

# **YOUNGSTOWN STATE UNIVERSITY**

## **Occupational Health Exposure Plan**

Reference 29 CFR 1910.1450

Combined  
Chemical Hygiene Plan  
Biosafety Plan  
&  
Occupational Exposure to Animals in Laboratories

Revised June 2009

### **INTRODUCTION**

On January 31, 1990, the Occupational Safety and Health Administration (OSHA) promulgated a final rule for occupational exposure to hazardous chemicals in laboratories. Included in the standard, which became effective on May 1, 1990, is a requirement for all employers covered by the standard to develop and carry out the provisions of a Chemical Hygiene Plan (CHP). Youngstown State University in accordance with Board of Trustee Policy 4010.01 has implemented the following plan to assure the safety of students and employees working in laboratories where chemicals are used. This plan will also serve as a guide for the proper use of animals in research and instructional laboratories to protect the health and safety of faculty, research assistants and students in accordance with Board of Trustee Policy 1015.01. By combining the elements of a CHP and the Animal Use Plan this document will become a comprehensive Occupational Health Exposure Plan for YSU.

This is a written program which sets forth procedures, equipment, personal protective equipment and work practices that are designed to protect employees from the health hazards presented by hazardous chemicals or animals used in research and teaching laboratories at YSU. It is recognized that many student teaching laboratories are of such a nature that no danger from chemicals and/or etiological agents exist. It is understood that this standard does not apply to these types of laboratories. In order to be effective, this plan must include standard operating procedures for safety and health, criteria for the implementation of control measures, measures to ensure proper operation of engineering controls, provisions for training and information dissemination, permitting requirements, provisions for medical consultation, designation of responsible personnel, and identification of particularly hazardous substances.

The Occupational Health Exposure Plan has been developed for Youngstown State University located at One University Plaza in Youngstown, Ohio. The plan has been and is readily available to laboratory employees and students. All laboratory personnel must know and follow the procedures outlined in this Plan. All operations performed in the laboratory must be planned and executed in accordance with the enclosed procedures. In addition, each employee and student is expected to develop safe personal chemical hygiene habits aimed at the reduction of chemical exposures to themselves and coworkers.

This document was developed to comply with paragraph (e) of the referenced OSHA 1910.1450 standard and also to comply with all legislation involving the safe use of animals in research and teaching facilities. Youngstown State University will maintain the facilities and procedures employed in the laboratory compatible with current knowledge and regulations in laboratory safety. This plan will be reviewed, evaluated and updated at least annually and is readily available to employees, students, their representatives and any representative of the Assistant Secretary of Labor for OSHA or representative of the Public Employees Risk Reduction Commission of the State of Ohio. Information contained in this manual was obtained through many sources and federal documents including but not limited to 29 CFR 1910.1400 and information obtained through the National Institute for Occupational Health and Safety (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH).

## **SCOPE AND APPLICATION OF THE OCCUPATIONAL HEALTH EXPOSURE PLAN**

The scope of this Occupational Health Exposure Plan shall apply to all laboratories on the campus of Youngstown State University engaged in the use of hazardous chemicals, etiological agents or animal research. For the purpose of this document, the definition of "hazardous chemical" shall be that used in 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories. Therefore, "Hazardous Chemical" means 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. The term "Health Hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, toxins, hepatotoxin, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems and agents which damage the lungs, skin, eyes, or mucous membranes. References found in appendix A and B of 29 CFR 1910.1200 will be used to determine whether or not a chemical fits any of the above definitions. It is the responsibility of each laboratory supervisor, consulting with department heads and the chemical hygiene officer to determine the hazard status of chemicals used in their area before beginning to work with any given chemical. A "laboratory" is defined as a facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis. The following definitions shall be used in the interpretation of the above scope.

### **Glossary of Terms**

**Action level** means a concentration designated in 29 CFR part 1910 for a specific substance, calculated as an eight (8)-hour time-weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance.

**Assistant Secretary** means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

**Carcinogen** (see select carcinogen).

**Chemical Hygiene Officer** means an employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the OHEP. This definition is not intended to place limitations on the position description or job classification that the designated individual shall hold within the employer's organizational structure.

**Chemical Hygiene Plan** means a written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment and work practices that (i) are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular workplace and (ii) meets the requirements of paragraph (e) 29 CFR 1910.1450.

**Combustible liquid** means any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flashpoints of 200 deg.

F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

**Compressed gas** means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F (21.1 deg. C); or

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C) regardless of the pressure at 70 deg. F (21.1 deg. C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 C) as determined by ASTM D-323-72.

**Designated area** means an area which may be used for work with "select carcinogens," reproductive toxins or substances which have a high degree of acute toxicity. A designated area may be the entire laboratory, an area of a laboratory or a device such as a laboratory hood.

**Emergency** means any occurrence such as, but not limited to, equipment failure, rupture of containers or failure of control equipment which results in an uncontrolled release of a hazardous chemical into the workplace.

**Employee** means an individual employed in a laboratory workplace who may be exposed to hazardous chemicals in the course of his or her assignments.

**Etiologic agent** means any organism capable of causing disease.

**Explosive** means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**Flammable** means a chemical that falls into one of the following categories:

(i) **Aerosol, flammable** means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame protection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.

(ii) **Gas, flammable** means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit.

(iii) **Liquid, flammable** means any liquid having a flashpoint below 100 deg F (37.8 deg. C), except any mixture having components with flashpoints of 100 deg. F (37.8 deg. C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) **Solid, flammable** means a solid, other than a blasting agent or explosive as defined in 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

**Flashpoint** means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24 - 1979 (ASTM D 56-79)) - for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 deg. F (37.8 deg. C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (See American National Standard Method of Test for Flashpoint by Pensky-Martens Closed Tester, Z11.7 - 1979 (ASTM D 93-79)) - for liquids with a viscosity equal to or greater than 45 SUS at 100 deg. F (37.8 deg. C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo auto accelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

**Hazardous chemical** means 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. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

Appendices A and B of the Hazard Communication Standard (29 CFR 1910.1200) provide further guidance in defining the scope of health hazards and determining whether or not a chemical is to be considered hazardous for purposes of this standard.

**Laboratory** means a facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

**Laboratory scale** means work with substances in which the containers used for reactions, transfers, and other handlings of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.

**Laboratory-type hood** means a device located in a laboratory, enclosed on five sides with a movable sash or fixed partial enclosed on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.

Walk-in hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.

**Laboratory use of hazardous chemicals** means handling or use of such chemicals in which all of the following conditions are met:

- (i) Chemical manipulations are carried out on a "laboratory scale;"
- (ii) Multiple chemical procedures or chemicals are used;
- (iii) The procedures involved are not part of a production process, nor in any way simulate a production process; and
- (iv) "Protective laboratory practices and equipment" are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

**Medical consultation** means a consultation which takes place between an employee and a licensed physician for the purpose of determining what medical examinations or procedures, if any, are appropriate in cases where a significant exposure to a hazardous chemical may have taken place.

**Organic peroxide** means an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

**Oxidizer** means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

**Physical hazard** means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer pyrophoric, unstable (reactive) or water-reactive.

**Protective laboratory practices and equipment** means those laboratory procedures, practices and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for exposure to hazardous chemicals.

**Reproductive toxins** means chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

**Select carcinogen** means any substance which meets one of the following criteria:

(i) It is regulated by OSHA as a carcinogen; or

(ii) It is listed under the category, "known to be carcinogens," in the Annual Report on Carcinogens published by the National Toxicology Program (NTP)(latest edition); or

(iii) It is listed under Group 1 ("carcinogenic to humans") by the International Agency for research on Cancer Monographs (IARC) (latest editions); or

(iv) It is listed in either Group 2A or 2B by IARC or under the category, "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:

(A) After inhalation exposure of 6 - 7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m<sup>3</sup>;

(B) After repeated skin application of less than 300 (mg/kg of body weight) per week; or

(C) After oral dosages of less than 50 mg/kg of body weight per day.

**Unstable (reactive)** means a chemical which is the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

**Water-reactive** means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

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## **1.0 Standard Operating Procedures for Laboratory Chemicals**

### **1.1 Procurement of Chemicals and Etiologic Agents**

1.1.1 The decision to procure a chemical or any etiologic agent shall be a commitment to handle, use, and dispose of the chemical or etiologic agent properly from initial receipt to the time of its ultimate disposal.

1.1.2 Requests for procurement of new chemicals shall be submitted to the Chemical Hygiene Officer for approval prior to beginning work with the chemical. The form entitled "New Chemical Request Form," Appendix A to this plan, shall be used for this purpose. Information on proper handling, storage and disposal shall be provided by the Chemical Management Center (CMC) personnel prior to the procurement of the chemical. Chemicals utilized in the laboratory shall be those for which adequate facilities are available including but not limited to proper ventilation systems and storage cabinets. Check with your individual department head for any departmental procedures that may need to be followed prior to procurement.

1.1.3 Requests for procurement of chemicals from the warehouse shall be done by filling out the "Chemical Order Form," Appendix B to this Plan. Check with your individual department head for any departmental procedures that may need to be followed prior to procurement. University Chemical ordering procedures can be found on EOHS and Materials Management websites.

1.1.4 All etiologic agents listed as by the National Institute of Health (NIH) or the Centers for Disease Control and Prevention (CDC) as belonging to Biosafety level 3 or 4 must be approved by the Biohazard Control Officer prior to ordering to assure that all necessary equipment and procedures are available prior to use.

1.1.5 All chemicals and etiologic agents shall be received in a central location. Chemicals and etiologic agents will be delivered to the CMC. Personnel who receive these shipments shall be knowledgeable of the proper procedures for receipt. Radioisotopes will be ordered and received according to procedures outlined in the Radiation Safety Program.

1.1.6 Chemical containers shall not be accepted without accompanying labels, material safety data sheets or other safety information, and packaging in accordance with all appropriate regulations. All chemical shipments should be dated when received and opened.

### **1.2 Storage of Chemicals and Etiologic Agents**

1.2.1 Received chemicals shall be logged in by the CMC and moved to the designated storage area according to hazard class. Large glass containers shall be placed in carrying containers or shipping containers during transportation.

1.2.2 Etiologic agents shall be delivered to an appropriate laboratory having facilities capable of safely storing the agent in question (i.e. cold room, incubator, biohazard safety cabinet, etc.)

1.2.3 The storage area shall be well-illuminated, with all storage maintained below eye level. Large bottles (5lb, 1gal, etc.) shall be stored no more than two feet from ground level.

1.2.4 Chemicals shall be segregated by hazard classification and compatibility in a well identified area, with local exhaust ventilation.

1.2.5 Mineral acids should be separated from flammable and combustible materials. Separation is defined by NFPA 49 (National Fire Protection Association) as storage within the same fire area but separated by as much space as practical or by intervening storage from incompatible materials.

1.2.6 Acid-resistant trays shall be placed under bottles of mineral acids.

1.2.7 Acid-sensitive materials such as cyanides and sulfides shall be separated from acids or protected from contact with acids.

1.2.8 Highly toxic chemicals or other chemicals whose containers have been opened shall be stored in unbreakable secondary containers.

1.2.9 The central storage area shall not be used as a preparation or repackaging area.

1.2.10 The central storage area shall be accessible during normal working hours. The storage area is under the control of the staff of the Department of Environmental and Occupational Health and Safety.

1.2.11 Chemicals taken from the central storage area or satellite storage shall be placed in an outside container or bucket. Once a chemical leaves the central storage area it shall become part of the inventory of the department who procured the chemical.

1.2.12 Storage of chemicals at the lab bench or other work areas shall be limited to those amounts necessary for one (1) days use or one (1) student laboratory session. The container size shall be the minimum convenient for safe use. The amounts of chemicals at the lab bench shall be limited to the amount needed for one (1) day's worth of work. Chemicals in the workplace shall not be exposed to sunlight or heat.

1.2.13 No etiologic agents are to be left out on benches overnight. All etiologic agents must be stored in a suitable refrigerator or incubator when not in use. Secured storage areas which are not accessible by anyone other than the researcher must be provided for any agents classified as Biolevel 3 or Biolevel 4 by NIH/CDC guidelines.

1.2.14 Stored chemicals shall be examined at least annually for replacement, deterioration, and container integrity. The inspection should determine whether any corrosion, deterioration, or damage has occurred to the storage facility as a result of leaking chemicals. All chemicals deemed deteriorated or unusable in any way will be disposed of according to the University's Hazardous Waste Contingency Plan.

1.2.15 Periodic inventories of chemicals outside the storage area shall be conducted. After consulting with the laboratory supervisor or department chair, unneeded items shall be discarded according to the University's Hazardous Waste Contingency Plan. Any questions regarding hazardous waste disposal should be directed to the Chemical Management Center, extension 3703.

### **1.3 Handling of Chemicals and Etiologic Agents**

All laboratory employees are expected to have the training, education and resources needed to safely work in laboratory areas using chemicals and/or etiologic agents. This training, provided by supervision should enable each employee to develop and implement work habits consistent with this plan to minimize personal and coworker exposure to the chemicals in the laboratory. In student teaching laboratories the instructor will be responsible for assuring that the students are properly trained and aware of the hazards of each experiment. Based on the realization that all chemicals inherently present hazards in certain conditions, exposure to all chemicals shall be minimized.

General precautions which shall be followed for the handling and use of all chemicals are:

1.3.1 Skin contact with all chemicals shall be avoided.

1.3.2 All employees and students shall wash areas of exposed skin prior to leaving the laboratory. This would normally include the hands and wrists, but may include the face or any other exposed areas as determined by the toxicity of materials used.

1.3.3 Mouth suction for pipeting or starting a siphon is prohibited.

1.3.4 Eating, drinking, smoking, gum chewing, or application of cosmetics in areas where laboratory chemicals are present shall be prohibited. These areas have been posted. Hands shall be thoroughly washed prior to performing these activities.

1.3.5 Storage, handling and consumption of food or beverages shall not occur in chemical storage areas. Refrigerators and glassware used for chemical handling and/or storage will not be permitted for food storage or contact.

1.3.6 Risk determinations shall be conservative in nature (i.e., when more than one standard exists the most stringent will be used).

1.3.7 Any chemical mixture shall be assumed to be as toxic as its most toxic component.

1.3.8 Substances of unknown toxicity shall be assumed to be toxic.

1.3.9 Laboratory employees shall be familiar with the symptoms of exposure for the chemicals with which they work and the precautions necessary to prevent exposure.

1.3.10 The intent and procedures of this plan shall be continuously adhered to.

1.3.11 In all cases of chemical exposure, neither the Permissible Exposure Limits (PELs) of OSHA or the Threshold Limit Values (TLVs) of the American Conference of Governmental Industrial Hygienists (ACGIH) shall be exceeded.

1.3.12 The engineering controls and safety equipment in the laboratory shall be utilized and inspected in accordance with Appendix C of this Plan.

1.3.13 Specific precautions based on the toxicological characteristics of individual chemicals shall be implemented as deemed necessary by the Chemical Hygiene Officer (see 7.2). These special precautions are listed in Section 8.0.

#### **1.4 Laboratory Equipment and Glassware**

Each employee and/or student shall keep the work area clean and uncluttered. All chemicals and equipment shall be properly labeled in accordance with Section 1.7. At the completion of each work day or operation, the work area shall be thoroughly cleaned, and all equipment properly cleaned and stored.

In addition, the following procedures shall apply to the use of laboratory equipment:

1.4.1 All laboratory equipment shall be used only for its intended purpose.

1.4.2 All glassware will be handled and stored with care to minimize breakage; all broken glassware will be immediately disposed of in the broken glass container.

1.4.3 All evacuated glass apparatus shall be shielded or securely wrapped with duct tape to contain chemicals and glass fragments should implosion occur.

1.4.4 Labels shall be attached to all chemical containers identifying the contents and related hazards.

1.4.5 Waste receptacles shall be identified as such.

1.4.6 All laboratory equipment shall be inspected on a periodic basis by the laboratory instructor/supervisor as specified in Appendix C, and replaced or repaired as necessary.

## **1.5 Personal Protective Equipment**

1.5.1 Safety glasses meeting ANSI Z87.1 are required for employees, students, and visitors to all laboratories where chemicals and/or etiologic agents are being used, and will be worn at all times when in the laboratory. (See protective eyewear policy Appendix D).

1.5.2 Chemical goggles and/or a full face shield shall be worn during chemical transfer and handling operations as procedures dictate.

1.5.3 Sandals, perforated shoes, and bare feet are prohibited. Safety shoes, per ANSI 47 are required where employees routinely lift heavy objects.

1.5.4 Laboratory coats will be provided to all employees and must be worn in the laboratory. Students must supply their own laboratory coats. Laboratory coats should be laundered or discarded on a periodic basis. Laboratory coats contaminated with body fluids will be handled according to the University's Bloodborne Pathogen Plan. Laboratory coats shall be removed immediately when visible contamination with hazardous chemicals is evident.

1.5.5 Appropriate chemical-resistant gloves, based on the information provided on the associated Material Safety Data Sheet, shall be worn at all times when there may be skin contact with chemicals. Used gloves shall be inspected and washed prior to reuse. Damaged or deteriorated gloves will be immediately replaced. Gloves shall be washed prior to removal from the hands unless they are disposable type gloves. Glove type and performance information can be found on all major glove supplier websites (ex: Ansell, Microflex, Best Glove).

If you need assistance determining the appropriate glove, call the Chemical Management Center at Ext. 3703.

1.5.6 Thermal-resistant gloves shall be worn for operations involving the handling of heated materials and exothermic reaction vessels. Thermal-resistant gloves shall be non-asbestos and shall be replaced when damaged or deteriorated.

1.5.7 Respirator usage shall comply with the OSHA Respiratory Protection Standard, 29 CFR 1910.134, and Youngstown State University's Respiratory Protection Program.

## **1.6 Personal Work Practices**

1.6.1 Laboratory supervision must ensure that each employee and/or student knows and follows the rules and procedures established in this plan.

1.6.2 All employees shall remain vigilant to unsafe practices and conditions in the laboratory and shall immediately report such practices and/or conditions to the laboratory supervisor. The supervisor must correct unsafe practices and or conditions promptly.

1.6.3 Long hair and loose-fitting clothing shall be confined close to the body to avoid being caught in moving machine/equipment parts.

1.6.4 Use only those chemicals appropriate for the ventilation system present in the laboratory.

1.6.5 Avoid unnecessary exposure to all chemicals by any route.

1.6.6 Do not smell or taste any chemicals.

1.6.7 Encourage safe work practices in coworkers by setting the proper example. Horseplay is strictly forbidden.

1.6.8 Seek information and advice from knowledgeable persons, standards and codes about the hazards present in the laboratory. Plan operations, equipment and protective measures accordingly.

1.6.9 Use engineering controls in accordance with Section 3.0.

1.6.10 Inspect personal protective equipment prior to use, and wear appropriate protective equipment as procedures dictate and when necessary to avoid exposure.

## **1.7 Labeling**

1.7.1 All containers in the laboratory shall be labeled. This includes chemical containers and waste containers. The label shall be informative, durable, and at a minimum, will identify contents, source, date received, storage location and type of hazard.

1.7.2 Portable containers shall be labeled by the individual using the container.

1.7.3 Exemptions for labeling requirements shall be made for chemical transfers from a labeled container into a container which is intended only for the immediate use of the employee who performed the transfer. This employee must be in a position to maintain control of the container at all times.

1.7.4 The labeling of chemicals shall be periodically inspected to ensure that labels have not been defaced or removed.

## **2.0 Criteria for Implementation of Control Measures**

### **2.1 Air Sampling**

2.1.1 Air sampling for evaluating employee exposure to chemical substances shall be conducted periodically or as specified by specific codes or regulations.

2.1.2 Upon addition of new chemicals or changes in control procedures, additional air sampling will be considered to determine the exposures. Air sampling will be conducted if there is reason to believe that exposure levels for regulated substances that require sampling routinely exceed the action level, or in the absence of an action level, the PEL. Air sampling will be implemented by the Chemical Hygiene Officer when usage of highly toxic substances exceeds three times per week. Highly toxic substances are any chemicals listed in 29 CFR 1910.1000 of the NIOSH most current addition of "Pocket Guide to Chemical Hazards."

2.1.3 The results of air sampling studies performed in the laboratory are maintained and recorded on the form shown in Appendix E to this plan.

## **2.2 Housekeeping**

2.2.1 Each laboratory worker is directly responsible for the cleanliness of his or her work space, and jointly responsible for common areas of the laboratory. Laboratory management shall insist on the maintenance of housekeeping standards.

2.2.2 The following procedures apply to the housekeeping standards of the laboratory:

2.2.2.1 All spills on lab benches or floors shall be immediately cleaned and properly disposed of. Large spills (exceeding an area of more than one (1) cubic foot) will necessitate the implementation of the Emergency Action Plan per OSHA 1910.38 and 1910.120 and the University's Hazardous Waste Contingency Plan.

2.2.2.2 The lab benches shall be kept clear of equipment and chemicals except those necessary for the work currently being performed.

2.2.2.3 The work area shall be cleaned at the end of each operation, shift or laboratory session. The method of cleaning shall be any method which assures the removal and containment of all hazards.

2.2.2.4 All apparatus shall be thoroughly cleaned and returned to storage upon completion of usage.

2.2.2.5 All floors, aisles, exits, fire extinguishing equipment, eyewashes, showers, electrical disconnects and other emergency equipment shall remain unobstructed.

2.2.2.6 All labels shall face front.

2.2.2.7 Chemical containers shall be clean, properly labeled and returned to storage upon completion of usage.

2.2.2.8 All chemical wastes will be disposed of in accordance with the University's waste disposal plan. Disposal procedures can be found on the EOHS website or call the Chemical Management Center at extension 3703.

## **2.3 Safety and Emergency Equipment**

2.3.1 Telephone numbers of emergency personnel, supervisors and other workers as deemed appropriate are to be posted.

2.3.2 Prior to the procurement of new chemicals, the Chemical Hygiene Officer shall verify that existing fire extinguishers and other emergency equipment are appropriate for such chemicals. Videos on types of extinguishers and their proper use are available for training from the Department of Environmental and Occupational Health and Safety.

2.3.3 All employees and/or students who might be exposed to chemical splashes shall be instructed in the location and proper usage of emergency showers and eyewashes by the laboratory instructor/supervisor or his/her designee. The eyewash and emergency shower shall be inspected monthly by the laboratory instructor/supervisor or his/her designee. These inspections shall be in accordance with ANSI Z358.1 and manufacturer's specifications. Records shall be maintained.

2.3.4 Location signs for safety and emergency equipment have been posted.

2.3.5 A visual check of safety equipment will be conducted each time the lab is used.

## **3.0 Engineering Controls**

### **3.1 Intent**

The engineering controls installed in the laboratory are intended to minimize employee exposure to chemical and physical hazards in the workplace. These controls must be maintained in proper working order for this goal to be realized.

### **3.2 Modification**

No modification of engineering controls will occur unless testing indicates that worker protection will continue to be adequate.

### **3.3 Improper Function**

Improper function of engineering controls must be reported to the Chemical Hygiene Officer immediately. The system shall be taken out of service until proper repairs have been executed.

### **3.4 Usage**

All employees shall follow proper work practices when using the engineering controls.

#### **3.4.1 Local Exhaust Ventilation**

The following procedures shall apply to the use of local exhaust ventilation and/or "point of use" exhaust:

3.4.1.1 Openings of hoods shall be placed as close as possible to sources of the air contaminant.

3.4.1.2 Clear the screen on the face of the hood prior to usage.

3.4.1.3 Hood fans shall operate when hoods are being used.

3.4.1.4 After using hoods, operate the fan for an additional period of time sufficient to clear residual contaminants from the ductwork.

3.4.1.5 Prior to a change in chemicals or procedures involving highly toxic substances, the adequacy of the ventilation system shall be determined by the Chemical Hygiene Officer.

### 3.4.2 Laboratory Hoods

The laboratory hoods shall be utilized for all chemical procedures which might result in release of hazardous chemical vapors or dust. As a general rule, the hood shall be used for all chemical procedures involving substances which are appreciably volatile and have a permissible exposure limit PEL less than 50 ppm. The following work practices shall apply to the use of hoods:

3.4.2.1 Confirm adequate hood ventilation performance prior to opening chemical containers inside the hood. An inward flow of air can be confirmed by holding a piece of paper at the face of the hood and observing the movement of the paper, although a ribbon or piece of tissue paper should be affixed to each hood face for this purpose.

3.4.2.2 Keep the sash of the hood at the marked height at all times except when adjustments within the hood are being made. At these times, maintain the sash height as close as possible to the marked height.

3.4.2.3 Storage of chemicals and equipment inside the hood shall be kept to a minimum and only for the chemicals being used for that specific procedure. Long term storage of chemicals under hoods is prohibited.

3.4.2.4 Minimize interference with the inward flow of air into the hood.

3.4.2.5 Leave the hood operating when it is not in active use if hazardous chemicals are contained inside the hood or if it is uncertain whether adequate general laboratory ventilation will be maintained when the hood is non-operational.

3.4.2.6 The hood ventilation system shall be inspected twice annually by the Chemical Hygiene Officer. Records of inspections shall be maintained by the Chemical Hygiene Officer.

3.4.2.7 The hood shall not be used as a means of disposal for volatile chemicals.

3.4.2.8 Prior to the introduction of new highly toxic chemicals, the adequacy of hood ventilation systems shall be determined by the Chemical Hygiene Officer.

#### 3.4.3 Glove Boxes and Isolation Rooms

The exhaust air from a glove box or isolation room will pass through scrubbers or other treatment before release into the regular exhaust system.

#### 3.4.4 Cold Rooms and Warm Rooms

In event of electrical failure, the following provisions will be followed:

The Walk-in Cold Rooms and Incubators in Room 2122 Cushwa Hall are equipped to run on the buildings emergency generator in the event of a power outage. In case of a power outage department heads will determine if materials in areas affected need to be maintained at a constant temperature. They will contact the Chemical Hygiene Officer to make arrangements to use the facilities in Room 2122 Cushwa on a priority basis until the power is restored.

#### 3.4.5 Storage Cabinets

Storage cabinets for flammable and hazardous chemicals will be ventilated as needed.

## **4.0 Employee Information and Training**

### **4.1 Hazard Information**

All employees, including graduate teaching assistants and undergraduate laboratory assistants, will be informed of the hazards presented by the chemicals in use in the laboratory by the laboratory supervisor or his/her designee. Each employee/student laboratory assistant shall receive training at the time of initial assignment to the laboratory, prior to assignments involving new exposure situations, and at a regular frequency as determined by the Chemical Hygiene Officer. Students, student laboratory assistants will be trained by the responsible faculty member at the first laboratory session. Training will consist of basic laboratory safety and the safe handling of chemicals. The instructor will acquaint the students with the hazards of the chemicals being used prior to each experiment.

### **4.2 Forms**

The New Chemical Request Form (Appendix A) and New Chemical Training Checklist (Appendix F) shall be used for these purposes.

### **4.3 Training**

This training shall include methods of detecting the presence of a hazardous chemical, physical and health hazards of chemicals in the lab, and measures employees can take to

protect themselves from these hazards. Training shall be conducted by the laboratory instructor in the case of students, the Chemical Hygiene Officer or his/her designee in the case of employees, and the consulting veterinarian when animals are being used. The training shall present the details of this plan and shall include:

- 4.3.1 the contents of the OSHA laboratory standard, and its appendices;
- 4.3.2 the location and availability of the Occupational Health Exposure Plan.
- 4.3.3 the permissible exposure limits for OSHA regulated substances or recommended exposure values for other hazardous chemicals not regulated by OSHA which are present in the laboratory;
- 4.3.4 signs and symptoms associated with exposure to the chemicals present in the laboratory;
- 4.3.5 location and availability of reference material on chemical hygiene; and
- 4.3.6 animal care when appropriate, including zoonoses, personal hygiene and other issues related to occupational health in an animal facility whenever animals are used as part of an experiment, research or laboratory procedure. Specific topics that are discussed will include allergies, bites, scratches, the use of personal protective equipment, immunizations and other procedures for minimizing risk while using animals.

## **5.0 Prior Approval of Laboratory Activities**

### **5.1 Permit System**

A permit system shall be used for laboratory activities that present specific, foreseeable hazards to the employees and students. These activities include off-hours work, sole occupancy of building, hazardous operations and unattended operations. The permit entitled "Chemical Hygiene Permit" is included in Appendix G to this plan and shall be executed prior to the performance of these activities.

#### **5.1.1 Off-Hours Work Procedures**

Laboratory personnel are not permitted to work after hours in the lab, except when permitted by the chairman or department head.

#### **5.1.2 Sole Occupancy**

At no time shall work be performed in the laboratory when the only person in the building is the laboratory person performing the work. Under unusual conditions, crosschecks, periodic security checks, or other measures may be taken when permitted. A person with special permission to work alone in a laboratory by the chairman or the department head must contact Campus Police by phone when the person enters the laboratory. The individual will continue to check in with campus police every hour until he/she leaves the laboratory. Campus Police must be notified when the individual will be leaving the building.

### 5.1.3 Hazardous Work

All hazardous operations are to be performed during a time when at least two personnel are present at the laboratory. At no time shall a laboratory person, while working alone in the laboratory, perform work that is considered hazardous. The determination of hazardous operations shall be made by the laboratory supervisor, instructor or department head and will require a permit.

### 5.1.4 Unattended Operations

When laboratory operations are performed which will be unattended by laboratory personnel (continuous operations, overnight reactions, etc.), the following procedures will be employed:

5.1.4.1 The permit system shall be utilized.

5.1.4.2 The laboratory supervisor will review work procedures to ensure for the safe completion of the operation.

5.1.4.3 An appropriate sign will be posted at all entrances to the laboratory.

5.1.4.4 The overhead lights in the laboratory will be left on.

5.1.4.5 Precautions shall be made for the interruption of utility service during the unattended operation (loss of water pressure, electricity, etc.).

5.1.4.6 The person responsible for the operation will return to the laboratory at the conclusion of the operation to assist in the dismantling of the apparatus.

5.1.4.7 Campus Police will be notified as to the building and room involved.

5.1.4.8 In departments such as chemistry, biology, etc., where unattended overnight reactions can occur in several laboratories daily, the permit system will not be used. Instead, information will be posted near the experiment indicating the chemical involved in the reaction, and the name and phone numbers (office and home) of the professor responsible for the reaction.

## **6.0 Medical Consultations and Examinations**

### **6.1 Opportunity for Medical Consultation**

An opportunity to receive medical attention is available to all employees who work with hazardous chemicals in the laboratory. The opportunity for medical attention will be made available to employees under the following circumstances:

6.1.1 Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory.

6.1.2 Medical surveillance programs will be established where exposure monitoring reveals an exposure level above the action level for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements, and/or, when in the opinion of the Chemical Hygiene Officer medical surveillance is indicated.

6.1.3 Whenever an event takes place in the laboratory such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure the employee will be provided an opportunity for medical consultation for the purpose of determining the need for medical examination.

6.1.4 For specific animal-based projects involving the use of hazardous agents, the initial identification of the use of a hazardous substance is made through the animal use protocol, *Request to Use Animals*.

6.1.5 Animal Handlers are divided into 3 levels depending on the level of animal exposure. These Levels include:

6.1.5.1 Level 1---exposure to rodents, rabbits, reptiles, amphibians, birds and fish

6.1.5.2 Level 2---exposure to bats, cats, dogs, or livestock

6.1.5.3 Level 3---exposure to non-human primates

The employee's level of animal exposure then determines the level of the Occupational Health Program in which they will be involved. The following guidelines will be used to determine what medical procedures are indicated for each level.

<u>PROCEDURE</u>	<u>PARTICIPATION LEVEL</u>		
	<u>I</u>	<u>II</u>	<u>III</u>
Health history form	X		X
Annual/Pre-employment medical exam			X
Tetanus immunization (10 Year)	X	X	X
Serum sample stored (5 Year) (Annual for primate handlers)		X	X
Bi-annual tuberculin skin test			X
Rabies immunization (cats, dogs, bats, n/h primates) (Titers every two years)		X	X
Annual Q-fever titer-sheep		X*	X*

\*Only if sheep are present in facility on campus.

## **6.2 Cost**

These medical consultations and examinations shall be provided without cost to the employees, without loss of pay and at a reasonable time and place.

## **6.3 Administration**

These medical consultations and examinations shall be administered by or under the direct supervision of a licensed physician. Employees seeking the opportunity of medical consultation should inform the Chemical Hygiene Officer.

Arrangements will be made with the appropriate physician.

## **6.4 Reporting of Exposures and/or Incidents**

An "Accident/Incident Report Form" (see Appendix H) must be filed by all employees, students, and visitors involved in accidents on University property. The form is available on the Department of Environmental and Occupational Health and Safety website.

## **7.0 Chemical Hygiene Responsibilities**

### **7.1 Chief Executive Officer**

The President of the University has the ultimate responsibility for chemical hygiene throughout the University and with assistance of other administrators, will provide continued support for chemical hygiene.

### **7.2 Chemical Hygiene Officer**

The Chemical Hygiene Officer shall:

7.2.1 work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices;

7.2.2 monitor procurement and use of chemicals in the lab, including determining that facilities and training levels are adequate for the chemicals in use;

7.2.3 perform regular, formal chemical hygiene and housekeeping inspections including inspections of emergency equipment;

7.2.4 help project directors develop precautions and adequate facilities;

7.2.5 maintain current knowledge concerning the legal requirements of regulated substances in the laboratory;

- 7.2.6 review and improve this plan on an annual basis;
- 7.2.7 maintain overall responsibility for laboratory operations;
- 7.2.8 ensure that workers and students know and follow the chemical hygiene rules;
- 7.2.9 determine the proper level of personal protective equipment, ensure that such protective equipment is available and in working order;
- 7.2.10 ensure that appropriate training has been provided to employees; and
- 7.2.11 monitor the waste disposal program.

### **7.3 Laboratory Workers**

The laboratory workers are individually responsible for:

- 7.3.1 planning and conducting each laboratory operation in accordance with the Occupational Health Exposure Plan and;
- 7.3.2 developing good personal chemical hygiene habits. In teaching laboratories, students are considered laboratory workers.

## **8.0 Special Precautions**

When laboratory procedures change to require the use of additional classifications of chemicals (allergens, embryotoxins, teratogens, carcinogens, etc.), additional special precautions shall be implemented as deemed necessary by the Chemical Hygiene Officer. The permit system shall be utilized for all special activities. All questions regarding the use of the permit system should be addressed to the Chemical Hygiene Officer.

### **8.1 Working with Allergens and Embryotoxins (Special Precautions)**

- 8.1.1 Suitable gloves to prevent hand contact shall be worn when exposed to allergens or substances of unknown allergen activity.
- 8.1.2 Women of child-bearing age will handle embryotoxins only in a hood with confirmed satisfactory performance and will use protective equipment to prevent skin contact as prescribed by the supervisor and Chemical Hygiene Officer.
- 8.1.3 Embryotoxins will be stored in adequately ventilated areas in unbreakable secondary containers.
- 8.1.4 The supervisor and Chemical Hygiene Officer will be notified of spills and other exposure incidents. A physician will be consulted when appropriate.

## **8.2 Working with Chemicals of Moderate Chronic or High Acute Toxicity (Special Precautions)**

8.2.1 Areas where these chemicals are stored and used are of restricted access and have special warning signs.

8.2.2 A special hood with the appropriate face velocity or other containment device will be used. Released vapors will not discharge with the hood exhaust, but will be trapped by High Efficiency Particulate Absolute (HEPA) filters or other suitable means.

8.2.3 Gloves and long sleeves will be used. Hands and arms will be washed immediately after working with these chemicals.

8.2.4 Two people will always be present during work with these chemicals.

## **8.3 Working with Chemicals of High Chronic Toxicity (Special Precautions)**

8.3.1 All transfer and work with these substances shall be in a designated area: a restricted access hood, glove box or portion of lab.

8.3.2 Approval of the supervisor will be obtained before use.

8.3.3 Vacuum pumps must have scrubbers, HEPA filters or other appropriate devices which will prevent contamination of the environment.

8.3.4 Any contaminated equipment or glassware will be decontaminated in the hood before removing them from the designated area.

8.3.5 For powders, a wet mop or vacuum with a HEPA filter will be used for cleanup.

8.3.6 The designated area will be marked with warning and restricted access signs.

8.3.7 Containers will be stored in a ventilated, limited access area in labeled, unbreakable, chemically resistant, secondary containers.

## **8.4 Working with Animals and Chemicals of High Chronic Toxicity (Special Precautions)**

8.4.1. Any proposed use of chemicals of high chronic toxicity in animals will require the formulation of procedures to assure the safety of personnel and the environment including: 1) appropriate training of persons who will participate in the project or provide care to the animals, 2) safe practices for administration of the chemical and handling, housing, husbandry, and observation of the animals, 3) proper disposal of the chemical and animals including their wastes and bedding, and 4) other topics as determined to be

relevant to the risks associated with the chemical. These procedures are to be approved by the Institutional Animal Care and Use Committee and the Chemical Hygiene Officer before the start of the project.

### **8.5 Work Involving Radioactive Materials**

8.5.1 All experiments involving radioisotopes will be conducted in accordance with the University's "Radiation Manual" and in compliance with appropriate Nuclear Regulatory Commission (NRC)/Ohio Department of Health (ODH) licenses.

## **9.0 Recordkeeping**

### **9.1 Incident Investigations**

Incident investigation will be conducted by the immediate supervisor with assistance from other personnel as deemed necessary by the Chemical Hygiene Officer.

### **9.2 Accident/Incident Reports**

Incident reports will be written and retained for ten (10) years.

### **9.3 Exposure Records**

Exposure report records for hazardous chemicals and harmful physical agents will be maintained for thirty (30) years per 29 CFR 1910.20.

### **9.4 Medical Records**

Medical records for employees exposed to hazardous chemicals and harmful physical agents will be maintained for the duration of employment plus thirty (30) years per 29 CFR 1910.20.

### **9.5 Inventory and Usage Records for High Risk Substances**

Inventory and usage records for high risk substances (amounts of substances on hand, amounts used, and names of workers involved) shall be maintained for ten (10) years.

### **9.6 Records of Inspections of Equipment**

Records of inspection of equipment will be maintained for ten (10) years.

### **9.7 Records of Employee Training**

Records of employee training will be maintained for ten (10) years.

## **10.0 Chemical Spills, Releases and Accidents**

In the event of a chemical spill, release or other accident, Youngstown State University will

adhere to the procedures outlined in the Emergency Response plan as required by OSHA standard 29 CFR 1910.38 and 1910.120 and the protocol outlined in the Hazardous Waste Contingency Plan.

### **11.0 Annual Occupational Health Exposure Plan Audit**

The Chemical Hygiene Officer, with input from the Chemical Hygiene Committee, will conduct an audit of the Occupational Health Exposure Plan each year. Results will be communicated to appropriate personnel. The laboratory manager or his /her designees are responsible for taking corrective action. The OSHA Hazardous Chemicals in Laboratories Standard Compliance Checklist (OSHA Standard 29 CFR 1910.1450) may be utilized for this purpose.

### **12.0 References and Recommended Reading**

Alaimo, Robert J. Handbook of Chemical Health and Safety. Washington, DC: American Chemical Society and Oxford University Press, 2001.

Code of Federal Regulations, 29 CFR part 1910 subpart Z section 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, 1990, Revised 2007.

Furr, A. Keith. CRC Handbook of Laboratory Safety. New York: CRC Press, 2000.

Hall, Stephen K. Chemical Safety in the Laboratory. Boca Raton: Lewis Publishers, 1994.

Mercier, Paul. Laboratory Safety Pocket Handbook. New York: Genium Publishing Corporation, 1996.

National Research Council. Prudent Practices in the Laboratory: Handling and Disposal of Chemicals. Washington, DC: National Academy Press, 1998.

Pipitone, David A. Safe Storage of Laboratory Chemicals. New York: Wiley & Sons, Inc., 1991.

Young, Jay A. Safety in Academic Chemistry Laboratories. Washington, DC: American Chemical Society, 2003.

## New Chemical Request Form

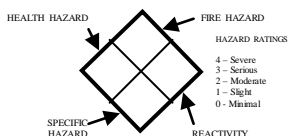
This form is to be filled out for chemicals that are ordered for the "FIRST TIME" by a department. It is meant to insure that Material Safety Data Sheets (MSDS) are available, and that all safety equipment and regulatory issues are in place prior to the chemical arriving on campus. **It is not intended to prohibit the ordering of any chemical by employees** but rather to assure that the University and its employees are complying with all pertinent legislation regarding the acquisition of chemicals. Thank you for your cooperation in filling out this form. Should you have any questions regarding your chemical order, please call the Chemical Management Center at Extension 3703.

Responsible Individual \_\_\_\_\_ Dept. \_\_\_\_\_ Room# \_\_\_\_\_

Extension \_\_\_\_\_ Date Requested \_\_\_\_\_ Date Needed \_\_\_\_\_

Name of Chemical Substance \_\_\_\_\_

Amount to be ordered \_\_\_\_\_ CAS # \_\_\_\_\_ Vendor/Catalog# \_\_\_\_\_



### Storage Requirements (Check)

- General Chemical Storage
- Cool Dry Cabinet
- Refrigerator
- Freezer
- Explosion Proof Refrigerator
- Flammable Cabinet
- Corrosive Cabinet
- Other (describe) \_\_\_\_\_

### Engineering Controls Needed (Check if applicable)

- Chemical Fume Hood
- Perchloric Acid
- Distillation Hood
- Laminar Flow Hood
- Glove Box
- Local Exhaust
- Other (describe) \_\_\_\_\_

### Personal Protective Equipment

(Check all that are appropriate)

- Protective eyewear (ANSI Z87.1)
- Face shield
- Gloves
- Lab Coat
- Respirator (call EOHS prior to issuing)
- Other (describe) \_\_\_\_\_

### Special Labeling Requirements (Check if applicable)

- Carcinogen
- Teratogen
- Mutagen
- Embryotoxin
- Lacrymator
- Reproductive Hazard
- Other (describe) \_\_\_\_\_

Is employee exposure anticipated?  No  Yes (amount) \_\_\_\_\_

Are workplace exposure levels anticipated?  No  Yes (amount) \_\_\_\_\_

Brief description of procedure: \_\_\_\_\_

\_\_\_\_\_  
Signature of Responsible Individual

\_\_\_\_\_  
Date

Comments: \_\_\_\_\_

\_\_\_\_\_  
Chemical Hygiene Officer

\_\_\_\_\_  
Date

Distribution: Original – Responsible Person

Copy – CMC

Revised September 2007

# CHEMICAL MANAGEMENT CENTER

## Chemical Order Form

Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Department \_\_\_\_\_

Class Course # \_\_\_\_\_

Research \_\_\_\_\_

Requested by: \_\_\_\_\_ Building & Room # \_\_\_\_\_

\_\_\_\_\_ From Chemical Management Center

\_\_\_\_\_ From Vendor

Vendor Name \_\_\_\_\_

Address \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Fax (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Quantity/ Unit	Cat #/Part#	Description	Unit Price	Page #	First Time Chemical?

Department Approval \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

When Needed \_\_\_\_/\_\_\_\_/\_\_\_\_

Acct # for Back-Charging \_\_\_\_\_

Received by \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_



**YOUNGSTOWN STATE UNIVERSITY**  
**DEPARTMENT OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND**  
**SAFETY**  
**PROTECTIVE EYEWEAR POLICY FOR ACADEMIC LABORATORIES<sup>1</sup>**

Protective eyewear is required in laboratories that use chemicals or etiologic agents, engage in the dissection of animals, have a threat of eye injury from flying debris or the use of lasers becomes imminent. Eye protection must be worn the entire time the person is in these types of laboratories or as long as the potential for eye injury is present. Individuals who supervise these laboratories are responsible for making sure that this policy is enforced. No one should be allowed to work in these laboratories without proper protective eyewear.

The protective eyewear used in these laboratories should be equipped with side shields. They should conform to the American National Standard Institute's (ANSI) standard Z87.1-2003 for use in chemical environments and/or be impact resistant depending on the type of hazard present. In some instances, full face shields may be required if there is the threat of large quantities of debris and/or chemicals splashing onto the face. Protective eyewear must be worn over prescription lenses. Regular prescription lenses do not qualify as eye protection. Individuals working in laboratories engaged in the use of lasers must wear glasses designed to protect against the specific type of laser being used.

Protective eyewear must be worn the entire time the individual is in the laboratory and the threat of eye injury is present. Only in those laboratories in which no apparent eye hazards are present may individuals work without protective eyewear. The decision as to whether or not protective eyewear is needed in a particular laboratory must be made at the departmental level. Laboratory instructors may use their discretion in allowing students to remove their eyewear during the remainder of the laboratory period if potential eye hazards are no longer present in the laboratory. Caution should be used, however, in making this decision. For example, if just one student is working with hazardous chemicals, all students should be wearing protective eyewear.

Students should be informed in the class syllabus that protective eyewear is required in the laboratory. If students are responsible for providing their own protective eyewear, this should be noted in the booklist for the course.

Graduate students and those working on independent research projects should be informed by the instructor if protective eyewear is required.

The wearing of contact lenses in laboratories where volatile fumes may be present is not recommended. Individuals should be informed that many such fumes can cause severe irritation to contact lens wearers. Protective eyewear will not alleviate this problem. Individuals should be instructed to wear their prescription glasses with appropriate eye protection.

Any questions regarding the need for protective eyewear should be directed to the Department of Environmental and Occupational Health and Safety.

<sup>1</sup>Includes all laboratories in the following areas: Biology, Chemistry, Physics, Allied Health, All Engineering Departments, Geology, Art, Photography, Theater

**AIR SAMPLING DATA  
TABLE NUMBER**

Company:		Location:			Survey Date:	
Air sampling results for:					Sampled By:	
Type of sample:			Analyte:			
Sample Media:			Analytical Method:			
ACGIH TLV-TWA:		OSHA PEL:			OSHA STEL:	
Sample Location	Sample Number	Time (minutes)	Volume (liters)	Sample Concentration	Unit <sup>1</sup>	Date
Remarks:						
<p>1 ppm    Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 760 torr.</p> <p>mg/m<sup>3</sup>    Approximate milligrams of substance per cubic meter of air.</p> <p>C    Ceiling limit - limit which should never be exceeded even instantaneously.</p>						

**NEW CHEMICAL TRAINING CHECKLIST**

Date: \_\_\_\_\_

1. Work Area: \_\_\_\_\_ 2. Instructor: \_\_\_\_\_

3. Chemical Substance: \_\_\_\_\_

4. Material Safety Data Sheet (MSDS) Attached:  Yes  No  
*The MSDS must be attached to this New Chemical Training Sheet*

5. New Chemical Use: \_\_\_\_\_

6. Employee Training Provided:

- |   |   |
|---|---|
| <input type="checkbox"/> MSDS Reviewed                    | <input type="checkbox"/> Work Area Monitoring |
| <input type="checkbox"/> Engineering Controls             | <input type="checkbox"/> Work Practices       |
| <input type="checkbox"/> Personal Protective Equipment    | <input type="checkbox"/> Emergency Procedures |
| <input type="checkbox"/> Detection of Release or Presence | <input type="checkbox"/> _____                |
| <input type="checkbox"/> Labels                           | <input type="checkbox"/> _____                |

7. Training Date: \_\_\_\_\_

8. Employees Trained:

Employee Signature

Employee Signature

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(use back if necessary)

9. Instructor's Signature

Date

\_\_\_\_\_

10. Route a copy to: Area Supervisor, Chemical Hygiene Officer, Personnel Department File

## CHEMICAL HYGIENE PERMIT

Permit Number: \_\_\_\_\_ Date: \_\_\_\_\_

Location: \_\_\_\_\_ Time: \_\_\_\_\_

Person Requesting Permit: \_\_\_\_\_

### POTENTIAL HAZARDS AND REQUIRED CONTROLS

Safety				Health				Fire			
Hazards:				Hazards:				Hazards:			
Precautions	Y	N	NA	Precautions	Y	N	NA	Precautions	Y	N	NA
Provide guards				Possible oxygen deficiency				Fire extinguishers			
Personal protective equip.				Special ventilation				Open flame permit			
Special safety training				Toxic materials				Explosion protection			
Special safety procedures				Personal protective equip.				Remove combustibles			
Lockouts required				Special rescue procedures				Test atmosphere			
Unattended operation				Lockouts required				Emergency egress			
Work alone				Exceed PELs				Pyrophorics			
Sole occupancy								Unattended operation			
Special considerations:				Special considerations:				Special considerations:			

Additional comments:

Approval of Chemical Hygiene Officer \_\_\_\_\_ Date: \_\_\_\_\_

**Youngstown State University**  
**Accident/Incident Report**

Name \_\_\_\_\_ Employee  Non-Employee  Male/Female \_\_\_\_\_  
Street Address: \_\_\_\_\_ Date of Birth \_\_\_\_\_  
City, State, Zip \_\_\_\_\_ Home Phone # \_\_\_\_\_  
Social Sec. # \_\_\_\_\_ Work Phone # \_\_\_\_\_  
Date of Hire \_\_\_\_\_ Employee/Student ID # \_\_\_\_\_  
Department \_\_\_\_\_ Supervisor/Instructor \_\_\_\_\_  
Job Title \_\_\_\_\_ Supervisor/Instructor notified \_\_\_\_\_ am/pm

**Incident Information**

Date \_\_\_\_\_ Time \_\_\_\_\_ am/pm Location \_\_\_\_\_ Time began work \_\_\_\_\_ am/pm

What activity was being performed just before the incident? Describe what happened.

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---

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---

Injuries/Illness? Yes  No  If yes, describe body parts affected. \_\_\_\_\_

---

---

Medical treatment? Yes  No

First Aid  Emergency Room  Student Health Services

If treated, Name of Health Care

Provider. \_\_\_\_\_

Name/address/phone of facility.

---

---

Hospitalized overnight as an in-patient?  Yes  No

Witness? Yes  No  Name, address, phone. \_\_\_\_\_

---

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I herein certify that the information set forth above is true and correct to the best on my knowledge.

Signature \_\_\_\_\_

Date \_\_\_\_\_