Chemical Hygiene Plan

Revised January 2018

Table of Contents

1.0 INTRODUCTION

The purpose of this Chemical Hygiene Plan is to define work practices and procedures to help protect employees and students of Pellissippi State Community College (PSCC) from health hazards associated with the use of hazardous chemicals. The Chemical Hygiene Plan is consistent with the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) standard entitled "Occupational Exposures to Hazardous Chemicals in Laboratories" (Code of Federal Regulations, 29 CFR 1910.1450; revised March 2012). This standard applies to all laboratories that use hazardous chemicals. The OSHA standard entitled “Hazard Communication” (29 CFR 1910.1200; revised March 2012.) applies to all workplaces that manufacture, use, store or dispose of hazardous chemicals. The laboratory standard specifies that a written Chemical Hygiene Plan must be developed and implemented that includes the necessary work practices, procedures, and policies to ensure that employees are protected from all potentially hazardous chemicals in use in their work area.

The OSHA standards were revised and updated in March 2012. The enforcement date for all of the changes was June 2016. The “purpose of this section is to ensure that the hazards of all chemicals produced or imported are classified, and that information concerning the classified hazards is transmitted to employers and employees. The requirements of this section are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3.”These are the changes:

Major changes to the Hazard Communication Standard:

- **Hazard classification:** Chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under the new, updated standard provides specific criteria to address health and physical hazards as well as classification of chemical mixtures.
- **Labels:** Chemical manufacturers and importers must provide a label that includes a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category.
- **Safety Data Sheets:** The new format requires 16 specific sections, ensuring consistency in presentation of important protection information.
- **Information and training:** To facilitate understanding of the new system, the new standard requires that workers be trained on the new label elements and safety data sheet format, in addition to the current training requirements.

OSHA has defined a hazardous chemical as "a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees." In addition, OSHA defines a laboratory as "a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis." Finally, laboratory workers are defined in the OSHA Lab Standard under the definition of "employee" as "an individual employed in a laboratory workplace that may be exposed to hazardous chemicals in the course of his or her assignments." An example of a laboratory worker would be a faculty member instructing an academic lab, a teaching assistant, or a laboratory technician. The students in the PSCC academic laboratory would not be considered laboratory workers; however they are covered by this plan.

Employees and students conducting laboratory procedures, as well as those responsible for oversight, should be familiar with this Chemical Hygiene Plan and together share the responsibility for creating a safe and healthy environment. In addition to the Chemical Hygiene Plan, laboratory workers shall also be cognizant of and adhere to the PSCC Health and Safety plan and Hazard Communication plan. A written record stating that each laboratory worker has reviewed the Chemical Hygiene Plan and related health and safety policies and guides shall be kept by the laboratory supervisor (See Appendix 3).

This Chemical Hygiene Plan will be reviewed annually and revised as needed by the Environmental, Health & Safety Compliance Manager.

2.0 RESPONSIBILITIES

2.1 Environmental Health & Safety Compliance Manager (Phone: 865-694-6738)

The Environmental Health & Safety Compliance Manager is responsible for implementing the Chemical Hygiene Plan as follows:

- develop and maintain a written Chemical Hygiene Plan;
- provide and/or arrange for technical assistance to laboratory workers concerning appropriate storage, handling and disposal of hazardous chemicals;
- provide and/or arrange for general and specialized laboratory safety training upon request;
- conduct exposure assessments and laboratory inspections upon request and on a routine basis;
- provide technical assistance concerning personal protective equipment and laboratory safety equipment;
- facilitate access to Safety Data Sheets and other laboratory and chemical safety literature;
- attain and maintain compliance with OSHA and PSCC policies and PSCC written safety plans; and,
- remain current on rules and regulations concerning chemicals used at the college

2.2 Director of Facilities

The Director of Facilities is responsible for supporting the Chemical Hygiene Plan as follows:

- remain current on rules and regulations concerning chemicals used at the college; and read the Chemical Hygiene Plan and verify this has been performed by signing an acknowledgement form and returning the form to the department head

2.3 The Chief of Police

The Chief of Pellissippi State Police Dept. is responsible for supporting the Chemical Hygiene Plan as follows:

- remain current on rules and regulations concerning chemicals used at the college; and,
- read the Chemical Hygiene Plan and verify this has been performed by signing an acknowledgement form and returning the form to the department head

2.4 Supervisors

The President, Vice Presidents, Deans, Directors, and Program Coordinators have the primary responsibility for the health and safety of their staff, faculty, and students.

Direct supervisors for laboratory workers have specific responsibilities regarding the implementation of the Chemical Hygiene Plan which include:

- collaborate with the Environmental Health & Safety Compliance Manager, faculty and staff to adapt the Chemical Hygiene Plan to include lab-specific guidelines and to develop strategies to implement the plan;
- ensure that each employee working with hazardous chemicals in a laboratory setting has knowledge of and follows specific guidelines for their use and handling;
- provide a list of all instructors working in a laboratory to the Environmental Health & Safety Compliance Manager. Ensure those on the list have read the Chemical Hygiene Plan and signed an acknowledgement form that is to be returned to the Environmental Health & Safety Compliance Manager;
- ensure that designated employees have received all required training;
- ensure that appropriate personal protective equipment is available, is in proper condition, and is used appropriately when required; and,
- make budget arrangements for health and safety improvements.

2.5 Faculty and Staff

Faculty and staff in charge of supervising laboratories, such as laboratory technicians and instructors, have the following responsibilities for implementing the Chemical Hygiene Plan:

- read the Chemical Hygiene Plan and verify this has been performed by signing an acknowledgement form and returning the form to the department head;
- inform and train students and laboratory workers concerning laboratory safety as required by the Chemical Hygiene Plan. Training will address, at minimum, the following:
  a) Location and proper use of safety showers and eye washes
  b) Location of first aid kits
  c) Location of fire extinguishers and fire pull stations
  d) Location of emergency shut offs for the lab
  e) Campus emergency numbers
  f) Retain training records and all documentation
  g) Implement and enforce rules and standards concerning health and safety for laboratories under supervisor's jurisdiction
  h) Ensure compliance of students and laboratory workers with this plan
  i) Ensure the availability of appropriate personal protective equipment, Safety Data Sheets (SDS), and relevant reference materials
  j) Maintain current SDS notebooks and ensure they are located in a clearly visible and accessible location
  k) Have students and laboratory workers read SDS for the materials they will be using prior to their use
  l) Provide a current inventory of hazardous materials and quantities every semester to the Environmental, Health & Safety Compliance Manager and post an inventory on the exterior door to the lab where materials are located
  m) Remain cognizant of chemicals stored and used in labs and their associated hazards
  n) Monitor to ensure laboratory waste is properly disposed of in the appropriate methods
  o) Monitor the function of engineering control equipment, such as fume hoods, and arrange for prompt repair when needed
  p) Dispose of chemicals no longer needed by filling out Hazardous Waste Container Tracking Forms and submitting them to the Environmental, Health & Safety Compliance Manager; and,
  q) Conduct internal inspections of labs for health and safety concerns including testing of safety showers and eye washes.

2.6 Students

Students' responsibilities regarding implementation of the Chemical Hygiene Plan are as follows:

- follow all health and safety standards and rules;
- report all hazardous conditions to the instructor;
- wear or use prescribed protective equipment;
- report any lab-related injuries or illnesses to the instructor and seek treatment immediately;
- refrain from the operation of any equipment or instrumentation without proper instruction and authorization;
- remain aware of the hazards of the chemicals in the lab and how to handle hazardous chemicals safely; and,
- request information and training when unsure how to handle a hazardous chemical or procedure.

3.0 STANDARD OPERATING PROCEDURES

"Standard operating procedures relevant to safety and health considerations are to be followed when laboratory work involves the use of hazardous chemicals."
29 CFR 1910.1450(e)(3)(i)

The Chemical Hygiene Plan represents a minimum set of guidelines for the handling and use of toxic chemicals on Pellissippi State Community College campuses. Individual administrative units, laboratories or research groups are required to develop more detailed procedures as their situations warrant. In all situations, individual faculty or staff will be responsible for enforcing adequate safety and hygiene measures in laboratories they supervise. If necessary, additional assistance is available from the Environmental, Health & Safety Compliance Manager.

3.1 General Procedures

Some rules or standard operating procedures, which apply to all laboratories at Pellissippi State Community College, include the following:

- Unattended Experiments. Laboratory experiments should be placed in potentially low hazard condition before leaving them unattended.
- Working Alone. When working with hazardous materials, it is advisable to have a second person present, or at a minimum, maintain surveillance via telephone contact.
- Housekeeping. Exits, aisles and safety equipment must be kept clear of any obstructions, such as equipment, furniture, etc. Hazardous liquid chemicals should be stored below eye level. Work areas and floors should be kept clear of excessive storage.
- Food, Drink, Cosmetics. Eating, drinking and the application of cosmetics are not permitted in areas where hazardous chemicals are used and will be done only in well-defined designated non-chemical areas. Do not store food in the same refrigerator with chemicals, biohazards or radioactive materials.
- No Horseplay. Practical jokes or other behavior that might confuse, startle, or distract another worker or cause a spill or accident is not permitted.
- Equipment. Use proper equipment that is in good condition. For example, never use chipped or cracked glassware. Shield pressurized or vacuum apparatus and safeguard against bumping or overheating.
- Waste Minimization. Strive to reduce waste where practical by implementing the following guidelines:
    1. Keep an up-to-date chemical inventory.
    2. Use a centralized purchasing program designed to reduce duplication and overbuying.
    3. Use of the chemical redistribution program.
    4. Annual review of experimental protocols and research of new techniques which consider the hazards and quantities of waste produced.

5. Destruction procedures as the final step in experiments. For example, neutralization of corrosive wastes which do not contain heavy metals should be a standard operating procedure.
6. Elimination of thermometers and reagents which contain mercury, and chromic acid cleaning solutions. Use of other hazardous materials such as heavy metals and halogenated solvents should also be eliminated or reduced.

- Disposal of Chemicals. To request a pickup of chemicals, complete a Hazardous Waste Container Tracking Form for each waste container and submit it to the Environmental Health & Safety Compliance Manager.
- Chemical Spills and Accident Response. For large spills or leaks, contact Campus Police at 694-6649 and evacuate the area. If the incident involves serious or life-threatening injury, emergency responders will be contacted.

3.2 Personal Protection/Hygiene

Personal protection and personal hygiene are two very basic aspects of laboratory safety. Wearing appropriate personal protection and practicing good personal hygiene, as described below, will minimize exposures to hazardous chemicals during routine use and in the event of an accident.

- Attire. Wear a lab coat or apron, cover legs and feet (no sandals, open-toed shoes, or shorts), and confine loose clothing, jewelry, and long hair.
- Gloves. Gloves are essential when working with hazardous substances. The proper gloves will prevent skin absorption, infection or burns. All glove materials are not equally effective in protection from chemical hazards. In many cases, latex examination gloves do not provide adequate protection from hazardous chemicals. Consult a chemical resistance chart such as the one found in Appendix 2, consult a glove manufacturer or contact the Environmental Health and Safety Compliance Manager for assistance in appropriate selection.

- Eye Protection. It is required that personnel including students, faculty, staff and visitors in laboratories wear safety glasses, goggles, or face shields at all times where potential eye hazards exist. Goggles are required when chemical splashes are possible.
- Face Shields. Full face shields must be worn when conducting a procedure which may result in a violent reaction. Full face shields with bottom caps to protect under the chin are preferred due to the tendency to raise the chin when a splash occurs.
- Glass Tubing. When inserting glass tubing into stoppers, lubricate the tubing and protect hands from being cut in the event the tubing slips and breaks.
- Personal hygiene. Hands should be washed frequently throughout the day, before leaving the lab, after contact with any hazardous material, before eating, etc.

3.3 Hazardous Material Handling and Storage

Hazards associated with various chemicals and gases vary widely. Understanding the hazards associated with a compound and minimizing the quantity used and stored in the lab will decrease the chance of injury.

- Chemical Storage (General). Chemicals must be stored by compatibility, not by alphabetical arrangement. For example, oxidizers should be separated from organics, air/water reactants must be kept dry, and cyanides should be stored away from acids. All containers must be labeled for their hazard class to prevent improper storage.
- Storage of Volatile Chemicals. Volatile toxic substances shall be stored in storage cabinets adequate to the purpose or in hoods when cabinets are unavailable. If volatile substances are stored in a hood, other uses of the hood shall be restricted to activities compatible with the chemical and physical properties of the chemicals being stored or used. When volatiles must be stored in a cooled atmosphere, refrigerators designed for this purpose must be used.
- Chemical Handling. Use secondary containment when transporting chemicals by placing the chemical being transported inside a protective container. For example, use polyethylene bottles or bottle carriers for transporting chemicals that are in regular glass containers. Close caps securely and avoid storing chemical containers in hard to reach areas. Pour chemicals carefully, and never add water to concentrated acid. Metal containers and non-conductive containers (e.g., glass or plastic) holding more than five gallons must be grounded when transferring flammable liquids.
- Cylinder Storage. Cylinders must be stored upright in well-ventilated areas with their protective caps screwed on and the cylinder secured (e.g., strapped or chained down) to reduce the chance of the cylinder being knocked over. Do not store cylinders near heat or high traffic areas. Do not store flammables and oxidizers together. Do not store empty and full cylinders together. Storage of large quantities of cylinders must be done in an approved gas cylinder storage area.
- Cylinder Handling. Use appropriate handcarts to move cylinders. Cylinders must be secured to the cart during transport. Highly toxic gases should not be moved through the corridors, particularly during business hours. Always consider cylinders as full and handle them with corresponding care.

- Labels. All labels must be legible. Label all secondary containers with the chemical name (as it appears on the original label or SDS) and appropriate hazards. Health hazard warning information should include the target organs that may be affected and any of the following terms that are appropriate: carcinogen, toxic or highly toxic agent, reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephrotoxin, neurotoxin, agents which act on the hematopoietic system, or agents which damage the lungs, skin, eyes, and mucous membranes. Physical hazard warning information should include any of the following terms that are appropriate: combustible liquid, compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable (reactive), or water reactive. Date all peroxidizable (i.e. ethyl ether) and other chemicals which may become unstable over time. Test and/or dispose of them when appropriate.
- Containers. Check the integrity of containers. Ensure that the container used is compatible with the chemical, for example hydrofluoric acid must not be stored in glass and some oxidizers should not be stored in plastic containers.

3.4 Employee Awareness

Awareness is the fundamental key to chemical safety. Each employee should remain constantly aware of:

- The specific hazard(s) of each chemical;
- Appropriate safeguards for using each chemical;
- Location and proper use of all equipment;
- How to properly store each chemical when not in use;
- Specific incompatibilities of each chemical;
- Proper personal hygiene practices;
- Since other employees may be required to use the same work area, unidentified chemicals in spills or in unlabeled containers should never be left at a work station;
- The proper use, maintenance, and limitations of personal protective equipment;
- The proper method of transporting chemicals within the facility;
- Appropriate procedures for emergencies;
- The importance of not working alone in a laboratory (if this is not possible, advise someone who can check with you at regular intervals); and,
- All appropriate control measures and equipment necessary for performing each task.

3.5 Indicators

Employees should recognize certain indicators, which should prompt supervisory attention including a review of the procedure and work process. Such indicators include, but are not limited to the following:

- Initiation of a new procedure, process or test, even if it is very similar to older practices;
- A change or substitution of any of the reagent chemicals in a procedure;
- A substantial change in the amount of chemicals used (usually the employee should review safety practices if the volume of chemicals used increases by 20 or 25%);
- Failure of any of the equipment used in the process, especially safeguards such as fume hoods or clamp apparatus; or
- Unexpected test results (when a test result is different from that predicted, a review of how the test results impact safety practices must be made).

4.0 CONTROLLING CHEMICAL EXPOSURES

"Criteria that the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of personal protective equipment and hygiene practices; particular attention shall be given to the selection of control measures for chemicals that are known to be extremely hazardous." 29 CFR 1910.1450(e)(ii)

There are three major routes of entry for a chemical to enter the body: inhalation, skin and eye contact, and ingestion. Three types of controls for prevention of these various routes of entry include: engineering controls, personal protective equipment and administrative controls. Each route of entry a chemical can take to enter the body can be controlled in a number of ways, as explained below.

4.1 Inhalation Hazards

Inhalation of chemicals is the most common route of entry a chemical can take to enter the body. To avoid significant inhalation exposures, engineering controls are the best option to eliminate or minimize hazards. For example, substituting a less volatile or a less toxic chemical, or substituting a liquid or solid chemical for a gaseous one are the best means of control. If substitution is not practical, ventilation should be used to lessen the chance of overexposure. The use of well-functioning local exhaust ventilation such as laboratory fume hoods and other local exhaust systems is often required to minimize exposure to hazardous chemicals. Dilution ventilation may be used to reduce exposure to non-hazardous nuisance odors.

Administrative controls can be utilized to reduce the risk of overexposure to hazardous chemicals. Some examples of administrative controls include:

- Minimization of exposure time for individual employees;
- Restricted access to an area where a hazardous chemical is used;
- Allowing a process that emanates nuisance odors to be done only after typical office hours, when most of the staff in the building have gone home; and,
- Proper signage on lab doors to indicate special hazards and an inventory of hazardous materials within that room, a list of lab personnel who should be contacted in the event of an emergency, and appropriate telephone numbers. Finally, if engineering and administrative controls are not an option, the use of personal protective equipment may be required to reduce inhalation exposures. The entire spectrum of respiratory protection from a dust mask to a self-contained breathing apparatus may be utilized to this end. If respirators are worn by laboratory employees, requirements of the OSHA Respiratory Protection Standard (29 CFR 1910.134) must be met. This standard requires training on the proper use of respirators, medical surveillance to ensure the user is capable of wearing a respirator, and fit testing to ensure that the respirator fits properly.

4.2 Skin/Eye Contact Hazards

To reduce the risk of a chemical entering the body via skin and eye contact, engineering controls including substitution and appropriate ventilation, should be used as described above in "Inhalation Hazards." The more obvious means of preventing skin and eye contact is the wearing of personal protective equipment such as eye protection, face shields, gloves, appropriate shoes, lab aprons, lab coats, and other protective equipment appropriate to the hazard. Since the chemical resistivity of the different types of protective equipment varies significantly, laboratory workers should consult Appendix 2 or other references to ascertain that the protective equipment material is resistant to the chemical being protected against.

Administrative controls to reduce skin/eye contact include: enforcement of policies pertaining to skin and eye protection, and discarding or repairing cracked or broken glassware.

4.3 Ingestion

Ingestion of chemicals is the least common route of entry into the body. However, a laboratory worker can easily ingest chemicals into the body via contaminated hands if they are not washed prior to eating, smoking or sticking part of the hand, or a writing tool that has been in contaminated hands, into the mouth. Use engineering controls, such as isolating the hazardous substance so that minimal contact is required to help prevent exposures. Administrative controls such as restricting mouth pipetting, encouraging good personal hygiene, and designating a well-marked non-chemical area where eating, drinking and the application of cosmetics are permitted, are also beneficial in preventing chemical exposures via ingestion. Personal protective equipment, such as gloves, may also be used.

At the request of faculty, staff or students, exposure evaluations may be conducted for any suspected overexposure to substances regulated by OSHA and/or with threshold limit values published by the American Conference of Governmental Industrial Hygienists.

5.0 ENGINEERING CONTROLS

"A requirement that fume hoods and other protective equipment are functioning properly and specific measures that shall be taken to ensure proper and adequate performance of such equipment." 29 CFR 1910.1450(e)(3)(iii)

All engineering controls must be properly maintained, inspected on a regular basis, and never overloaded beyond their design limits.

5.1 Fume Hoods

Laboratory fume hoods on the campuses should be evaluated on a semi-annual basis by the user's department for flow rate and efficiency. Fume hoods normally should provide approximately 80 to 100 feet per minute of air flow at face velocity. When using a fume hood, general procedures to follow include:

- Fume hood sashes should be lowered at all times except when adjusting the apparatus inside;
- The apparatus inside the hood should be kept towards the rear of the hood to prevent vapors from escaping;
- Hoods should not be used for storage;
- The vent ducts and fans must be kept clean and clear of obstructions; and,
- The hood must remain "on" at all times when a chemical is inside the hood, regardless of whether or not work is actually being performed in the hood.

New laboratory fume hoods should be equipped with air flow monitoring devices which will alert the user if there is a problem with air flow. For older hoods without air flow monitoring devices, a simple visible test to ensure flow into hoods and other ventilating devices is to tape a tissue to the hood and note its movement when the exhaust fan is turned on.

Any questions or requests for assistance in evaluation of hoods may be directed to the Environmental Health & Safety Compliance Manager.

5.2 Other Engineering Controls

In addition to fume hoods, other engineering controls should be utilized such as:

- Proper ventilation of work areas where chemicals are stored or used;
- Flammable and corrosive storage cabinets;
- Safety cans; and,
- Secondary containment, when possible, to protect against spills.

6.0 HOUSEKEEPING

Common housekeeping practices contribute greatly toward the achievement of chemical hygiene and safety. A clean work area is much safer than a cluttered or dirty one. Some appropriate housekeeping measures include:

- Keep all aisles, hallways, and stairs clear of all chemicals;
- Keep all work areas and especially work benches clear of clutter;
- All working surfaces and floors should be cleaned regularly;
- Access to emergency equipment, showers, eyewashes, and exits should never be obstructed; and,
- Wastes should be kept in the proper containers and labeled properly.

All laboratory staff should be considerate and aware of custodial personnel working in their area by ensuring that:

- All chemicals are placed in proper storage areas at the end of each workday;
- All chemical containers are labeled with both the identity of the chemical and its hazards; and,
- Chemicals should never be stored in aisles, stairwells, on desks or workbenches, on floors or in hallways, or left on shelves over the workbenches.

7.0 EMPLOYEE INFORMATION AND TRAINING

"The employer shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area."
29 CFR 1910.1450(f)(1)

Principal lab supervisors are primarily responsible for providing employees with training regarding the specific hazards of chemicals found in their work areas. This information shall be provided at the time of initial assignment to a work area and prior to assignments that may involve new potential exposure situations.

Employees must be informed of the contents of "Occupational Exposures to Hazardous Chemicals in Laboratories" (Code of Federal Regulations, 29 CFR 1910.1450). In addition, they are required to read this Chemical Hygiene Plan and fill out the Training Certificate found in Appendix 3. Employees shall be informed of the permissible exposure limits or the recommended exposure limits, signs and symptoms associated with exposures, the location of reference materials that include information on the hazards, safe handling, storage and disposal (including Safety Data Sheets) for the hazardous chemicals they are to work with.

Training must include applicable information from this Plan, how to detect hazardous chemical releases, information on physical and health hazards of pertinent hazardous chemicals, and how to protect themselves from hazardous chemicals using appropriate work practices, emergency procedures and personal protective equipment.

8.0 APPROVAL FOR AQUISITION AND USE OF HAZARDOUS CHEMICALS

"The circumstances under which a particular laboratory operation, procedure or activity shall require prior approval from the employer or the employer's designee before implementation." 29 CFR 1910.1450(e)(3)(v)

The Deans overseeing the laboratories and the Environmental Health & Safety Compliance Manager are responsible for approval for acquisition and use of toxic chemical agents.

9.0 MEDICAL CONSULTATION

"Provisions for medical consultation and medical examinations in accordance with paragraph (g) of this section." 29 CFR 1910.1450(e)(3)(vi)

An opportunity to receive medical consultation shall be provided under the following circumstances: if an employee develops any symptoms thought to arise from chemical overexposure; after an event such as a major spill, leak or explosion which may have resulted in an overexposure; or, an overexposure is identified as the result of an evaluation by the Environmental, Health & Safety Compliance Manager. These suspected or actual exposures requiring medical evaluation can and should be treated as a regular Worker's Compensation claim.
Following notification of overexposure, arrangements for an appropriate medical examination must be completed before the exposed individual may return to work. Any medical examination required by this Plan shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Records of any medical examination will be maintained by Human Resources.

10.0 CHEMICAL HYGIENE OFFICER

"Designation of personnel responsible for implementation of the Chemical Hygiene Plan including the assignment of a Chemical Hygiene Officer and, <u>if appropriate</u>, establishment of a Chemical Hygiene Committee." 29 CFR 1910.1450(e)(3)(vii)

The Environmental, Health & Safety Compliance Manager will serve as the Chemical Hygiene Officer and be responsible for developing, implementing, and maintaining the Chemical Hygiene Plan. The Environmental, Health & Safety Compliance Manager will meet with the Director of Facilities and the Chief of Police as needed to assure implementation of the plan within the affected departments.

Environmental, Health & Safety Compliance Manager	Director of Facilities
Chief of Police	Fine Arts faculty member
Nursing faculty member	MET faculty member
N&BS faculty member	N&BS Lab Technician

The Chemical Hygiene plan will be reviewed, and revised as needed, or at least annually.

APPENDIX 1 - CHEMICAL WASTE DISPOSAL PROCEDURES

Background

In general, all chemicals and their disposal should be treated with a healthy measure of respect. Because of the tremendous number of chemicals available in today's institutional environment, their deleterious effects to personnel, and the "cradle to grave" responsibility under the Resource Conservation Recovery Act (RCRA) and Superfund Amendments and Reauthorization Act (SARA Title III) regulations, it is essential that an institution conduct a chemical waste disposal program that limits both health and monetary liability.

Generally, a hazardous chemical is one that is highly flammable, toxic, corrosive, carcinogenic, explosive, reactive, or is a solvent.

Disposal

When disposing of chemical waste, the waste should be:

1. Placed in the proper container.
    a. The outside of waste containers must be contamination free, the lid should be securely attached, and the container must be in good condition.
    b. All containers should be maximum one gallon with a minimum two inches of free space on top. Acids, bases, and poisons should be placed in containers no larger than ½ gallon.
    c. All dry waste should be double bagged in 2 mil thick bags.
2. Labeled properly with the complete chemical name of the waste by having a completed Hazardous Waste label attached to it. The label should have the chemical name(s), its hazard classification (flammable, toxic, corrosive, carcinogenic, explosive, reactive, or solvent) and the date when the container was completely full and ready for pickup.
3. Have a completed Hazardous Waste Container Tracking Form for each container.
4. When ready for collection, contact the Environmental, Health & Safety Compliance Manager at 694-6738 for pick up and submit the completed Hazardous Waste Container Tracking Forms.

Empty Containers

Empty containers with a volume of less than five gallons can be disposed of in the regular trash provided the labels are defaced. Containers greater than five gallons or containers that held chemicals that are acutely toxic must be rinsed a minimum three times, the rinsate collected and disposed of as chemical waste, before they can be discarded in the regular trash.

Broken Glassware/Containers

Broken glassware/containers contaminated with biohazards must be disposed of in biohazard containers. Otherwise, broken glassware/containers should be disposed of in a broken glass box. When filled, the container should be closed, taped, labeled "Trash" and placed near the regular trash for pickup.

Sink Disposal

Under no circumstances, should any hazardous waste be disposed of by pouring it down the drain (through the sanitary sewer). There are some chemicals, however, that can be disposed of by pouring down the sink. They include salt solutions, sugar solutions, saline, ringers lactate, amino acid solutions, vitamin solutions, and glucose solutions.

APPENDIX 2 - CHEMICAL RESISTANCE CHART

Resistance to Chemicals of Common Glove Materials

(E=Excellent, G=Good, F=Fair, P=Poor)

==========

CHEMICAL	NATURAL RUBBER	NEOPRENE	NITRILE	VINYL
Acetaldehyde	G	G	E	G
Acetic acid	E	E	E	E
Acetone	G	G	G	F
Acrylonitrile	P	G	-	F
Ammonium hydroxide	G	E	E	E
Aniline	F	G	E	G
Benzaldehyde	F	F	E	G
*Benzene	P	F	G	F
*Benzyl chloride	F	P	G	P
Bromine	G	G	-	G
Butane	P	E	-	P
Butyraldehyde	P	G	-	G
Calcium hypochlorite	P	F	G	F
Carbon disulfide	P	P	G	F
*Carbon tetrachloride	P	F	G	F
Chlorine	G	G	-	G
Chloroacetone	F	E	-	P
*Chloroform	P	F	G	P
Chromic acid	P	F	F	E
Cyclohexane	F	E	-	P
Dibenzyl ether	F	G	-	P
Dibutyl phthalate	F	G	-	P
Diethanolamine	F	E	-	E
Diethyl ether	F	G	E	P
**Dimethyl sulfoxide	-	-	-	-
Ethyl acetate	F	G	G	F
*Ethylene dichloride	P	F	G	P
Ethylene glycol	G	G	E	E
*Ethylene trichloride	P	P	-	P

APPENDIX 2 - CHEMICAL RESISTANCE CHART

Resistance to Chemicals of Common Glove Materials

(E=Excellent, G=Good, F=Fair, P=Poor)

==========

CHEMICAL	NATURAL RUBBER	NEOPRENE	NITRILE	VINYL
Fluorine	G	G	-	G
Formaldehyde	G	E	E	E
Formic acid	G	E	E	E
Glycerol	G	G	E	E
Hexane	P	E	-	P
Hydrobromic acid (40%)	G	E	-	E
Hydrochloric acid (conc.)	G	G	G	E
Hydrofluoric acid (30%)	G	G	G	E
Hydrogen peroxide	G	G	G	E
Iodine	G	G	-	G
Methylamine	G	G	E	E
Methyl cellosolve	F	E	-	P
*Methyl chloride	P	E	-	P
Methyl ethyl ketone	F	G	G	P
*Methylene chloride	F	F	G	F
Monoethanolamine	F	E	-	E
Morpholine	F	E	-	E
*Naphthalene	G	G	E	G
Nitric acid (conc.)	P	P	P	G
Perchloric acid	F	G	F	E
Phenol	G	E	-	E
Phosphoric acid	G	E	-	E
Potassium hydroxide	G	G	G	E
*Propylene dichloride	P	F	-	P
Sodium hydroxide	G	G	G	E
Sodium hypochlorite	G	P	F	G
Sulfuric acid (conc.)	G	G	F	G
*Toluene	P	F	G	F
*Trichloroethylene	P	E	G	F
Tricresyl phosphate	P	E	-	F
Triethanolamine	F	E	E	E
Trinitrotoluene	P	E	-	P

* Aromatic and halogenated hydrocarbons will attack all types of natural and synthetic glove materials. Should swelling occur, the user should change to fresh gloves and allow the swollen gloves to dry and return to normal.

** No data on the resistance of dimethyl sulfoxide of natural rubber, neoprene, nitrile rubber, or vinyl materials are available; the manufacturer of the substance recommends the use of butyl rubber gloves.

Appendix 2 taken from "Prudent Practices for Handling Hazardous Chemicals in the Laboratory"

APPENDIX 3
PELLISSIPPI STATE COMMUNITY COLLEGE
CHEMICAL HYGIENE PLAN
GENERAL TRAINING CERTIFICATE

Name: _____ Date: _____

Building/Room: _____ Phone: _____ Department: _____

I certify that I have read the Chemical Hygiene Plan for Pellissippi State Community College and that I have received the general training related to the Chemical Hygiene Plan, which included the following:

1. Location of the potentially hazardous chemicals in the workplace.
2. Recognition of the chemical labeling and its meaning.
3. Location of the SDS's in the workplace.
4. Location of the health hazard, physical hazard, environmental protection, and special protection sections of the SDS and an explanation of their use.
5. Identification of the Chemical Hygiene Officer by name and title.
6. The major components of the laboratory's standard labeling system.
7. The appropriate protective clothing for the area and its proper usage.
8. Emergency procedures in the events of a hazardous chemical spill.
9. Location and safety precautions for potentially hazardous equipment.
10. Physical and health effects of hazardous chemicals associated with task assignments.
11. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the laboratory.
12. How to lessen or prevent exposure to hazardous chemicals through controlled work practices and personal protective equipment.
13. Emergency and first-aid procedures to follow if employees are exposed to hazardous chemicals. In addition, I understand that I have the responsibility to read the SDS's for any chemical that I will work with in the laboratory.

_____
Laboratory User Signature