only radioisotopes allowed on campus are those specifically permitted by license or those BRC (below regulatory control), sealed sources contained in the campus inventory.
I. The fume hood in Wheeler Hall, room 147 is the only one on campus which may be used for isotope work.

XV. INFECTIOUS WASTE (REGULATED MEDICAL WASTE)

1. Infectious waste includes surgical waste, obstetrical waste, pathological waste, biological waste, discarded materials soiled with blood, waste discarded from renal analysis, discarded serum and vaccines, discarded lab waste that has come in contact with pathogens, animal carcasses exposed to pathogens, articles that are potentially infectious and could cause punctures or cuts (includes hypodermic needles, intravenous needles and intravenous tubing with needles attached, intravenous bags, and unused sharps).
2. Infectious waste must be contained in bags impervious to moisture and have sufficient strength to resist tearing or ripping. Bags must be colored red and have the College's name and address on the bag. Each bag must have at least two floatable tags with this information. Sharps must be in leakproof, rigid, puncture resistant container, and labeled "Infectious Waste."
3. Before being transported, the bags must be in reusable pails, cartons, drums, or portable bins.
4. The same precautions as outlined in Biological agents should be followed.
5. Infectious waste is disposed of by contract to a permitted carrier.

XVI. MONITORING OF EMPLOYEES

1. Initial monitoring for regulated chemicals shall be performed if there is reason to believe that exposure levels for the substance exceeds the action level or in the absence of the action level, the PEL.
2. If it is not regulated, monitoring shall be done based on the toxicity, available exposure limits, and available engineering controls.
3. An employee is considered exposed to a hazardous chemical when: workplace monitoring indicates TLV, PEL, or STEL has been exceeded. when illness or symptoms arise that indicates exposure. When an incident that caused the release of a hazardous

chemical to the environment has resulted in exposure the Department Supervisor will evaluate the situation to determine if the possibility of over-exposure exists. If it is suspected, the Department Supervisor shall call the Environmental Health and Safety Officer who will then proceed with monitoring.

4. Periodic monitoring shall be done to insure that the action level or in its absence, the PEL is not being exceeded. Monitoring requirements may be terminated in accordance with the relevant OSHA standard.
5. Employees shall be notified of monitoring results within 15 working days. Results shall be in writing or by posting in an appropriate location accessible to employees. A copy of the results are to be kept in the employee's medical file in the Environmental Health and Safety Office.

XVII. COMPRESSED GASES

1. Compressed gas cylinders must be firmly secured with straps, clamps, or chains. Cylinder content must be clearly identified.
2. The correct cylinder valve and regulator are to be used for the particular gas in the cylinder. Valve threads may be right handed for non-fuel gases and left handed for fuel gasses. Cylinders not in use must be capped.
3. Cylinders will be transported on approved cart or hand truck. Never roil or scoot a gas cylinder. Do not lift cylinder by the cap.
4. Keep unregulated cylinder valve closed at all times. Open the main valve only to the extent necessary and regular gas flow using the regulator. Insure adequate ventilation and precaution when using hazardous gases. Report leading gas cylinder to Public Safety at -5555, the laboratory supervisor, and the Environmental Health and Safety Officer at -5411.
5. Do not use oil, grease, or lubricants on valves, regulators, or fittings.
6. Do not attempt to repair damaged cylinders or to force frozen cylinder valves.
7. Close cylinder valve first, then release all pressure from the regulator before removing the regulator.
8. Cylinders not necessary for current needs shall be stored and secured with strap damp or chain in a safe location outside the lab work area.

XVIII. FLAMMABLE GASES

1. No more than two cylinders should be manifolded (hooked) together.
2. No more than one cylinder of a highly flammable gas shall be in the laboratory without specific review by the laboratory supervisor and Chemical Hygiene Officer.
3. Cylinder size shall be limited to 200 cubic feet.
4. Valves on all flammable gas cylinders shall be shut off when tanks are unattended or not in use.
5. Cylinder throats and surfaces must be clean and tightly fitted. Do not lubricate.
6. Tighten regulators and valves firmly with proper sized wrench. Do not force fittings.
7. Check for leaks at connections using soap and water or “SNOOP” (trademark).
8. Valve handles must be left attached to the cylinder.
9. Fine tuning of flow should be set by the needle valve, not the high pressure valve.

10. Empty cylinders must be marked “Empty” or “MT. They must be returned promptly withvalve caps replaced.

XIX. STANDARD OPERATING PROCEDURES

The following procedures are to be followed when working in a laboratory:

1. Fire extinguishers in the laboratories are to be used to help a person escape from a laboratory should a fire occur. No one is to attempt to put out a fire. Leave the area immediately and activate the nearest pull station as you depart the building.
2. Determine chemical hazard by referring to MSDS prior to first time use. No chemical will be used until the MSDS is at the work site and the employee has read and understood the MSDS.
3. Use personal protective equipment when necessary.
4. Know location of showers, eye wash, fire extinguishers, fire alarm stations, and fire blanket. Report immediately missing and/or inoperable safety equipment to the Department Chairperson, Supervisor, or Environmental Health and Safety Officer.
5. Properly store chemicals.
6. Use proper personal hygiene practices.
7. Never work in the laboratory alone. If not possible, notify Public Safety on 5555 of your location and how long you will be there.
8. Wash skin promptly if a chemical comes in contact with your skin.
9. Eye protection should be worn when eye impact hazards are present.
10. Do not “sniff' chemicals.
11. Do not mouth pipette anything. Use suction bulb.
12. Wash with soap before leaving laboratory.
13. Do not eat, drink, or smoke in laboratory.
14. Do not wear contact lenses in laboratory.
15. Wear shirts and blouses with tight fitting sleeves. Wear long legged trousers or slacks. Wear a laboratory coat. Confine long hair. Shoes shall be worn in laboratory, not sandals or fabric shoes (this includes fabric top sneakers).
16. Gloves must be compatible with chemicals used as stated on the MSDS.
17. Goggles with liquid proof seal around eyes shall be worn when pouring chemicals. Face shield and goggles shall be worn when more corrosive or hot chemicals are used.
18. Fume hoods must be used when working with volatile chemicals or where TLV is 50 ppm. or 100 mg/m3 or lower.
19. Keep aisles and benches clear.
20. Wash all working surfaces with an appropriate solvent and/or disinfectant.
21. Do not block access to emergency equipment.
22. Make sure all chemicals are properly labeled.
23. Dispose of waste properly and in accordance with EPA and DEC regulations stated in IX. Waste chemicals shall be disposed in accordance with Section VII.9.D.
24. Clean up small spills promptly. if it is a large spill, contact Public Safety at 5555 and the Environmental Health and Safety Office at -5411 for assistance.

25. If an experiment is unattended, leave the lights on, place an appropriate sign on the door, and provide for the containment of a toxic substance in the event of a utility service failure. Notify Public Safety at 5555 that the operation is unattended and for how long.
26. Students shall not be issued any hazardous chemical nor shall students be permitted to conduct experiments involving hazardous chemicals, flammable substances, or microorganisms in the absence of an experienced faculty member.
27. Cosmetics shall not be applied in the laboratory.

GLOSSARY

ACTION LEVEL - One-half the Permissible Exposure Limit

ALARA - As-Low-As-Reasonably-Accepted Limits. Limits of radioactive exposure that should be strived for when handling these materials.

BRC - Below Regulatory Control-Radioactive Substances below certain energies that do not require licensing.

CHO - Chemical Hygiene Officer. Person designated with the responsibility of providing technical guidance in implementation of the Chemical Hygiene Plan.

CHP - Chemical Hygiene Plan. OSHA requirement that regulates areas where chemicals are used in a laboratory (non-production basis).

COMBUSTIBLE LIQUID

- Class A - liquid having a flash point at or above 100 degrees Fahrenheit.
- Class II - liquid having a flash point above 100 degrees Fahrenheit and below 140 degrees Fahrenheit
- Class IIIA - liquid having a flash point at or above 140 degrees Fahrenheit and below 200 degrees Fahrenheit.
- Class IIIB - liquid having a flash point at or above 200 degrees Fahrenheit

DEC - Department of Environmental Conservation. A New York State Agency responsible for regulations to protect the environment.

EH&S - Environmental Health and Safety Officer

EPA/RCRA - Environmental Protection Agency/Resource of Conservation and Recovery Act. Federal agency regulating generation, treatment, storage, and disposal of hazardous waste.

FLAMMABLE LIQUID

- Class A - liquid having a flash point below 100 degrees Fahrenheit
- Class IA - liquid having a flash point below 73 degrees Fahrenheit and boiling point below 100 degrees Fahrenheit
- Class IB - liquid having a flash point below 73 degrees Fahrenheit and boiling point above 100 degrees Fahrenheit
- Class IC - liquid having a flash point at or above 73 degrees and below 100 degrees Fahrenheit

HMIS - Hazardous Material Identification System. NFPA system that identifies hazardous materials by health, flammability, reactivity, and special precautions using a scale of 0-4, where 0 is harmless and is most harmful.

MSDS - Material Safety Data Sheet Chemical fact sheet that lists important information on chemicals so users of these chemicals can take appropriate safeguards.

MSHA - The Mine Safety and Health Administration. A Federal agency that regulates the mining industry in the safety and health area.

NFPA - National Fire Protection Association. National organization that develops and fosters fire codes.

NIOSH - The National Institute for Occupational Safety and Health is a Federal agency. The agency conducts research on health and safety concerns, tests, and certifies respirators and trains occupational health and safety professionals.

OSHA - United States Occupational Safety and Health Administration. Federal or State agency that regulates safety and health in the workplace.

OXIDIZER - A chemical compound containing oxygen when mixed with other chemicals can support combustion.

PERMISSIBLE EXPOSURE LIMIT (PEL) - An exposure limit that is published and enforced by OSHA as a legal standard.

RSO - Radiation Safety Officer. Campus designee responsible for administration of the Radiation Safety Program.

STEL - Short Term Exposure Limit. Maximum concentration an employee can be exposed to for no more than 15 minutes.

TLV - Threshold Limit Value. A time-weighted average concentration under which most people can work consistently for eight hours a day, day after day, with no harmful effects. OSHA

LINKS

Occupational exposure to hazardous chemicals in laboratories. 1910.1450

Occupational exposure to hazardous chemicals in laboratories. 1910.1450 App A

Occupational exposure to hazardous chemicals in laboratories. 1910.1450 App B

To obtain a copy of the Chemical Hygeine Plan, contact the Environmental Health & Safety Office at -5411

DO NOT STORE CHEMICALS ALPHABETICALLY AS A GENERAL GROUP!

This may result in incompatibles appearing together on a shelf.
Separate chemicals into their organic and inorganic families AND THEN related and compatible groups.

Related and Compatible Storage Groups[1]

Inorganic Family

· Metals, hydrides
· Halides, sulfates, sulfites, thiosulfates,phosphates, halogens
· Amides, nitrates (ammonium nitrate), nitrites, azides
· Hydroxides, oxides, silicates, carbonates, carbon
· Sulfides, selenides, phophides, carbides, nitrides
· Chlorates, perchlorates, perchloric acid, chlorites, hypochlorites, peroxides, hydrogen peroxide
· Arsenates, cyanides, cyanates
· Borates, chromates, manganates, permanganates
· Nitric acid, other inorganic acids
· Sulfur, phosphorus, arsenic, phosphorus pentoxide

Organic Family

· Acids, anhydrides, peracids
· Alcohols, glycols, amines, amides, imines, imides
· Hydrocarbons, esters, aldehydes
· Ethers, ketones, ketenes, halogenated hydrocarbons, ethylene oxide
· Epoxy compounds, isocyanates
· Peroxides, hydroperoxides, azides
· Sulfides, polysulfides, sulfoxides, nitrites
· Phenols, cresols

[1] From National Research Council Prudent Practices in the Laboratory