

**Kansas State University College of Veterinary Medicine
Policy or Operating Procedure**

SOP Title: CVM Biosafety Manual

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PREFACE

The College of Veterinary Medicine (CVM) health and safety program was implemented with the following goals:

- To prevent and minimize risks to the health, safety, and well being of employees and the public while in the CVM;
- To promote employee awareness and understanding of possible hazards at work and ways to counteract them,
- To ensure that CVM meets the requirements of health, safety, and environmental regulations issued by Federal, State, and local agencies.

Responsibility for developing and maintaining the CVM health and safety program resides in the Office of the Dean. All faculty and supervisors must ensure that the employees under their direction understand and adhere to occupational health and safety requirements. Employees have the basic responsibilities of following the health and safety practices and procedures established in this manual and to report any workplace hazards, injuries, or illnesses.

The CVM Safety Manual is a compilation of the policies, procedures, and guidelines established to create and maintain a safe and healthful environment for employees and visitors. Use it as a reference tool in planning and conducting diagnostic, research and support activities. This manual assigns and communicates safety and health responsibilities so that faculty, supervisors, and employees in all parts of CVM understand what performance is expected.

CHAPTER 1- INTRODUCTION

1.A. Policies and Responsibilities

Policy and Purpose

It is the policy of the CVM to prevent and minimize all risks to the health and safety of employees and the public while in the college. All work performed at the CVM will be conducted according to the instructions and procedures in this Safety Manual. A copy of the manual will be available at each work location where appropriate.

Responsibilities

Faculty/Supervisor

- Ensures the general overall health and safety of employees under his/her supervision. Ensures that all work is conducted safely and according to established policies at all times and under all conditions.
- Ensures all employees are properly trained and instructed in safe practices and are aware of all hazards associated with their work.
- Submits protocols for all research projects involving bio-hazardous agents, bloodborne pathogens, animals and/or radioactive materials. The protocol must be approved before any research can begin.

Employee

- Follows the CVM health and safety policies and procedures and the instructions of the responsible supervisor.

- The ultimate responsibility for safe practices rests with the employee.
- Reports potentially hazardous situations to the supervisor, the departmental representatives of the CVM EH&S Committee or Environmental Health and Safety.

KSU Environmental Health and Safety (EH&S)

- Assists supervisors and employees in defining hazardous operations, designating safe practices, and selecting protective equipment.
 - Obtains from principal investigators, reviews and approves hazardous agent protocols detailing all aspects of proposed research activities and procedures to prevent employee exposure.
 - Collects workplace air samples, swipes, or other tests to determine the amount and nature of airborne or surface contamination. Uses data to aid in the evaluation and maintenance of appropriate laboratory conditions.
 - Ensures the proper treatment and disposal of unwanted and/or hazardous chemicals and materials according to all applicable regulations.
 - Develops and reviews rules and procedures for safe and healthful work practices; provides consultation, advice, and recommendations on all health, safety, and environmental compliance matters.
 - Develops and administers the CVM fire safety and emergency response programs. Ensures availability of fire fighting and emergency equipment.
 - Administers CVM Worker Compensation Program and maintains all related records and statistics. Conducts accident investigations and develops corrective measures as necessary.
 - Operates the University's Radiation Safety Program
- **Departmental Representatives from CVM EH&S Committee**
 - Conducts formal laboratory inspections at least annually to ensure compliance with existing Institute policy and other safety and health guidelines. Files a comprehensive report to all pertinent individuals after the inspection. Oversees the correction of deficiencies found during inspections.
 - Develops safety training plans and programs, conducts training courses, and makes available information or other resources on occupational health and safety.

1. B. Chemical Hygiene Plan

Policy and Purpose

CVM employee exposure to hazardous chemicals in laboratory activities will be maintained at the lowest practical levels and at no time will exceed the Permissible Exposure Limits established by the Occupational Safety and Health Administration (29 CFR 1910.1000, Subpart Z). The control of laboratory exposures to hazardous chemicals will be accomplished by implementing a chemical hygiene plan containing necessary work practices, procedures, and policies. The CVM Chemical Hygiene Plan is available in all of the laboratories and can be accessed on the web at

[**CHEMICAL HYGIENE PLAN LINK.**](#)

Responsibilities

Lab Supervisor

- Ensures that the appropriate elements of the CVM Chemical Hygiene Plan are implemented for the laboratory areas and employees under their supervision.
- Reviews the use of chemicals in the laboratory on a regular basis. Notifies Environmental Health and Safety if there is reason to believe potential exposure conditions have changed.

Environmental Health and Safety

- Provides technical guidance on the implementation of the CVM Chemical Hygiene Plan.
- Conducts employee exposure determinations whenever the proposed use of laboratory chemicals may potentially exceed OSHA Permissible Exposure Limits or Action Levels.
- Evaluates the effectiveness of the CVM Chemical Hygiene Plan and makes necessary revisions.

1.C. Safety Orientation of New Employees

Policy and Purpose

All new employees will complete safety training. The information provided to new employees will promote their awareness and understanding of the possible hazards at work, as well as the methods to be used to control such hazards.

Responsibilities

Supervisor

- Ensures the employee is enrolled in the appropriate programs (e.g., baseline medical exams, training sessions, etc.) and obtains and uses the equipment necessary to perform his/her job according to CVM health and safety policies (e.g., protective clothing, safety glasses, shoes, hard hats, etc.).
- Designates pertinent sections of the Safety Manual to be read before employee begins duties.
- Discusses and, when appropriate, demonstrates safety practices and equipment (e.g. safety shower, eyewash, fire extinguisher, etc.) in the area(s) assigned.
- Explains pertinent CVM and safety policies (e.g., activities requiring submission of hazardous chemical protocols, etc.).
- Explains use of special equipment and/or facilities (e.g., containment laboratories, animal handling facilities, etc.).
- Ensures that the employee attends required health and safety training.
- The immediate supervisor sponsor will ensure that all health and safety requirements are explained to and understood by the international worker.

Departmental Representatives from CVM EH&S Committee

- Issues a copy of the Safety Manual or requests the supervisor to indicate where a copy is readily available in the work area to all employees.
- Gives each employee a copy of the Safety Compliance Form to serve as an aid in the health and safety orientation process.
- Provides available safety training materials for new employees.

1.D. Safety Training

Policy

All employees will receive general safety training to suit the needs of all individuals subject to special or unusual hazards.

Responsibilities

- **Supervisor**
Informs Departmental Representatives from CVM EH&S Committee of safety training opportunities as they arise and makes sure those personnel who require specific training courses attend them.
- **Employee**
Participates in the safety training program(s) as required.
- **Environmental Health and Safety**
Supplies information regarding specific training courses, their availability and scheduling. Conducts or coordinates specific training courses as required.

General

- KSU EH&S and CVM conducts and sponsors various health and safety training programs ranging from videos and short seminars to longer courses. Topics covered may include laboratory safety, radiation safety, general accident prevention, fire protection, etc.
- Specific training plans will be developed, when necessary, by the supervisor, employee, Departmental Representative to the CVM EHS Committee and Environmental Health and Safety.
- Training should not replace the supervisors' responsibility for ensuring that employees are properly trained to perform assigned tasks.
- ALL laboratory personnel are required to have suitable laboratory safety training.

1.E. Injury/Illness Reporting, Investigation and Compensation

Policy and Purpose

All work-related injuries and illnesses will be reported and analyzed to identify possible trends and preventive actions. Prompt and accurate reporting of work-related injuries/illnesses is a necessary component of effective accident prevention programs. Employees of Kansas State University, including student employees, are provided protection under the Workers' Compensation Act.

The Division of Human Resources at Kansas State University is the contact for reporting all accidents. Workers' Compensation claims for Kansas State University employees, except those with Federal benefits, will be submitted to the State Self-Insurance Fund in Topeka, Kansas. The State Self-Insurance Fund office at the State of Kansas Department of Administration determines compensability and provides benefits contained within the Workers' Compensation Act.

Reporting accidents/injuries

Work related accidents, injuries, or occupational diseases must be reported for all faculty, staff, students and student employees injured while performing the duties of their employment, regardless of where the situation occurs. Report all on-the-job accidents and injuries to the Division of Human Resources. This initial reporting must be done within three business days to the Departmental Representatives from CVM EH&S Committee. The Supervisor must be made aware of the accident/injury. Supervisors

who hear or know of an accident should inquire directly of the employee and make the necessary report (Accident Report - PER 17 and Memo For Record - MFR)

The following information is required when reporting the accident/injury:

- First and last name of person making the report
- Business telephone number of person making the report
- Department or unit of injured employee
- First and last name of injured employee
- Social Security Number of injured employee
- Date of accident/injury
- Medical treatment required: Yes or No
- Time loss: Yes or No
- Business telephone number of injured employee
- Home telephone number of injured employee
- Name of injured employee's supervisor
- Business telephone number of injured employee's supervisor

Failure to report work related accidents/injuries within the required time limit might result in denial of benefits.

Responsibilities

Supervisor

- Promptly completes their portion of all injury/illness reporting forms (Standard Accidental Injury Form; PERS 17 and Memo For Record - MFR).
- Obtains witness statements and assists in accident investigation efforts.

Employee

- Promptly reports the incident to the supervisor.
- Completes the employee's portion of the applicable workers' compensation form (PERS 17) and submits form to the supervisor.
- Provides continuing medical information to Human Resources for submission in support of the claim.
- Keeps the supervisor apprised of the medical condition as it affects the ability to return to either light or full duty.

Human Resources

- Provides guidance and assistance on workers' compensation benefits, procedures, and claim forms to CVM supervisors and employees.
- Reviews all workers' compensation claims prior to submission.
- Maintains workers' compensation claim information.

Injury and Illness Reporting Procedures

- If possible, an employee should verbally notify the supervisor immediately upon sustaining a work-related injury. For serious or life threatening injuries, the Emergency Personnel should be notified (Ext. 2-6400 or 911) Or the employee should transported to Mercy Health Center Emergency Room, Mercy West or Lafene Health Center (students). In the case of a non-life threatening injury, employees should go the KSU Occupational Health office at Mercy West and students should report to Lafene.
- The employee, or someone on the employee's behalf, must complete a Standard Accidental Injury Form (PERS 17) and submit this form to the

supervisor. The supervisor must complete the section of the form "Official Supervisor's Report and the MFR." Submit the completed PERS 17 and the MFR to the Departmental Representatives from CVM EH&S Committee within three workdays of the injury.

Workers' Compensation Benefits

Contact KSU Division of Human Resources staff at 785-532-6277. You may also contact a claims adjuster at 785-296-2364 in Topeka. An ombudsman program with the Division of Workers' Compensation in Topeka can provide you with advice at 1-800-332-0353. For unresolved disputes between you and the State Self-Insurance Fund, you can request a benefit review conference that is to be a non-adversarial and informal method of dispute resolution. An ombudsman can assist you at the benefit review conference by an ombudsman.

More Information

More detailed information may be obtained from the State Self-Insurance Fund at (785) 296-2364 and from KSU Human Resources or at their web page at <http://www.ksu.edu/hr/benefits/>

1.F. Employee Assistance Program

Policy and Purpose

All CVM employees will have access to an Employee Assistance Program (EAP) providing confidential counseling assessment and referral services. The KSU-CVM EAP is designed to help employees deal with any personal, family, or job-related concern that could interfere with their performance or conduct at work.

Participation in the EAP is voluntary and confidential. No penalty may be imposed upon an employee for accepting or declining to participate in the program. The purpose of the EAP is to enable employees to achieve their full individual potential, even when stress and problems in their working or personal lives present difficult challenges.

Responsibilities

Supervisor

- Encourages and supports employee participation in the EAP when an employee may be experiencing personal problems affecting the work environment.
- Respects and safeguards the confidentiality of any information provided by the employee or counselor.

Guidelines

- CVM official concern for an employee's personal problem comes into effect only if the problem causes difficulties in the work situation. Persons making referrals under the EAP must not attempt to delve into or diagnose an employee's problem. Employees must not be coerced or forced to use the program. Discussions should focus on job performance issues and not on the employee's personal affairs. Participation or non-participation in the EAP does not relieve the employee's responsibility for satisfactory performance and conduct, nor does it relieve supervisors of their responsibility under personnel management regulations to deal with unsatisfactory performance and conduct matters.

- Official personnel folders, other personnel records, and supervisor files will contain no management reference to the nature of the employee's personal problem(s) or the employee's use of the EAP.
- Any information or reports from the counselor can be released only with written consent of the employee and only to those individuals that the employee specifically identifies in the written consent.

1.G. Clearance of Laboratory Personnel Leaving CVM

Policy and Purpose

Personnel leaving CVM must ensure that all research samples, solutions, and hazardous materials under their control and custody have been properly disposed or transferred to other appropriately trained and informed personnel. An effective process for transferring accountability for hazardous materials used by individuals leaving the college encourages efficient chemical usage, minimizes potential hazards to others and saves Departmental resources.

Responsibilities

Supervisor/Principal Investigator

- Ensures that laboratory personnel leaving the college have completed all tasks and forms related to the proper disposition of research materials and supplies, including the identification and labeling of research samples, disposal or transfer of hazardous materials, and amendment or cancellation of hazardous agent protocols.
- Assumes care and custody for all samples, chemicals, and unidentified materials that were not properly disposed of or transferred.
- Principal Investigators departing the college or moving to other laboratory space are responsible for thoroughly cleaning and decontaminating the assigned laboratory area and properly disposing of hazardous chemicals before departure.
- If animal experiments are in progress, the Principal Investigator must inform the Director of the Animal Resource Facility about arrangements for these animals.

Laboratory Employee

- All waste hazardous material must be prepared and submitted to the KSU hazardous waste management program (See Chapter 6).
- Research samples, chemical solutions, and unused chemicals that are to be retained in the laboratory must be properly labeled with compound name (include isotope and activity for radioactive material), amount, and date. Inventory and transfer these materials to person(s) in the laboratory who will serve as custodian(s).
- Principal users who have active protocols in their name should notify EH&S 30 days, or at the earliest date possible, prior to separation and make arrangements to have all active protocols transferred or canceled.

CHAPTER 2 – EMERGENCY PLANS

2.A. Emergency and Evacuation Procedures

Fire Emergency

Every employee must know the location of fire extinguishers and fire blankets and be familiar with the fire alarm system. The first person to observe a fire should:

- Immediately sound the fire alarm by activating nearest fire alarm pull station.
- Report fire to Dean's Office 2-4000.
- If possible, use available fire extinguishers to extinguish or contain the fire. If the fire is fueled by a natural gas or LP gas leak, the gas supply should be shut off prior to extinguishing the fire.
- Immediately evacuate area should initial fire fighting attempts fail. Shut off gas supplies, etc. Close door to area to contain fire.

- Solvent Fires – Extinguish solvent fires by the proper use of dry chemical or carbon dioxide extinguishers. Fires in small containers of solvents can often be snuffed out by placing the lid on the container tightly enough to exclude air.
- Gas Fires - The most effective means of extinguishing a gas fire is by closing a valve in the gas supply line. Call Facilities (2-6711) to cut off building gas valves. Extinguish gas fires by the proper use of carbon dioxide or dry chemical extinguishers.
- Chemical Fires - Chemical fires can be of many different sorts, and special methods of fire fighting must be used. For example, smother a metal fire (sodium, titanium, magnesium, potassium, lithium) with dry sand, graphite, salt or inert gas in confined areas, never with water.
- Electrical Fires - If possible, first turn off the power to the motor or other electrical equipment. If power cannot be turned off, call Facilities (2-6711). Use carbon dioxide or dry chemical on electrical equipment, never water. Do not return electrical equipment involved in fires to operation until inspected or repaired.
- Asphyxiation and Injury - To the extent possible, depending on training, each laboratory employee should render first aid to injured employees.

Medical Emergency

The person observing a medical emergency should call 911. Give information as to the nature of the emergency and the exact location. PROMPT EMERGENCY MEDICAL RESPONSE IS DEPENDENT UPON SECURITY BEING NOTIFIED WHEN A MEDICAL EMERGENCY OCCURS.

If there is a person who has received first aid/CPR training nearby, he/she should be immediately contacted to give assistance.

Stay with the injured person and do what you can until medical assistance arrives.

Natural or LP Gas Leaks

- Do not use light switches or other apparatus likely to produce a spark.
- Search your immediate area for a source and shut off gas supply if possible.
- Notify Facilities (2-6711) and if necessary KSU Police (dial 911) and EH&S (2-5658).

Spills, Exposure Hazards

Procedures for proper clean up of minor chemical or radioactive spills are contained in individual hazardous chemical or radioisotope use protocols. Clean up minor spills

according to established procedures. Contact EH&S (2-5856). After office hours, contact KSU Police (ext. 2-6400). Clean up all spills promptly and restrict access to the contaminated area to clean-up personnel until clean up is completed

General Guidelines - In the event of an emergency involving material that presents an exposure hazard, several factors must be considered.

Assess Risk to Yourself and Others

- Think before acting.
- When evaluating the risk, consider the toxicity, volatility, and volume of material involved.

Protect Yourself and Others

- If necessary, remove yourself and others from the area.
- Immediately remove any contaminated clothing and wash any part of body contaminated by chemicals or radioactive materials. Do not spread the contamination to clean areas.
- Attend to anyone injured.
- Close off area to personnel; close doors and post warnings.
- Turn off any potential ignition sources.
- Notify EH&S (2-5856) or KSU Police (2-6400) if necessary and follow their instructions.

After meeting the above conditions, then appropriate to your level of training and to the equipment available, apply the following guidelines:

- Confine the Spill/Stop the Source
 - Minimize your exposure by being upwind, wearing protective clothing.
 - Use spill control materials or other suitable absorbents.
 - Cover spilled powders with suitable liquids to reduce dust.
- Cleanup
 - Minimize exposure to volatile compounds.
 - Avoid procedures that create gases.
 - Decontaminate, if necessary, ventilation system, glassware, etc.
 - Submit appropriate waste pickup request form for waste material to Environmental Health and Safety.
- Report
 - Complete a spill report and send to EH&S.

Radioactive Spills (Also see Radiation Safety Guide)

- Principal user and/or radiation worker should determine the magnitude and severity of the spill.
- For major spills or spills involving volatile radioactive material, the area should be evacuated and posted with warning signs, and the Radiation Safety Officer should be notified immediately (2-5856 or (785) 537-2885.)
- Minor Spills
 - Monitor extent of contamination.
 - Confine the spill and clean-up (soap and water is usually sufficient or as indicated in Safety Protocol).
 - Monitor area for contamination after cleanup (Geiger Counter or swipe).

- Notify the Radiation Safety Office (2-5856).

Adverse Weather Conditions (tornadoes, etc.)

- During severe weather, personnel should be alert to the possible hazardous conditions caused by tornadoes, lightning, wind, etc.
- When a tornado WARNING has been announced, employees will immediately assure that equipment is secure (i.e., shut off gas, water, high voltage, etc.) and move to the nearest place of safety where they should sit on the floor with backs to a wall as far away from windows as possible. Remain in safe locations until all-clear message is given. The basement of Trotter Hall is a designated Tornado Shelter.

Bomb Threats

Receipt of a Threat

- Any person receiving a phone call involving a bomb threat or a threat against an individual should attempt to obtain as much information as possible from the caller. This information is invaluable in determining the validity, urgency, and nature of the threat, and consequently in determining what action is appropriate in response to that threat.

After Receipt - What To Do!

- Immediately notify KSU Police at 911 and the Dean's Office at 2-4000.
- Notify your immediate supervisor of the fact that you received a threatening phone call and have already notified Security.
- Remain at your location until the Police Officer arrives. He will interview you regarding the call.

Occupant Search - Prior to Evacuation

- Building occupants shall respond as directed over the public address system (Mosier Hall) or as directed by Security Personnel. Employees may be requested to check their work areas for suspicious objects with the additional direction that they not touch or disturb such items if found.
- Report any thing suspicious to Security, Ext. 2-6400. Occupants will be notified if there are any building areas that should be avoided during evacuation.

Evacuation Procedures

- Personnel should take their coats, purses, keys, etc., and exit the building as if they were not returning for the day. All personnel will be directed to leave the building and told when to return, or to wait outside in a safe area for further instructions.

Handling Public and News Media Inquiries

- The purpose of this provision is to furnish the public and news media with accurate information and to see that additional bomb threat calls are not precipitated by incorrect statements from uninformed sources.
- All KSU-CVM employees are instructed not to discuss the situation with news media or other outsiders. Inquiries should be directed to the Office of the Dean at ext. 2-4000.

CHAPTER 3 – PERSONEL PROTECTION POLICIES

3.A. Restricted Areas

Policy and Purpose

Access to potentially hazardous areas (e.g., laboratories containing chemical, biological, or radiological materials) is limited to assigned personnel and individuals with a specific need to be in the area. Certain areas may be designated as restricted. Door and wall signs and other markers are used to indicate the degree of restriction as described in [Chapter 3-B](#) of this manual.

The following sections of the manual should be referred to for access restrictions established for specific areas of the Institute: Visitors and children ([Chapter 3-C](#)), and Animal handling facilities ([Chapter 8-A](#)).

Responsibilities

- **Supervisor** - Designates areas as restricted with assistance of the Departmental Representatives from CVM EH&S Committee. Ensures areas are posted and access restrictions are enforced.
- **Employee** - Obeys established access restrictions. Participates in identifying the need for restricted areas.
- **Departmental Representatives from CVM EH&S Committee** - Ensures that restricted areas are accurately posted with hazard warnings according to Chapter 3-B of this manual.

3.B. Hazard Warning Signs

Policy and Purpose

All devices, structures and areas where hazardous materials are used, or where hazards or possible hazards may exist will be identified with appropriate hazard warnings.

Responsibilities

Supervisor

- Posts appropriate warning signs for materials of a hazardous nature (poisonous, toxic, flammable, carcinogenic, biological hazard, radioactive, etc.) or hazardous conditions (high voltage, slippery when wet, welding arcs, etc.).

Employee

- Conducts themselves in the manner (safe procedures, protective equipment, clothing, etc.) as called for by the hazard warning signs and training.
- Assists the supervisor in recognition of any potentially hazardous condition that may need identification by hazard warning signs.

Departmental Representatives from CVM EH&S Committee

- Periodically surveys all operations to ensure proper identification of hazardous areas or conditions by use of warning signs and immediately notifies supervisor of any lack of, or improper markings.
- Assists the supervisor in defining proper identification, and acceptable location of signs in compliance with existing regulations.
- Provides hazard warning signs.

Sign Policy

- Common sense is required in the use of Hazard Warning Signs so their effectiveness is not lost by over use. Hazard Warning Signs are not to be abused for personal reasons such as to keep people out of an area or to discourage use of laboratory materials, equipment, etc.

Biological Hazard Signs - shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain, or are contaminated with, viable hazardous agents.

No smoking, eating or drinking signs - will be placed in all designated areas where there are flammable, toxic, carcinogenic, mutagenic, teratogenic, or radioactive materials stored or used. KSU-CVM is a smoke free environment and smoking is prohibited inside all college buildings.

Special signs or tags - will be used as needed (e.g. labels for chemical carcinogens).

Method of Posting

- Signs that are to be used permanently will be installed only by Facilities.
- Signs that are to be used in laboratory areas on a temporary basis will be posted with masking tape on a glass surface door or, if more appropriate, on refrigerators, freezers, etc.
- Signs will not be posted with tacks, pins, and various adhesive materials that will damage the doors, walls, or building when the signs are removed.

Laboratory Entrance Warning Placards

Affix warning placards to doors to alert personnel of specific hazards within laboratories. These placards will identify the presence of carcinogenic agents, biohazards, radioactive materials, reproductive toxins, flammable solvents, corrosive materials, reactive chemicals, toxic chemicals, toxic gases, and emergency contacts.

3.C. Visitors

Policy

All visitors entering CVM facilities must comply with applicable health and safety policies and procedures.

Responsibilities

- **Supervisor** - Posts restricted areas; provides for adequate visitor protection; coordinates group visitation and designates tour guides.
- **Employee** - Escorts visitors; provides safety instruction and equipment as needed; acts as tour guide.
- **Departmental Representatives from CVM EH&S Committee** - Ensures availability of protective equipment for visitors and participates in enforcing the visitor policy.

Procedures

- Children under 16 years old will not be allowed in any laboratory or other hazardous work area. Children must be properly supervised and accompanied by an adult while in CVM facilities.
- Visitors entering laboratories and other hazardous areas must be escorted by an employee.
- Visitors must be provided appropriate safety instruction and protective equipment by their host employee.

- Restricted areas may be visited only by permission of the supervisor in charge of the restricted area.
- Large tour groups must be escorted by appropriate escorts and must be given permission by the Laboratory Supervisor prior to the visit

3.D. Personal Protective Clothing and Equipment (PPE)

Policy

PPE will be provided whenever it is necessary. The department encourages the use of protective clothing when chemical hazards, radiological hazards, or mechanical irritants are encountered in a manner capable of causing injury or impairment through absorption, inhalation, or physical contact.

The use of protective eye and face equipment is required where machines or operations present hazards of glare, flying objects, chemicals, radiation or any combination thereof.

All employees will be protected from exposure to airborne radioactive, chemical, or biological contamination. For some experiments, respiratory protection may be provided as an additional safeguard against exposure

All employees will be protected against the detrimental effects of excessive noise exposure.

Responsibilities

Supervisor

- Ensures all employees use and maintain PPE as needed to provide effective protection against identified hazards.
- Ensures all employees who wear PPE (including respirators and hearing protection devices) are thoroughly trained in their use.
- Requests survey from EH&S when a change in equipment or procedure may increase employee exposure to noise.
- Ensures visitors to laboratory areas wear PPE as necessary.
- Provides employees with appropriate PPE and ensures their use.
- Identifies potentially hazardous conditions and immediately notifies EH&S for corrective action.

Employee

- Uses and maintains all PPE issued and when necessary suggests additional protection.
- Conforms to CVM policy on PPE use and uses good safe laboratory practices.

Procedures

- Personal protective clothing is to include approved lab coats, surgical caps, masks, gloves, overalls, lab coats or smock, eye protection, ear protection, and respiratory protection. As a minimum, lab coats, gloves and closed toe and side shoes must be worn during laboratory work.
- Requests for all personal protective clothing not generally available should be made to the supervisor. The protective clothing should be worn by the employees and visitors as dictated by laboratory policy.

- Personal protective clothing may not be worn in the cafeteria or other food consumption areas, conference rooms, picnic areas or library.
- Appropriate footwear should always be worn.
- Latex gloves should not be worn in public areas and should be removed and discarded before leaving the laboratory.

Monitoring - It is the responsibility of EH&S to monitor noise exposure levels in a manner that will accurately identify employees who are exposed at or above an 8-hour time-weighted average (TWA) of 85 dBA.

Hearing Protectors - Hearing protectors shall be made available to all employees exposed at or above the action level.

3.E. Eye Protection

Policy

The use of protective eye and face equipment is required where machines or operations present hazards of glare, flying objects, chemicals, radiation or any combination thereof.

Responsibilities

Supervisor

The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

- Must emphasize the need and importance of wearing eye protection.
- Must ensure that all employees under his/her direction have and wear eye protection.
- Makes sure visitors to laboratory areas wear eye protection.

Employee

- Uses correct eye protection as designated by supervisor at appropriate times and for appropriately designated tasks.
- Conforms to CVM policy on eye care and uses good safe laboratory practices.

3.F. Respiratory Protection Program

Policy

All employees will be protected from exposure to airborne radioactive, chemical, or biological contamination. For some experiments, respiratory protection may be provided as an additional safeguard against exposure.

References

29 CFR 1910.134 Respiratory Protection, DHHS (NIOSH) Publication No. 87-116 "NIOSH Guide to Industrial Respiratory Protection", American National Standards Institute - ANSI-288.2-1992, "Practices for Respiratory Protection"

Responsibilities

Supervisor

- Ensures that all employees who wear respiratory protective devices are thoroughly trained in their use and that they have been properly fit tested.
- Provides employees with the respiratory protection appropriate for the operation, and ensures the use of such devices.
- Identifies potentially hazardous conditions and immediately notifies EH&S for corrective action.

Employee

- Uses respiratory protective equipment as instructed and required under hazardous agent protocols.
- Stores respirator properly to prevent damage and inspects prior to each use.

Standard Operating Procedures

- **Selection** – Select respirators based on the potential hazards to which the worker is exposed. The following factors shall be ascertained to ensure that the device selected for the employee will provide satisfactory protection when used properly:
 - Chemical, physical, and toxicological properties of the contaminant(s).
 - Review of actual and potential hazards to assess extent of injurious effects produced under all conditions of potential exposure.
 - Evaluation of the duties to be performed by the wearer as they relate to restriction of movement and duration of potential exposure.
 - An understanding of the principles, design, scope of use, limitations, advantages, and disadvantages of the available respirators.

3.G. Hearing Conservation Program

Policy

All employees will be protected against the detrimental effects of excessive noise exposure.

References

29 CFR 1910.95, Occupational Noise Exposure, Fundamentals of Industrial Hygiene, 3rd Edition, National Safety Council, 1988

Responsibilities

Supervisor

- Maintains an awareness of the approximate noise levels in work places for which he/she is responsible.
- Requests a survey from EH&S when a change in equipment or procedure may increase employee exposure to noise.
- Ensures that all employees are aware of the requirements for hearing protection in any area that has been identified as having levels that exceed permissible exposure limits.
- Ensures that appropriate protective devices are worn and that any other control measures are observed.

Employee

- Complies with the recommendations of the supervisor for controlling noise exposure.

- Makes proper use of the hearing protection devices provided.
- Reports any suspected change in noise levels of equipment to the supervisor so that a survey can be made.

Departmental Representatives from CVM EH&S Committee

- Coordinates noise surveys in all areas of their department as requested.
- Places warning signs in areas where sound levels exceed accepted levels.
- Recommends, after consultation with Facilities, engineering methods for controlling noise levels when such measures are considered feasible.

Procedures

Monitoring - It is the responsibility of EH&S to monitor noise exposure levels in a manner that will accurately identify employees who are exposed at or above an 8-hour time-weighted average (TWA) of 85 dBA. Each employee will be informed of monitoring results when exposed at or above the action level.

Hearing Protectors - Hearing protectors shall be made available to all employees exposed at or above the action level. These protectors shall be capable of attenuating noise levels to at least a time-weighted average of 90 dBA for all employees and 85 dBA for employees who have experienced a standard threshold shift (STS).

3.H. Occupational Health Examination and Surveillance Programs

Policy and Purpose

Appropriate and effective medical surveillance and screening services will be provided for all employees who, as a part of their normal work activities, are potentially exposed to hazardous agents or conditions. This section states the responsibilities, requirements, and procedures for obtaining medical examinations for those individuals who require medical surveillance.

These examinations are designed to provide screening and surveillance for occupationally related risks and should not be relied upon for overall general health assessment or maintenance.

Responsibilities

Supervisor

- Reviews employee work activities to determine whether the potential for exposure to hazardous agents or conditions may be present.
- Ensures eligible employees participate in the Universities occupational health examination and surveillance programs.
- Provides notification to EH&S as soon as possible when an employee is separating from service so that an exit examination can be scheduled prior to the last day of service.

Employee

- Completes necessary medical pre-registration forms and submits material to Environmental Health and Safety as requested.
- Keeps scheduled appointment(s) for medical examination and surveillance services.

Departmental Representatives from CVM EH&S Committee

- Coordinates the scheduling of necessary examinations with the employee and the designated medical service provider.

- Assists Department supervisors and employees in the assessment of work activities for potentially hazardous exposures.

Special Evaluations and Conditions

- Employees are encouraged to report all suspected work related injuries and illnesses to the Environmental Health and Safety. Accidental exposure incidents will be evaluated to determine the need for medical follow-up or health surveillance.
- Female laboratory personnel, upon learning of their pregnancy, should inform the immediate supervisor. The Supervisor will survey the normal working areas of the female employee for potential occupational hazards. Together with the supervisor, a mutually agreed upon work schedule for the female employee will be established for the duration of the pregnancy. The female employee should inform her personal physician of workplace conditions and limitations so that proper medical surveillance may be instituted.
- Personnel intending to have children may request EH&S to evaluate normal working areas and duties for potential reproductive hazards.

3.I. Working Alone

Policy

Working alone in certain circumstances, situations, or environments is unsafe and requires special arrangements to minimize potential hazards. "Alone" means beyond the visual or audible range of any other individual for more than a few minutes at a time.

Responsibilities

- **Supervisor** - Schedules experiments and work procedures to minimize potential hazards of working alone.
- **Employee** - Consults with supervisor and security guards as necessary to schedule work done after hours or otherwise in isolation and to maintain communications during such work periods.

Procedures

- If the nature of the work performed after normal hours makes an operation relatively safe (e.g., recording data, operating an instrument, counting plates), a telephone call or visual check during a guard's inspection tours may be adequate.
- Work of a clearly hazardous nature (e.g., tasks involving high energy, toxic, flammable, cryogenic, or high-pressure materials) must not be conducted alone. Such activities must be scheduled during normal working hours or performed when another worker is present.
- Administrative or clerical employees and others working in low-hazard locations shall not be alone longer than two hours without an established safety check procedure. The procedure may be part of a guard's standard inspection tour, or it may consist of a phone call or work (e.g., coffee) break with a contact person.

CHAPTER 4 – GENERAL SAFETY AND LABORATORY POLICIES

4.A. Centrifuge Safety

Policy

All centrifuges will be used, cared for and maintained in a safe manner.

Responsibility

Supervisor

- Provides copies of the operating instructions for each machine under his/her authority.
- Provides a logbook for all high-speed centrifuges, to record rotor serial number, speed, and names of individuals using the centrifuge.
- Provides, for each employee using the centrifuge, operating instructions including the requirement for balancing loads, maximum G loads in RPM for each rotor and precautions involving the centrifugation of hazardous materials. Provides derating information on old rotors.

Employee

- Reads the operating instructions for each rotor used and is familiar with safety features of the centrifuge used. Attends instructional classes as necessary.
- Logs the rotor serial number, speed in RPM, duration of spin and times of use and name.
- Operates and maintains all centrifuges in accordance with good safe laboratory procedures, including the proper cleaning of rotors.
- Cleans spills and breakages within the centrifuge. For spills of hazardous materials, refers to the pertinent section of this manual. For radiochemical spills refers to the Radiation Safety Guide and informs the Radiation Safety Officer.
- Reports damage to centrifuge or rotors to the laboratory supervisor for repair or derating action.

General Centrifuge Safety Procedures

- Lids shall be closed at all times during operation.
- The operator shall not leave the centrifuge until full operating speed is attained and machine appears to be running safely without vibration.
- If vibration occurs the centrifuge should be stopped immediately and load balances checked. Swing-out buckets should be checked for clearance and support.
- Rooms where potentially hazardous biological, radioactive materials, toxic or other hazardous chemicals are centrifuged must be identified by the appropriate warning signs.
- Plastic centrifuge tubes should be discarded after one cycle of ultracentrifugation.
- Nitrocellulose tubes should be used only when transparent and flexible (fresh). They must never be heated because of explosive possibility.
- Rotors and cups should be cleaned and disinfected after each use with non-corrosive cleaning solutions (mild detergent and distilled water are recommended). Test tube brushes must not be used for cleaning the cup cavities. All traces of detergents should be removed prior to air-drying.

Emergency Procedures

- Turn off centrifuge, notify others in laboratory and evacuate.
- Notify the laboratory supervisor.
- Post temporary Hazard Warning Sign

4.B. Compressed gases in cylinders

Policy

Users of compressed gases should be familiar with the pertinent equipment and the characteristics of the gases.

Responsibilities

Supervisor

- Ensures that CVM policies are enforced and good safe laboratory practices are used.
- Provides for and requires adequate instruction in the use and maintenance of gas cylinders by all employees.

Employee

- Performs all work with compressed gases in accordance with departmental policies and good safe laboratory practices.

Departmental Representatives from CVM EH&S Committee

- Ensures that departmental policies are enforced and good safe laboratory practices are carried out.
- Assists, advises and instructs personnel in the care and handling of controlled gases.

General Safe Handling Procedures

- Compressed gas cylinders must be secured at all times so they cannot fall.
- Valve safety covers should be in place until pressure regulators are attached.
- The names of the cylinder contents must be permanently attached to the cylinders.
- Cylinders may be moved on chain equipped hand trucks or carts; they should never be rolled or dragged.
- Employees must not attempt to repair cylinders or cylinder valves, or to force stuck or frozen cylinder valves.
- The cylinder valve is never to be opened or cracked without first attaching the proper pressure regulator.
- Cylinders shall not be stored near corrosive chemical or fumes.

Restricted Products

- EH&S must be notified of intent to work with highly toxic gases prior to their proposed use to allow time for making necessary safety preparations. If possible use small cylinders of toxic gases rather than large.
- Laboratories using toxic gases should have respirators available that are effective against the agent

Acceptance of Cylinders from Vendors

- The contents of cylinders must be identified. Cylinders lacking proper identification must not be accepted from the vendors.
- Cylinders must not be accepted from the vendors without valve safety covers.
- Vendors moving cylinders should use chain equipped hand trucks or carts. Cylinders should not be dragged or rolled.

Pressure Regulators and Needle Valves

- The valve fittings of cylinders used to store different families of gases are different and will allow regulators or needle valves to be attached that are safe for use with those gases. Use of adapters to connect regulators to cylinder valves is not authorized. Only pressure regulators and needle valves approved for the gases may be used.
- When attaching regulators or needle valves, the connections must be tightened firmly. Use wrenches of the proper size. If the cylinder valve faces are damaged, return the cylinders to the vendors. Do not attempt to repair them. Do not use damaged regulators.
- After attaching the pressure regulator to the cylinder, the delivery pressure adjusting screws of the regulators should be turned out until they turn freely. Open cylinder valves slowly. Avoid standing directly in front of the regulators as the pressure of the cylinders may blow the glass from the front of a faulty gauge. After the valves are opened, check the regulators and fittings for leaks. Do not attempt to force sticking valves. Return the cylinders to the vendors.
- If the gases are not to be used over a considerable length of time the cylinder valves should be closed, the lines bled, and the pressure adjusting screws turned back until they turn freely. Damage to the gauges may result if pressure is left on the gauges during extended periods of nonuse.

Cylinder Leaks

- Test for leaks after the pressure regulators are attached to the cylinder valves and the valves opened. Soapy water painted over the valves and connections will indicate most gas leaks.
- Do not attempt to repair leaks caused by loose valve stem packing. Return leaking cylinders of nontoxic, nonflammable gas to the vendor. Leaks from cylinders of toxic or flammable gases require immediate attention. How to handle the problem will depend on the kind of gas, the size of the leak, the area where the cylinder is located, and other factors. Wear appropriate protection when attempting to move leaking cylinders of toxic gases.

Empty Cylinders

- Leave a small amount of gas in the cylinders and the cylinder valves closed to prevent contamination of the inside of the cylinders.
- Mark empty cylinders "EMPTY" or "MT".
- Valve safety covers and the labels showing contents must be in place.
- Store empty cylinders separately from full cylinders.
- Empty cylinders must be secured at all times so they cannot fall.

4.C. Cryogenic Liquids

Policy

Cryogenic liquids may be used only in a manner that is safe for all Department employees and visitors and in accordance with the procedures outlined below.

Responsibilities

Supervisor

- Ensures that Department policies are enforced and good safe laboratory practices are used.
- Provides for and requires adequate instructions and protective equipment for use with cryogenic liquids.

- Provides personal protective equipment and clothing

Employee

- Performs all work with cryogenic liquids in accordance with CVM policies and good safe laboratory practices.

Departmental Representatives from CVM EH&S Committee

- Assists, advises and provides training as necessary.

Procedures for Handling Cryogenic Liquids

Due to the extremely low temperatures of cryogenic liquids and their vapors, direct skin or eye contact can result in severe damage to tissues similar to burn injuries. Liquid nitrogen is the most commonly used cryogenic liquid in the department and has a temperature of -198 C. A small amount of volume of liquid produces a large volume of gas (expansion ratio is approximately 700:1 for liquid nitrogen). Never place liquid nitrogen in a sealed container as expansion during warming produces enormous pressure resulting in potential for explosion.

Protective Clothing

- Use of glasses or safety goggles is mandatory.
- Gloves should be loose fitting so that quick removal is possible if liquid should splash into them. Even with gloves, contact with cold liquids should be for a very brief time.
- Protective clothing consists of lab coats and shoes to protect against skin contact in the event of a splash or spill.

Ventilation

Cryogenic liquids should be stored and handled in well-ventilated areas to prevent excessive buildup of gas concentration. Do not use in closed environmental chambers. The rapid conversion of liquid nitrogen to the gas phase can deplete the oxygen in a closed area, resulting in asphyxiation and death.

Transfer of Cryogenic Liquids from Storage Vessel

Liquid nitrogen and other cryogenic liquids are delivered and stored in specially designed double walled, evacuated containers known as Dewar flasks. To transfer cryogenic liquids from the storage vessel, observe the following procedures:

- Attach a suitable length of hose to the control valve located on the top of the storage vessel.
- Attach the hose to the LIQUID valve, not the gas or vent valves.
- All transfers must be made to a suitable container, whether steel or glass Dewar flasks that have been taped or are shielded to protect from possible implosive fragmentation of the flask or wheeled cryo-vessels.
- Withdraw liquid slowly at first because if the interior of the flask is still be at room temperature, rapid boil off will occur.

Disposal of Cryogenic Liquids - Evaporation in a well-ventilated area is the best method of disposal of cryogenic liquids.

Emergency/First Aid Procedures for Cryogenic Liquids

- Rapidly re-warm contact area by immersion in warm water (100-110 F), with body heat, or warm air. DO NOT USE AN OPEN FLAME FOR THIS PURPOSE. (NOTE: this procedure is the opposite of the procedure for a burn injury, which is to rapidly cool the contact area).
- Do not rub or massage the affected area.
- Prevent infection by cleansing with mild soap and water.

4.D. Laboratory Hoods (Biological Safety and Chemical Fume)

Policy

Personnel shall conduct all work involving biohazardous, hazardous or noxious materials within a hood or exhaust system designed to contain and remove hazardous dusts and vapors from the area and protect the worker.

Responsibilities

Supervisor

- Ensures the proper type, design, construction and number of hoods are procured, available and used.
- Ensures employees are correctly trained and knowledgeable of the use and conditions requiring the use of hoods.
- Requires employee compliance to the above policies.
- When necessary, schedules or arranges time for hood use as determined by conditions and the nature of the work.
- Schedules and maintains all testing and certification for hoods.
- Arranges for periodic and routine cleaning, replacement of filters and recertification of biological safety cabinets, laminar flow hoods, and clean benches.

Employee

- Ascertain, within reason, the correct functioning of hood before use.
- Uses hoods according to good safe laboratory practices.
- Suggests, advises and assists in the selection of hoods and exhaust systems necessary to conduct his/her work safely.
- Immediately reports all malfunctioning hoods and generates a work order for repair of exhaust hoods to Facilities and biological safety hoods to the contracted repair firm.
- Immediately informs Facilities, Environmental Health and Safety and supervisor if an exhaust hood has been inadvertently or inappropriately used for materials that could leave hazardous residues.

Environmental Health and Safety

- Inspects, monitors, and labels laboratory chemical hoods for compliance to Environmental Health and Safety requirements on an annual basis.
- When necessary, determines and indicates if hood has been used for material that could be hazardous to workers in the course of repair, maintenance, etc.

Departmental Representatives from CVM EH&S Committee

- Coordinates with the user and Facilities and arranges for the servicing, decontamination, etc. which arises from a potential hazard requiring special expertise (e.g. improper use of Perchloric acid).

Procedure and Use of Hoods and Exhaust Systems

Use of Chemical Exhaust Hoods

- A face velocity of 100 ± 10 fpm, with the sash open to the indicated height, is required for all general utility hoods to be used for routine work; higher face velocities may be required for certain high hazard work.
- Laboratory hoods are to be used for volatile, hazardous or odoriferous materials.

- Each user should first determine that the hood and its support utilities are functioning adequately and properly.
- Containers of hazardous materials will be opened and the contents used only in the hoods. Waste and contaminated material will be contained in a closed system (i.e. flask, jar, plastic bag, etc.) before removal from the hood.
- In the event of a hood system malfunction, the user will immediately secure and contain all hazardous materials to minimize exposure and inform the necessary authorities (i.e. Facilities, EH&S , etc.). If an emergency exists, the area should be immediately evacuated, closed and posted.
- Malfunctioning hood utilities (air, gas, vacuum, water) should be reported to Facilities as soon as noted and a repair work order issued.
- Upon completion of an experiment, clean the hood and remove all wastes, unnecessary equipment, chemicals, etc.
- Placement of shelves or equipment that impede the proper functioning of the hood are forbidden.
- Do not use hoods for storage.

Use Perchloric Acid Hoods

- An explosion hazard exists when perchloric acid is used incorrectly. Therefore, perchloric acid will be used only in hoods specifically designed for its use or when used in conjunction with a scrubber in a general utility hood.
- Policies under general utility hoods apply to perchloric acid hoods.

Radioactive Use Hoods (see Radiation Safety Guide)

- Laboratory hoods are to be used with all high-level radioisotope work or any work with volatile radioisotopes or operations likely to produce aerosols.
- Radiolabeled iodination and similar reactions require use of a radioisotope hood equipped with charcoal filters. The EH&S Radiation Safety Officer must be consulted before any iodination is done.
- Applicable general utility hood policies apply to hoods used for radioisotope work.

Biological Safety Cabinets (BSC)

Use of biological Safety Hoods

- Allow the fan to run for a few minutes before beginning work in a BSC.
- Do not block the vents in the back of the hood or the grate blocked.
- Do all work no less than 6" back from the front sash.
- Enter the hood straight in when placing and/or removing objects. Keep sideways motions to a minimum while working in the hood.
- Place a container for waste or contaminated materials inside the hood before work is begun.
- Keep movement into and out of the BSC at a minimum.
- When your work is complete
 - Remove all objects from the hood.
 - Let the fan continue to run for a few minutes.
 - Wipe down the hood surfaces with an appropriate disinfectant.
 - Turn off the blower.
 - Turn on the UV light.
- Never put your face lower than the sash opening. Be particularly careful of this when disinfecting the hood.

- Always use aseptic technique and proper safety precautions for the organism or potential organism you may be working with.

Annual Certification of BSC and Clean Air Benches

- All biosafety cabinets must be certified annually.
- New biosafety cabinets must be certified before use..
- All biosafety cabinets must be certified after they have been repaired or relocated.
- Annual biosafety cabinet certification is required according to:
 - The CDC/NIH Biosafety in Microbiological and Biomedical Laboratories 4th Edition, May 1999.
 - The NIH Guidelines for Research Involving Recombinant DNA Molecules, January 2001.
 - The NSF International Class II (Laminar Flow) Biohazard Cabinetry Standard 49, 1992.

Suggested Source for Certification and Repair Service

Air Safe	ETN
2221 NE 76th Street	927 S. 7th Street
Gladstone, MO 64118	Kansas City, MO 66105
816.4689850	800.722.5330
airsafe@rocketmail.com	

4.E. General Use, Care and Maintenance of Equipment

Policy

All equipment will be used, cared for and maintained in a safe manner. Only necessary, properly functioning and safe equipment will be kept in work areas.

Responsibilities

Supervisor

- Ensures employee is aware of and follows the requirements for the use, care and maintenance of equipment.
- Periodically surveys all equipment in the area of responsibility.
- Designates an individual who is responsible for the maintenance and proper function of each major piece of equipment.
- Designates on a routine basis, equipment to be stored, surplus, repaired, or discarded.

Employee

- Maintains all equipment used or for which he/she has been assigned.
- Provides regular preventive maintenance on equipment.
- Initiates appropriate repair requests on all malfunctioning equipment.
- Ensures equipment is free of contamination by hazardous chemicals or radioactive material.

Procedure

- Broken and unused equipment will be discarded after removal from inventory.
- Equipment will be maintained in safe operating conditions.
- Frayed electrical cords and plugs will be repaired.
- Electrical plugs will be 3 pronged and all outlets will be grounded.

4.F. Ultraviolet Lights and Sources (see [Chapter 9-B](#))

Policy and Purpose

All ultraviolet lights and sources or radiation must be properly maintained. Ultraviolet (UV) radiation includes that portion of the radiant energy spectrum between visible light and X-rays (approximately 390 to 13.6 nanometers). Improper use of UV light can result in serious damage to the eyes and skin. The UV source is not to be used a primary disinfectant source.

Responsibilities

Supervisor

- Ensures that personnel are adequately trained in the use, maintenance and hazards involved in use of UV sources.
- Ensures that adequate protection is provided, available and used when UV lights are utilized.

Employee

- Uses good safety practices with UV sources.
- Uses the correct protective clothing and eye protection necessary for the circumstances.

Procedure

- Turn on UV lamps in BSC only when the cabinet is not in use.
- Avoid direct exposure or indirect exposure or UV radiation by strong reflection to the eyes or skin.
- Overexposure of the eyes will result in a painful inflammation of the conjunctiva, cornea, and iris. Symptoms will develop 3 to 12 hours following exposure. There is a very unpleasant foreign body sensation accompanied by tearing. The symptoms usually disappear in a day or two. Exposure to the skin will produce reddening 1 to 8 hours following exposure.
- Adequate eye and skin protection must be worn when working in an irradiated area. UV safety glasses with side shields, goggles with solid sidepieces, or face shields should be worn. Protect skin with face shields, gloves, lab coats etc.
- Report overexposure to ultraviolet radiation to the supervisor.

4.G. Vacuum Equipment

Policy and Purpose

All glass containers used in vacuum work or which are under vacuum must be securely taped or shielded to restrain flying glass in the event of an implosion or other accident.

Responsibilities

- **Supervisor** - Ensures personnel are correctly trained and are provided necessary safety equipment.
- **Employee** - Uses good safe laboratory practices and procedures to ensure all vacuum equipment used is securely and adequately taped or shielded.

Procedures

- Use metal or taped vacuum flasks, Dewars, etc.
- Tape or shield large glass accessories.
- Always wear safety glasses, goggles, or a face shield.
- When using glass vacuum containers including vacuum desiccators, take one of the following precautions:
 - Tape the flask with electrical duct, adhesive tape, or a similar product.
 - Put the flask in a metal container tall enough to hold the entire flask.
 - If the above precautions are not possible, place an approved safety shield between the flask and personnel.

4.H. Preparing Property for Safe Movement

Purpose

These procedures apply to the safe movement of CVM property that may have been exposed to various contaminants, i.e., known hazardous chemical, radiological, or biological substances

Procedures for Moving Property from Laboratory Areas

All property must be contamination free and safe to move. The last user of the property is responsible for this task. However, if the property has had multiple users, the appropriate laboratory or area supervisor is responsible for ensuring that decontamination procedures.

Inventory of Transferred or Discarded Property

The Principal Investigator in the Lab is responsible for the maintenance of accurate inventory records for all equipment in their care, including items that are moved or discarded. The department is required to maintain a file of all property valued over \$2000 and its current location. The copies of inventory are subject to University audit. Property numbers must be reported to the person responsible for inventory before items may be discarded or moved.

Abandoned Property

Abandoned property is defined as any property that is in an inappropriate location and has no known user. Supervisors are responsible for keeping abandoned property from cluttering corridors and storerooms. Abandoned property must be moved when it impedes the normal flow of traffic, creates a hazard, or for other reasons.

All refrigerators, freezers and refrigerated centrifuges must have Freon captured prior to disposal. It is the supervisor's responsibility to have the Freon removed.

Radioactive Contamination

Property must be surveyed using appropriate methods for the presence of radioactivity before it is removed from a posted radioactive materials laboratory. If you have questions regarding appropriate monitoring methods, decontamination procedures, or how to handle a situation where contamination cannot be removed, please consult with the Radiation Safety Officer.

After monitoring to ensure that such items are free of radioactive contamination, any radioactive warning signs, labels, tape, or other indicators must be completely defaced or removed.

Freezers, refrigerators, and centrifuges must be free of contamination.

Liquid Scintillation counters, gamma counters, and gas chromatographs with Ni-63 electron capture detectors require special procedures because they contain an internal radioactive source that must be removed prior to surplus or discard. Although not all gamma counters have an internal radioactive source they all must undergo special clearance procedures before being moved. Contact the Radiation Safety Officer to make arrangements for movement of this type of equipment.

Decontamination Procedures for Radioactive Material

Equipment may be decontaminated by one of the following methods. If these methods are not adequate contact the Radiation Safety Officer (2-5856).

- **Method #1:** Tape patch for dry or localized contamination.
 - Place masking, adhesive, friction, or duct tape over the contaminated area.
 - Remove tape and discard it as radioactive waste.
 - Repeat process as long as it is effective.
- **Method #2:** Wiping or mopping of dust or accumulated contamination.
 - Wipe contaminated area with a wet mop, cloth, or towel.
 - A decontaminating agent or mild soap and hot water may be applied to mop, cloth or towel.
 - Rinse area with clean water.
 - Repeat as necessary.
 - Dispose of contaminate materials as radioactive waste.
- **Method #3:** Detergents for nonporous surfaces with accumulated film contamination.
 - Apply detergents at full strength or per manufacture's recommendation. Application may be by the use of a mist applicator, using caution to prevent spread of contamination to other surfaces.
 - Vigorously wipe area with a towel or rag. A brush may be used but be careful not to spread contamination.
 - Rinse area with clean water.
 - Repeat as necessary.
 - Dispose of contaminated materials as radioactive waste.

Chemical Decontamination

- A large percentage of chemical contamination can be removed from environmental surfaces by scrubbing with detergent and water. Use this cleaning technique for decontaminating the surfaces of scientific equipment. If the chemical is known to be extremely persistent and is more soluble in a non-aqueous medium, consider first wiping with an appropriate solvent, then washing with detergent and water.
- If the chemical contaminant is considered too toxic to risk exposure while scrubbing and rinsing, select and use a surface decontamination procedure in which the toxic material decomposes to form a safe product. EH&S can advise on destruction techniques for some chemicals (ext. 2-5856).
- If the chemical contaminant is considered hazardous and cannot be effectively neutralized on the surface of the equipment, any wash water resulting from scrubbing with detergent and water is to be treated as chemical waste and must be disposed of according to the guidelines of the KSU Hazardous Waste Management Program. Contact EH&S (2-5856) for the proper collection, labeling, and disposal of contaminated wash water.

- Wear appropriate protective equipment, such as safety glasses and gloves, to avoid unnecessary exposure to surface contaminants.
- These recommendations do not apply to the treatment of an overt spill of hazardous chemicals. Should a spill occur, call EH&S (2-5856) for emergency assistance.

Biological Decontamination

- Adequate pre-cleaning is the first prerequisite for any decontamination procedure. Organic soil present on the equipment may inactivate chemical disinfectants or protect microorganisms from the decontamination process. The actual physical removal of microorganisms by scrubbing is often more important than any antimicrobial effect of the cleaning agent.
- Disinfectants suitable for decontaminating the surfaces of scientific equipment include the following formulations: glutaraldehyde; iodophors; chlorine compounds; alcohol (isopropyl, ethyl); phenolic compounds; and quaternary ammonium compounds. EH&S can advise on selection of appropriate chemical disinfectants (2-5856).
- Read and follow the directions of the manufacturer for disinfectant concentration, contact time (generally 20-30 minutes or longer), and method of application.
- Gloves and eye protection must be worn whenever chemical disinfectants are used.

4.I. Autoclave Use

- All personnel using autoclaves should be adequately trained by an experienced user in your Laboratory. Standard Operating Procedures (SOPs) should be used and posted near the autoclave and followed.
- Do not exceed the maximum operating temperature and pressure of the autoclave. Refer to the manual for the autoclave for operating instructions. Only the laboratory supervisor shall change autoclave setting and programs.
- Use only Type I borosilicate glass bottles. Do not use ordinary glass bottles or any container not designated for autoclave use.
- Do not use plastic containers that will melt or distort during autoclaving. Use Nalgene containers that can be autoclaved.
- Use a tray on the bottom rack of the autoclave to retain any accidental melting of plastic containers or spilled liquid.
- Autoclave bags containing waste should be placed in secondary containers to retain melted agar or other liquid waste that may accidentally leak through.
- Contact the laboratory supervisor for any problems or malfunctions with autoclaves. Do not attempt to make repairs or modifications to the autoclave.

4.J. Miscellaneous Policies

Policy and Purpose

This section sets policy and procedures on miscellaneous laboratory and general safety topics not covered under other specific sections in the Manual.

Responsibilities

Supervisor, Employee, EH&S - Conducts all work, supervision, assistance and advise according to general safety policies.

General Procedures

- Good housekeeping is essential for laboratory safety. Shelves, bench tops, and floors must be free of unnecessary apparatus and materials.
- Doorways and aisles must not be blocked.
- Scientific apparatus must be away from the edge of the bench, leaving adequate room to work and reducing the possibility of an accident.
- Label all bottles and containers holding chemicals accurately and clearly. Whenever possible, hazards and necessary precautions shall also be included on the label. All unlabeled or illegibly labeled chemicals are subject to immediate disposal according to the procedures of KSU EH&S.
- Operations involving the use of toxic, flammable, carcinogenic, biological, or easily aerosolized materials will be conducted in a properly operating hood, biological safety cabinet or other safe area as determined by the nature of the work, EH&S and the Hazardous Agent Use Protocol.
- Heavy items should be placed near the floor to aid in handling.
- Broken glassware must be placed in specially marked containers.
- Glassware must be thoroughly rinsed and decontaminated before returning to the glassware washing area.
- Appropriate carrying trays, carts, or bottle carriers shall be used for transportation of chemicals.
- Experimentation involving the use of perchloric acid will only be done in specifically designated hoods or in hood using a scrubber system.
- Oxidizing chemicals shall be dated and removed from use at the end of the prescribed period.
- Hot plates, not bunsen burners, shall be used for heating flammable and combustible chemicals.
- Refrigerators and freezers used in laboratories shall be either labeled as explosion safe or flammable materials storage.
- Food for human consumption will not be kept in refrigerators where flammable, toxic, carcinogenic, mutagenic, teratogenic, or radioactive chemicals are stored. All refrigerators used for non-chemical storage must be labeled accordingly.
- Mouth pipetting is strictly forbidden.
- Laboratory reagents will not be used for food or drink.
- Incompatible chemicals that might react to emit dangerous fumes or present fire or explosion hazards will be segregated.
- Smoking, eating, drinking, chewing tobacco and/or gum, and application of cosmetics will not be allowed in laboratories where toxic, flammable, carcinogenic, mutagenic, teratogenic, biological agents or radioactive chemicals are used or stored.
- Sharp instruments such as syringe needles, scalpel blades, etc. must be disposed of using disposal boxes designed for this purpose. These items must not be placed in ordinary trash receptacles.

CHAPTER 5 – HAZARDOUS CHEMICALS AND FLAMMABLE SOLVENTS

5.A. Hazardous Material Definitions

Policy and Purpose

Research conducted in the Department involves the use of many potentially hazardous chemicals. For the purpose of this Manual, the following definitions can be used to determine which hazardous chemicals require special concern and safety considerations. Questions on the following classes of agents can be addressed to EH&S or the Safety Officer.

Hazardous chemicals agents are defined as:

- Those chemical agents known to have undesirable biological effects, either acutely or chronically. Reasonable regard is given to the size of the dose, duration and type of exposure, and the physical state of the compound required to produce such effects;
- Those agents for which toxicity information is not available but are highly suspect for reasons of similarity in chemical structure or function to known toxic agents; and
- Explosive or violently reactive agents.

Combustible, flammable materials - for purposes of this Manual, combustible or flammable materials will be defined as substances that will easily ignite, burn and serve as fuel for a fire; specifically, liquids having a flash point below 140°F(60°C) and a vapor pressure not exceeding 40 p.s.i.a. at 100°F (38°C).

Caustic or corrosive materials - caustic or corrosive materials will be defined as strong acids or bases that may burn or otherwise damage the skin and other human tissues. Considerations must also be given to corrosion of equipment.

Controlled drugs - controlled drugs will be those as defined in [Chapter 5-E](#).

5.B. Hazardous Chemical Agent Use Protocol

Policy

All work involving the use of hazardous chemical agents as defined in 5-A requires increased vigilance. Care must be taken by workers to maintain a safe work environment.

Procedures and Responsibilities

Principal Investigator - The Principal Investigator is responsible for evaluating all safety aspects of the planned experimental program. A protocol for use of each hazardous agent or structurally similar class of hazardous compounds must be written prior to the beginning of the research for new programs. The Principal Investigator is the person most directly responsible for all aspects of the safe use and disposal of hazardous materials in the laboratory and in the animal care facilities.

- It is the primary responsibility of the Principal Investigator to instruct and inform all laboratory personnel who are participating in this program in any manner of the potential hazards associated with the experimental investigation. In fulfilling this obligation, the Principal Investigator must determine that personnel directly engaged in the experimental program have the proper level of training and experience required for safe handling of hazardous materials. Under no circumstances are personnel with inadequate training and experience to be allowed to handle (including waste disposal) or participate in any operation with hazardous materials.

Procedures for Vacating Laboratories (see also [Chapter 1-G](#))

Principal Investigators departing the department or moving to other laboratory space are responsible for thoroughly cleaning and decontaminating the assigned laboratory area and properly disposing of hazardous chemicals before departure. All hazardous chemicals to be taken with the Principal Investigator are to be approved by the Department Head and reported to the Safety Officer before departure. The Departmental Representatives from CVM EH&S Committee will verify that the Principal Investigator has performed these functions.

5.C. Storage and Use of Hazardous Chemicals and Flammable Solvents

Policy

Hazardous chemicals and flammable solvents must be transported, handled and stored safely and in accordance with all applicable regulations and other legal requirements while in the CVM.

Responsibilities

Supervisor

- Ensures that necessary safety equipment (e.g., approved solvent storage cabinets, waste disposal container, etc.) is available and properly used.
- Provides adequate training to employees in the safe handling, transportation, and storage of hazardous chemicals and flammable solvents.
- Ensures the availability of proper safety equipment required for the safe performance of all work functions.

Employee

- Adheres to good laboratory practices for the safe handling, transportation, and storage of hazardous chemicals and flammable solvents.
- Obtains and utilizes equipment necessary for safe conduct of work.

Handling and Storage Procedures

Transportation

- All caustic or corrosive chemicals not packaged in a shatter-resistant container are to be stored and transported in an approved shock-resistant carrying device.
- When transporting caustic or corrosive chemicals by cart, all materials must be placed in approved carrying devices.

Storage

Flammable Solvents- The following items will be stored in approved, vented, solvent storage cabinets or vented areas below or adjacent to hoods:

- All containers of flammable solvents larger than half-gallons.
- All flammable solvent supplies, when cumulative amounts greater than two gallons are kept in one laboratory room. In general, no more than a one-day supply or one bottle of each solvent (whichever is greater) will be kept in each laboratory outside of a vented, safety cabinet.
- If refrigeration of flammable chemicals or mixtures is required, "Explosion Safe" laboratory refrigerators/freezers should be used.

Hazardous Chemicals - (including highly toxic, carcinogenic, mutagenic and teratogenic chemicals):

- Will be stored in areas approved by the supervisor and user.
- The area(s) used for storage of these materials will be stated in the Hazardous Agent Inventory.

Hoods - The area inside a hood is not be used for storage of hazardous chemicals or flammable solvents.

Pesticides - Proper safety equipment will be used in handling pesticides as recommended on the pesticide container label or as specified in the hazardous agent use protocol. Warning signs will be posted and the doors to the storage area kept locked.

5.E. Shipment of Hazardous Substances

Policy

Hazardous materials will be shipped in a manner consistent with the United States Department of Transportation (DOT) and International regulations and to ensure that personnel exposure, accident risk and potential contamination is kept to an absolute minimum.

Responsibilities

Supervisor

- Ensures that hazardous materials are shipped safely and according to regulations.
- Ensures that all employees involved in shipping hazardous materials are properly trained and instructed in the necessary procedures.

Employee

- Correctly package non-radioactive hazardous materials for shipment before bringing them to the Shipping Office. Method of transportation and packaging must conform to DOT and HAZMAT regulations.
- Completes necessary documentation (Shipper's Declaration for Dangerous Goods), to the extent possible, before hazardous materials are brought to the Shipping Office.

Departmental Representatives from CVM EH&S Committee

- Ensures general compliance with agency policies.
- Assists and advises when necessary or as requested.

Shipping Officer

- Ensures that documents, packaging and labeling comply with DOT and other pertinent regulations.
- Assists, when necessary, in completion of Shipper's Declaration for Dangerous Goods forms.
- Completes and signs final forms for shipment if necessary.
- Notifies proper individuals of potentially hazardous situations or regulation violations.
- Orders and maintains a stock of the proper labels, documents, containers and other materials required for the shipment of hazardous materials.

Shipping Procedure

- Properly label hazardous material container so labels will not come off or smear.
- If sample is liquid, use a container so leakage is impossible and allow space for expansion (shipment usually goes airfreight).
- If sample requires dry ice, pack to insure inclusion of proper quantity of dry ice and provide correct insulation and ventilation of carbon dioxide.
- If sample is radioactive, consult Radiation Safety Officer.
- Liquids and solids cannot be shipped in the same container and must be packaged separately.
- One set of forms is required for each shipping package, regardless of the number of packages sent to that destination. If more than one chemical compound is being sent in a single shipping container, list all the compounds legibly on the forms.
- Packaging kits for less than 50ml or 50gm per shipping container consist of: a primary container, a plastic bag, absorbent cushioning, a secondary container, and a shipping container. Tape, do not staple the plastic bag shut with the absorbent cushioning and the primary container inside.
- The Shipping Officer will take care of all labeling, but will inspect only the external packaging. The internal package will be inspected by the Shipping Officer only if they are personally responsible for the shipment.
- Note: Foreign shipments require special forms and arrangements. Contact the Shipping Office (2-4349) before making arrangements.

5.F. Controlled Drugs – Policy and Procedures

Purpose

The Controlled Substances Act of 1970 (PL-513) assigned the Drug Enforcement Administration (DEA) the responsibility for establishing policies and procedures for the ordering and using of certain drugs. This issuance summarizes these policies and procedures and establishes local procedures and supplemental policies.

Summary of DEA Regulations

- PL 91-513 identifies substances subject to controlled use by properly registered persons. The law classifies such substances into five schedules: I, II, III, IV, and V. Controlled substances sold through Sigma Chemical Company are listed in their catalog by schedule under "Forensic Chemistry".
- Persons who engage in research with controlled substances must either be properly registered with the DEA or obtain their materials in an authorized manner through another individual or organization so registered.
- Researchers must maintain records of the use of controlled substances, as indicated below.
- The procurement of controlled substances must be done in an officially approved manner as described below. This applies regardless of whether the substance is available at a cost or at no cost.
- All controlled substances must be stored in securely locked, substantially constructed cabinets or safes.

Controlled Substances

- The Controlled Substances Officer will be responsible for authorizing non-licensed members of the Department to receive controlled substances. The Controlled Substances Officer will determine: 1) whether or not the compound is in fact a controlled substance; 2) that controlled substances are needed for an approved study; 3) that the quantity ordered is consistent with the extent of the planned study.
- Individual investigators are responsible for maintaining records of the use of controlled substances as indicated below.
- The Controlled Substances Officer is responsible for maintaining current up-to-date listings of controlled substances and obtaining initial or renewal registration with the DEA.

Principal Investigator

- Individual investigators are responsible for maintaining records of the use of controlled substances as indicated below.
- After issuance of controlled substances, the investigator then becomes responsible for the appropriate control and use of materials issued.

Ordering, Receiving, and Issuing Schedules I-IV Controlled Substances

Ordering

- All controlled substances will be ordered by individually DEA licensed investigators. Records of issuing and receiving are maintained as for all controlled substances.

Receiving

- Controlled substances will be delivered unopened directly to the Controlled Substances Officer or the DEA Licensed Investigator. The Controlled Substances Officer or DEA Licensed Investigator will check the contents, sign for receipt of the order, and assume responsibility for the controlled issuance of the substance.

Issuing

- Some controlled substances will be maintained by the Controlled Substances Officer and issued on as-needed basis consistent with the requirements of the protocol. In order to issue a controlled substance to an investigator, the Controlled Substances Officer will require that the investigator's signature be on file indicating the transfer of the controlled substance. After issuance of controlled substances, the investigator then becomes responsible for the appropriate control and use of materials issued.

Records

EACH INDIVIDUAL AUTHORIZED TO RECEIVE CONTROLLED SUBSTANCES MUST ESTABLISH AND MAINTAIN A CURRENT AND ACCURATE LOG OF SUBSTANCES RECEIVED AND USED. STATE AND FEDERAL DEA OFFICIALS HAVE THE RIGHT TO AUDIT THESE RECORDS AND DRUG INVENTORY AT ANY TIME.

The Controlled Substances Officer and Licensed Investigator are required to keep the following records:

- Name of the substance;

- The unit of issue and the number of units received, issued, and on hand;
- The date and names of persons to whom issued;
- The proposed use of the substance; and
- Other appropriate information as to any of the substances used.
- Unlicensed Investigators should return unused materials to the Controlled Substances Officer.

Protocols

Any research protocols involving use of animals must be reviewed and approved by the Institutional Animal Care and Use Committee (IACUC) prior to the initiation of any research.

5.G. Hazard Communication Program

Policy

Compliance with the Occupational Safety and Health Administration's Hazard Communication Standard is required of all employees. This standard, also referred to as the Right-To-Know Law, was enacted to ensure that the hazards of all chemicals used in a workplace are evaluated and that the resulting information is made available to those employees who use the chemicals in question.

Responsibilities

Supervisor

- Is responsible for ensuring that all employees they supervise are made aware of all elements of the Hazard Communication Program and that they receive the necessary training needed to handle potentially hazardous chemicals.
- Ensures that the compliance List for Laboratory Safety is completed and returned to the Departmental Representatives from CVM EH&S Committee. This will serve as documentation that all required training was received or is being scheduled.

Employee

- Understands and complies with all phases of the Hazard Communication Program.

Departmental Representatives from CVM EH&S Committee

- Issues a copy of the KSU Hazard Communication Program to all new employees who may handle hazardous chemicals.
- Maintains training and compliance records including rosters of training sessions, annual reports, and chemical inventories.
- The Departmental Representatives from CVM EH&S Committee will also maintain training aids that can be utilized by the supervisors in their training efforts.

Hazard Communication Program

The KSU Hazard Communication Program is an integral part of the Health and Safety Manual and will be made available to all employees. The contents of the program are as follows:

- KSU's Written Hazard Communication Program.
- Notification of Employee Rights.
- Information on how to obtain Material Safety Data Sheets and to use the information contained in them.

- A glossary of terms used in Material Safety Data Sheets.

Employee Rights

- Employees have the right to information regarding known or suspected hazards of chemicals to which they are exposed. This information shall be disseminated by:
 - Container labeling that identifies the substance and the appropriate hazard warnings. Neither employers nor employees shall remove or deface existing labels unless they immediately replace the label with the required information.
 - Material Safety Data Sheets that will be readily available to employees and will be made available to an employee within five working days of a request.
 - Training which details how to work safely with hazardous substances. This instruction will be performed during the initial employment and whenever a new "hazard" is introduced into the work environment.
- Employees have the right to be informed of the location of operations where hazardous chemicals are present.
- CVM will not require employees to work with an unidentified hazardous substance unless health and safety information, and specific training has been provided.
- Employees may issue any complaints regarding this regulation with the:
 - Commissioner of Labor
 - Division of Occupational Safety and Health
 - North Carolina Department of Labor
 - 214 West Jones Street
 - Raleigh, NC 27603
- An employer may not discharge, discipline or otherwise discriminate against any employee or prospective employee because that person or their representative has exercised any right granted by the Act, made a claim, filed a complaint, or testified in any proceeding related to this Act. Nor shall any position, seniority or any other benefits be lost for such reasons.
- No employer shall request or require that an employee, former employee, or applicant for employment waive any rights granted under this Act.

Hazard Determination

CVM will rely on hazard determinations performed by the chemical manufacturers, importer, distributors, for those chemicals obtained commercially. EH&S may provide supplemental data where appropriate.

Hazardous Chemical Inventory

A hazardous chemical inventory has been done. The list is in a data system that will be maintained by the Environmental Health and Safety. Periodically, a printout will be sent to the individual laboratories. Purchase orders may also be checked. The information will be used to keep the inventory as current as possible.

Container Labeling

Those container labels provided by the chemical manufacturer, distributor, or importer shall be relied upon. As long as the chemicals are contained therein, the labels must not be removed or defaced. These labels and any other forms of warning must be (1) legible; (2) clearly identify the hazardous chemical (s) in question; and (3) list the necessary hazard warnings.

Employees are to inspect containers to determine if they are properly labeled. The Departmental Representatives from CVM EH&S Committee will assist in correcting inadequate labeling upon request.

Working solutions of potentially hazardous chemicals should be labeled with all of the information pertaining to the hazards. It is good laboratory practice, that the contents of all containers be identified. Bulk quantities of chemicals stored in drums must also be adequately labeled.

Material Safety Data Sheets (MSDS)

Investigators are responsible for maintaining material safety data sheets for commercially available chemicals. These MSDS will be available in the laboratories. They will be updated based on information received from the periodic inventory review and from a review of chemicals purchased.

Any employee can request a MSDS on a particular hazardous chemical found in CVM. Requests are made by contacting their supervisor or the departmental representatives from CVM EH&S Committee.

Other Forms of Warnings

Hazardous Chemical Agent Protocols

- As part of the laboratory's SOPs, the Hazardous Agent Protocol shall serve as a supplementary document for use of hazardous substances.

Laboratory Entrance Warning Placards

- Warning placards will be affixed to the doors of laboratory to alert personnel of specific hazards within laboratories. The areas of concern addressed by these placards are carcinogenic agents, biohazards, radioactive material, reproductive toxins, flammable solvents, corrosive materials, reactive chemicals, toxic chemicals, toxic gases, and emergency contacts.

Employee Training

- Specific training on handling chemicals is the responsibility of the supervisors. For new employees, citing hazard communications training and the initialing by both the individual and the supervisor on the new employee safety checklist shall serve as additional documentation.

5.I. Ethyl Ether **Policy**

Ethyl ether shall be stored in a manner that provides appropriate control of hazards resulting from its flammability, volatility, and potential formation of explosive peroxides.

Storage

Any laboratory using ethyl ether will limit its supply to the smallest amount necessary for uninterrupted research. Cans will be dated when opened and disposed of if not used within 12 months. All quantities should be stored in locked cabinets. If the cumulative amount is larger than 2 gallons, they must be kept in flammable solvent cabinets.

CHAPTER 6 – HAZARDOUS WASTE DISPOSAL

6.A. Hazardous Waste Disposal

Policy

Environmental Health and Safety will control the disposition of all hazardous chemical wastes generated at the college in accordance with OSHA, EPA and other regulations. For specific instructions on packaging, labeling, segregation, and minimization of waste please see the CVM Chemical Hygiene Plan or contact EH&S.

Disposal of infectious wastes is the responsibility of the investigator, supervising faculty and/or employee.

Responsibilities

Supervisor

- Ensures that all hazardous wastes generated at CVM are properly identified and safely packaged for pick-up by EH&S personnel so that they may be disposed of safely in accordance with the policies given below and with minimal effect on the environment.
- Evaluates work tasks and procedures to identify opportunities to prevent or minimize the generation of hazardous wastes. Implements waste minimization practices such as material recovery/reuse, efficient chemical purchases, material substitution, or equipment and process changes.

Employee

- Whenever possible, chemically modifies or deactivates hazardous waste materials such that they may be disposed of by incineration, reclamation and other alternatives to landfill etc. EH&S will assist, consult and advise when necessary.
- Follows the policies in this section regarding hazardous wastes disposal. Calls to the attention of the supervisor or EH&S any possible hazardous conditions resulting from the handling or storage of hazardous wastes.
- Properly packages all hazardous wastes according to the guidelines set forth by EH&S.
- Performs work tasks in a manner that minimizes the quantity or toxicity of hazardous waste generated.

Environmental Health and Safety

- Provides assistance in developing and approving proper waste handling, storage procedures, and equipment for these purposes.
- Provides for timely pick-up of hazardous wastes and/or instruct the employee in proper procedures for waste disposal.

Procedures for Disposal

The following are general guidelines for the preparation and disposition of radioactive, chemical and biological waste.

Radioactive Wastes

- Radioactive wastes should not be disposed of via the drain.
- All waste regardless of form should be separated by isotope to the extent possible. If multiple label experiments are performed, the waste should be separated by half-life to extent possible.
- Sharps should be placed in a proper container that is lined with a plastic bag. When the container is full, it should be sealed and labeled for pick-up.

- All radioactive waste should be labeled with investigator's name, estimated activity of each isotope, date and estimated amounts of any associated chemicals or scintillation fluids that may be present.
- Containers of liquid waste should be placed in large pans or other suitable secondary containers so if accidentally broken or if a leak occurs, the material will be retained.

Chemical Wastes

- No chemical wastes are to be flushed down the drain except with specific approval by Environmental Health and Safety.
- All chemical wastes must be clearly identified. If a used solvent/acid bottle is used for collection of solvents, a new label indicating the contents must be affixed to the container and the old label must be removed or crossed out.
- Pipettes, broken glass or other objects capable of puncturing plastic bags must be packaged by placing a plastic bag in a broken glassware box, hazardous material box or other cardboard container. The pipettes or other items would then be placed in the container. Once the container is ready for disposal, the top must be taped shut.
- In completing the waste pick-up form special attention should be paid to the following:
 - Abbreviations for proper chemical names will not be accepted
 - If the waste is a mixture (i.e. organic solvents), all components and approximate amounts of each constituent must be listed in order for that waste to be picked-up;
 - The PI's name must be on the container label.

Biological Wastes

- Except as otherwise provided, all laboratory specimens or materials consisting of, containing, or contaminated with infected animal tissues or fluids, as well as inoculated media, cultures, and other potentially infectious materials must be sterilized by autoclaving or by use of a chemical disinfectant before disposal.
- When there is no reasonable evidence to indicate that clinical specimens or other materials may contain an infectious agent, discarding into the sanitary sewer without sterilization may be permitted. If in doubt, consult Environmental Health and Safety. Materials that may be discarded directly into the sanitary sewer include:
 - Un-inoculated liquid mediums
 - nutrient fluids
- All glassware, pipettes, slides, etc., used in the examination or testing of biological materials must be autoclaved or chemically disinfected before being discarded or prepared for reuse. Single-use bottles, tubes, vials, and other biological specimen containers should not be placed in wastebaskets customarily emptied by janitorial personnel.
- Any material to be autoclaved must be clearly marked for autoclaving by packaging in orange autoclave bags.
- Hypodermic syringes and needles shall be discarded in suitable, puncture-resistant sharps containers which will then be taken to Necropsy.

Protocol for Disposal of Biohazardous Waste

- Biohazardous material will be placed in certified autoclave bags and the bags sealed with heat sensitive autoclave tape.

- Absolutely no sharps or glass will be put in autoclave bags for disposal. All sharps should be discarded in certified sharps containers.
- Biohazardous material will be transported to the necropsy autoclave in covered, waterproof, biohazard labeled containers. These containers should be used to store biohazardous material in the labs. Bags of biohazardous material should NOT be stored on the floor in the labs.
- All biohazard bags must be intact to be accepted for autoclaving. Broken or torn bags will not be accepted.
- The necropsy autoclave will be run twice a week on Monday and Thursday afternoons. Biohazardous materials will be accepted for autoclaving from 8:30 until 11:30 a.m. on those days. Investigators will be responsible for proper placement of biohazardous material in autoclave tubs. If you have any questions concerning proper disposal of biohazardous waste, please contact Tracy Weston at 2-4349.

CHAPTER 7 – BIOHAZARD SAFETY

7.A. Recombinant DNA, Infectious Agents, and Tumorigenic Materials

Policy

All research proposals involving recombinant DNA, Infectious Agents and/or tumorigenic material must be submitted to the Institutional Biosafety Committee (IBC) in the University Research Compliance Office. The registration document can be found at www.ksu.edu/research/ibc/form60.doc.

Projects involving animals must be submitted for approval to the Institutional Animal Care and Use Committee (IACUC) as well as IBC. The IACUC application form is available at www.ksu.edu/research/animal/iacuc/iacucfrm.doc.

Hazardous biological agents used in the department must be properly handled or disposed of so as not to constitute a health risk. Any accidents occurring in the presence of biological agents may result in infection. The majority of exposures result from more subtle causes such as the production of aerosols during routine laboratory procedures. When working with biological agents or materials containing biological agents whose epidemiology and etiology are unknown or incompletely understood, it should be assumed that the work presents a hazard. Certain biological agents infect both laboratory animals and humans. Safety procedures should be directed toward the prevention of infection in both laboratory animals and humans. To accomplish this goal, KSU requires that each investigator, desiring to work with a hazardous biological agent develop an Experimental Protocol describing the methods used for handling, containment and decontamination of the agent and exposed area and objects as well as describing the pathogenicity and public health aspects of the agent used. The Hazardous Biological Agents Use Protocol is then submitted to the IBC for review and approval or disapproval, prior to experimentation.

Responsibilities

Principal Investigator

- Submits an IBC Registration Document for all research projects and an IACUC application if animals are to be used. These must be completed and approved before any research can occur.
- Investigates all safety aspects of planned experimental work.
- Informs all individuals participating in the experiment of all potential hazards associated with the work.
- Ensures personnel working under the protocol obtain any necessary immunizations.
- Determines that all proposed recombinant and infectious agent projects have sufficient biological containment.
- Prepares procedures dealing with accidental spills and overt personnel containment.
- Advises staff of potential hazards.
- Ensures that work is done in the appropriate work area.

Employee

- Brings to supervisors attention potentially hazardous practices or situations.
- Conforms to NIH and CDC policies on recombinant DNA research and uses good safe laboratory practices.

Departmental Representatives from CVM EH&S Committee

- Assists, when necessary, in defining and eliminating safety hazards.

Recombinant DNA Guidelines

- Recombinant DNA and Infectious Agent guidelines are set forth by the Institutional Biosafety Committee and generally follow NIH and CDC guidelines.

Emergency Procedures

- The immediate area shall be evacuated, posted with appropriate hazard warning sign, and quarantined until appropriate biological or chemical assays indicate the absence of all biohazardous materials.
- Environmental Health and Safety shall be notified immediately.
- Humans and animals involved in the accident or affected area shall be quarantined until appropriate biological or chemical assays can predict a low level probability of infection.

CHAPTER 8 - ANIMAL FACILITIES

8.A. Animal Handling Facilities Policies

Policy

All use of animals in the department will be conducted safely and humanely and according to all applicable federal regulations. ARF facilitates animal use at the College of Veterinary Medicine at Kansas State University by providing high quality animal care in accordance with both federal and state regulations and AAALAC guidelines.

The KSU animals care and use program is in full compliance with the Animal Welfare Act (and its subsequent amendments) and the Health Research Extension Act of 1985.

Standards for housing and care of research animals at KSU meet or exceed these federal laws and guidelines. KSUCVM is accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care, International (AAALAC). Kansas State University utilizes the United States Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research and Training guidelines for appropriate animal use. Kansas State University files an Assurance Statement with the NIH Office of Laboratory Animal Welfare (OLAW) that assures our adherence to quality care and use principles in animal facilitated research and teaching. This document further demonstrates KSU commitment to regulatory compliance in its animal care and use program. Kansas State University is registered with the United States Department of Agriculture (USDA), Animal & Plant Inspection Service (APHIS) as an approved research facility.

All activities involving use of animals are overseen by the KSU Institutional Animal Care and Use Committee (IACUC), the University Research Compliance Office (URCO) and the Attending Veterinarian.

Responsibilities

Animal Resource Facility

- Ensures the general safety, handling, upkeep, etc. of the animal facilities.
- Provides for the training of investigators and associates involved in animal experiments.
- Acquires and houses animals.
- Maintains Federal paperwork as required by AWA.

Principal Investigator

- Conducts all animal work safely and in accordance with university policy and good safe laboratory practices.
- Completes all appropriate hazardous agent use protocols (i.e., radiation, chemical, biological agent or human materials) and animal study proposal before work is to be done.
- Receives approval from the University Research Compliance Office and the Institutional Animal Care and Use Committee (IACUC) before starting work. Application for Approval is available on the web at www.ksu.edu/research/animal/iacuc/iacucfrm.doc
- Coordinates personnel training, procurement of necessary safety equipment and procedures with the employees and with the manager of the Animal Resources Facility.
- Enrolls all research staff in the Occupational health and Safety Program.

Employee

- Conducts all animal work safely, humanely and in accordance with University policy and good safe laboratory practices.
- Reports to the supervisor, principal investigator, Departmental Representatives from CVM EH&S Committee or other authorities of unsafe or hazardous operations and recommending any improvements.

Procedures

General - Investigators and research associates working with animals are required to view Visual Training materials and complete on-line training modules on the Humane Care and Use of Animals in Research that are available for use by KSU personnel

through the Animal Resource Facility (ARF) at the College of Veterinary Medicine and on-line at www.ksu.edu/research/comply/iacuc/index.html. Inquiries regarding specific safety procedures with animals may be directed to the Director, Animal Resource Facility. Written documentation is maintained by the PI for training of special procedures involving animals and animal handling.

Safety Procedures in Animal Facilities

- This facility houses species used for routine studies. Persons entering animal rooms should put on protective clothing before entering. Minimally, this will be a clean lab coat and exam gloves. This protective clothing should be removed when leaving an animal room and properly cleaned. No protective clothing can be worn from one animal room to another.
- Special studies or conditions may require additional precautions before entering an animal room. These will be specified in the Hazardous Agent Protocol and/or Animal Study Proposal (ARF90), and indicated by the sign on the door of the animal room.
- Studies using hazardous agents also require a protocol detailing procedures to ensure the safety of technicians handling the animals.
- Contact the Director of ARF concerning transport of animals to the lab.

8.B. Animal Studies employing Toxic Substances, Radioisotopes and Biological Agents

Policy and Purpose

Use of toxic substances, radioisotope compounds, biological agents or human materials in animal rooms introduces potential exposure hazards for animal handlers, cage cleaners, and investigators. The degree of risk associated with a particular study is a function of many variables including toxicity of the compound, method of dose administration, dose and the presence or absence of toxic animal excretion products.

Prior to initiating a toxic substance animal study, an application must be submitted for approval to the Institutional Biosafety Committee (www.ksu.edu/research/ibc.form60.doc) and if Radioisotopes are used, to the Radiation Officer in Environmental Health and Safety. Approval must also be obtained from the Director of ARF before the study begins. Projects will be evaluated on an individual basis to determine the level of containment necessary for safe operation.

Chapter 9 – RADIATION SAFETY

9.A. Ionizing Radiation

(see [Kansas State University Radiation Safety Guide](#))

Policy

CVM policies and procedures for the use of radioactive materials and ionizing radiation sources are contained in the Kansas State University Radiation Safety Guide.

Responsibilities

The [Radiation Safety Guide](#) assigns individual responsibility and accountability for all uses of radioactive materials in CVM research and diagnostic activities.

Responsibility for management of the Kansas State Radiation Safety Program is assigned to EH&S. The day- to-day operation of the program is assigned to the Radiation Safety Officer who works under the general guidance of the Radiation Safety Committee. Each principal and individual user of radioactive material must demonstrate, through an appropriate level of training and experience, their ability to safely use and control all radioactive materials in their custody.

9.B. Non-Ionizing Radiation – Laser/UV

Policy

The use of non-ionizing radiation sources or equipment will be permitted only in a manner that is safe for all CVM employees and visitors. Non-ionizing radiation includes all sources of electromagnetic radiation with wavelengths greater than 0.16 μm .

Responsibilities

Supervisor

- Ensures that non-ionizing radiation sources or equipment are used safely.
- Ensures that all employees using laboratory areas are trained and instructed in the procedures necessary for safe operation of non-ionizing radiation sources and for working safely in the vicinity of such sources.
- Submits written procedures for using any non-ionizing radiation sources and equipment when requested to do so by Environmental Health and Safety.
- Furnishes or sees that proper eye and body protection is provided.
- Notifies medical personnel and Environmental Health and Safety in case of an accidental exposure to non-ionizing radiation.

Employee

- Follows instructions of the supervisor and conducts all work according good safe laboratory practices.
- Brings to the attention of the supervisor and Environmental Health and Safety any potentially hazardous sources of non-ionizing radiation or hazardous aspects of their operation.
- Provides for the repair of malfunctioning equipment which represents a potential hazard immediately or as soon as possible if specialists from the outside are required. Work is not permitted with a source of non-ionizing radiation which presents a potential hazard.

Environmental Health and Safety

- Assists the supervisor in defining hazardous operations, designating safe practices and selecting protective equipment.
- Reviews and approves written procedures for the use of non- ionizing radiation sources when required, before work is started.
- Keeps an inventory of all potentially hazardous sources of non- ionizing radiation and inspects them at least semiannually for proper functioning and proper use procedures.

References

A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields, NCRP Report No. 119 (1993). National Council on Radiation Protection and Measurements, Bethesda.

American National Standards Institute. Safety Levels with Response to Human Exposure to Radiofrequency Electromagnetic Fields, 300 KHz to 100 KHz.. ANSI C95.1-1982: New York, American National Standards Institute.

American National Standards Institute. Standard Safety Levels with Respect to Human Exposure to Radiofrequency Fields, 3kHz to 300 GHz. ANSI C95.1- 1991. New York, American National Standards Institute.

Laser Hazard Classification Guide - David A. Sleriez et. al. 1976. Department of Health Education and Welfare. Publication No. (NIOSH) 76-183.

Laser Safety Guide - Laser Institute of America. Fourth Edition. Cincinnati, Ohio (1977).

American National Standards Institute. Safe Use of Lasers. ANSI Z136.1-1993. New York, American National Standards Institute.

Procedures for Use of Non-ionizing Radiation Sources

Personal

- Proper eye protection must be worn when working with sources such as ultraviolet, laser and high intensity visible light which are capable of producing eye damage.
- Protective clothing must be worn with sources such as ultraviolet which are capable of producing skin burns.

General Laboratory

- Warning signs (see [Chapter 3-B](#)) are to be prominently displayed where hazardous sources of non-ionizing radiation exist.

Ultraviolet Radiation (see also [Chapter 4-F](#))

- UV sources should be placed out of the direct line of sight and highly reflective surfaces painted with low reflectance paint.

Laser Radiation

- Laser sources exist with outputs from the infrared to the UV. The eye is generally the most sensitive organ and the one that must be protected. However, ultraviolet and high power lasers may also be hazardous to the skin. In addition, high powered lasers may become fire hazards. The eye is transparent to radiation from 400 to 1,400 nm and is termed the ocular hazard region since the radiation incident on the cornea is focused on the retina.
- Lasers are classified by the American National Standards Institute (ANSI) in numbered classes where the higher the number the greater is the potential hazard.

CHAPTER 10 – MISCELLANEOUS SAFETY POLICIES

10.A. Electrical Safety Policy **Policy**

All electrical work will be conducted in a manner consistent with existing regulations and with good standard practices. This section establishes standards for most operations.

Responsibilities

Supervisor

- Ensures that all employees are properly trained and instructed in the safe operation of electrical equipment and aware of all hazards associated with the use of these electrical devices.
- Initiates any necessary administrative action required to enforce safety practices.

Employee

- Follows the CVM electrical safety policies and procedures and instructions of responsible supervisor.
- Brings to the attention of the supervisor and/or departmental representatives from CVM EH&S Committee potential hazardous situations such as discrepancies between instruction, procedures, policies and manual, faulty equipment, misapplication of device, etc.
- Electrical equipment known to be malfunctioning must be repaired or replaced before use. The repair must be initiated as soon as possible after the malfunction is noted.

Departmental Representatives from CVM EH&S Committee

- Assists supervisors in defining hazardous operations, designating safe practices and selecting proper application of devices.
- Evaluates potential electrical hazards during facility inspections to insure compliance with existing Institute policy and other safety guidelines.
- Requests support from Facilities on hardware and equipment testing, tagging out of unserviceable equipment, and taking corrective action where necessary.

Electrical Safety Practices

The following practices are to be followed by all employees:

Laboratory

- All electrical and electronic laboratory equipment should be visually inspected for electrical hazards before using.
- All electrical equipment must be grounded through power cords, frame grounding and/or grounding through wiring in conduit system. NOTE: Some power tools and instruments are now double insulated and do not require or need three pronged plugs.
- Laboratory equipment will be kept clear of electrical panel boards with the following clearances: 36 inches for 120/208 volts and 42 inches for 277/480 volts and up to 600 volt equipment.
- Operation of panel board circuit breakers by laboratory personnel is prohibited except in case of personal emergency, contact the Facilities for operation.
- When work is to be performed on electrical equipment, care must be taken to make sure the electrical source is turned off.
- Extension cords are intended only for temporary use with portable appliances, tools, and similar equipment that are not normally used at one

specific location. Extension cords are not to be used as a substitute for fixed wiring. Facilities will install receptacles when needed for new equipment.

Emergency Procedures

- In the event of a medical emergency (shock etc.) contact local Emergency Rescue Units (911), and direct Emergency Rescue Units to the scene. If there is a person nearby who has received First Aid/CPR training, he/she should be contacted immediately to give assistance.

10.B. Departmental Vehicle Operation

Policy

Departmental vehicles are to be operated in a safe manner consistent with local, state and federal laws. All accidents must be reported promptly according to procedures outlined below. The use of departmental vehicles is limited to necessary department business. Passenger vehicles may only be used as a people transport- NO ANIMALS, DEAD OR ALIVE. Only the truck may be used to transport animals.

Responsibilities

Driver's Supervisor

- Ensures that employees under his/her supervision who drive department vehicles possess a valid state driver's license.
- Ensures that vehicles are used only for official department business and carries only department employees who are authorized passengers.

Departmental Motor Pool Supervisor

- Oversees maintenance and repair of vehicles.
- Ensures that vehicles are equipped with a spare tire, jack, and lug wrench.
- Keeps a vehicle use log in each of the vehicles to track use.
- Oversees proper use of the vehicles.
- Keeps a calendar for reserving date and times for vehicle use
- Obtains permission from the Department Head when the vehicle is reserved for more than 24 hours by the same person.

Driver

- Uses the vehicle only for conducting official business of the department.
- Carries a valid state driver's license.
- Wears seat belt at all times while the vehicle is in motion. The driver shall also instruct all passengers to fasten their seat belts before the vehicle is in motion.
- Operates the vehicle in a safe manner conforming to traffic laws and road conditions. Smoking is prohibited in department owned or leased vehicles.
- Signs the vehicle out on the vehicle sign out sheet with the department.
- Reports any mechanical difficulties with the vehicle to the departmental motor pool supervisor.
- Fills out the vehicle use log which is kept in the vehicle. This information is necessary for KSU auditors.

Motor Vehicle Accident

In cases of accident:

- Stop immediately.
- Take steps to prevent another accident at the scene.
- Call a doctor or ambulance, if necessary.
- Notify police.

- DO NOT sign any paper or make any statement as to who was at fault.
- Obtain the name and address of each witness.
- Provide your name, address, place of employment, name of your supervisor, and upon request, show your state driver's license.
- Make notes of the following:
 - Registration information for other vehicle(s) (owner's name, tag number and state, serial number, and vehicle description).
 - Information on other driver (name, address, driver's license number, and expiration date).
 - Name and address of each person involved and extent of injury, if any.
 - Name and address of company insuring other vehicle(s).
 - General information such as location, time, measurements, weather, damage, etc.
- As soon as possible, notify your supervisor. If the vehicle is unsafe to operate, have it towed to the nearest garage or service station.
- If you are injured, submit Form PERS-17 and MFR, Standard Accidental Injury Report and Memo For Record to departmental Biosafety Personnel.
- Submit all reports and data to your supervisor within one working day.
- If you are injured have the police notify your supervisor who will assume your responsibilities for reporting the accident.
- Make sure that a police report is filed with a copy sent to the department.
- Upon receipt of the police report, the Department must complete an automobile loss notice and send the form and a copy of the police report to KSU purchasing.

10.C. Use of Corridors and Outside Walkways

Policy and Purpose

The Department will ensure that corridors in all buildings and outside walkways be maintained in such a manner that they are free of obstructions.

Fire codes and building regulations establish requirements for safe and adequate means of egress from buildings during emergencies. These codes and regulations maintain an exit path (i.e., corridors) which is free of obstructions and hazards. This precludes storage of materials or operation of equipment in building corridors, even though corridor widths are greater than code-specified minimum widths.

This section establishes CVM policy for the safe use of corridors in buildings occupied by CVM employees. The intent of this policy is to ensure that corridors provide for:

- a readily apparent, safe and adequate means by which building occupants may exit a building in the event of a fire or other serious emergency;
- adequate access and use by emergency personnel;
- the safe movement of people during normal daily use of the building; and
- the safe transportation of goods and materials.

Responsibility Supervisor

- Ensures that all employees under his/her direction are aware of and conform to this policy.

- Ensures that corridors and outside walkways in the vicinity of his/her workplace and staff are free of obstructions and are not used for storage.

Employee

- Uses appropriate areas and locations for the storage of equipment/supplies that will not impede safe movement of material or personnel.

Departmental Representatives from CVM EH&S Committee

- Enforces the corridor and outside walkway policy.
- Provides guidance or interpretation of the provisions of this policy.
- Conducts periodic inspections of departmental corridors for the purpose of advising each Lab of conditions requiring corrective action.
- Approves/disapproves requests for exceptions under this policy.

General Provisions

Corridors, hallways and outside walkways, aside from serving as passageways for personnel, equipment and supplies, function as avenues for building evacuation in the event of fire or other emergencies, quick admission of emergency personnel, and as convenient sites for fire alarm boxes, extinguishers, safety showers, eyewash stations, and other emergency equipment.

- No equipment or material shall be placed or stored in any corridor or outside walkway.
- When exceptions are granted, no material may block or impede access to doorways or other exits, telephone and electrical switch gear panels, safety showers, fire extinguishers, or fire alarm boxes.
- Compressed gas cylinders, empty or full, shall not be stored in any corridor.
- Items to be disposed of by the janitorial service should not be placed in corridors until the late afternoon, just prior to the end of the normal work day. They should be clearly marked as "TRASH".
- No hazardous material (i.e., chemicals, radioactive materials) or hazardous wastes shall be placed or stored in corridors. Orange bags are reserved for hazardous wastes and should never be placed in the corridors.
- Surface mounted fire extinguishers, bulletin or chalkboards, or similar items may extend into the clear space; however, displays which extend into the clear space by more than 4 inches are not permitted. Items shall have no sharp edges which could cause injury.

Laboratory Carts

This policy is not intended to prohibit the temporary use of the occasional laboratory cart which may be quickly moved by the occupants in order to provide full access. Carts shall be returned to the lab at the end of each day.

Elevator Lobbies

Elevator lobbies are a part of the path leading to the stairwell exits and are not for general storage.

Exceptions

Temporary exceptions will be allowed if needed for storage in corridors or walkways due to alterations or scheduled moves.

Penalties

Material or equipment found in violation of the provisions of this issuance will be subject to removal from the building by authorized personnel.

Abandoned Property

Abandoned property is defined as any property which is in an inappropriate location and has no known user. It can cause space, security, and safety problems. Supervisors are responsible for keeping abandoned property from cluttering corridors and building storage areas. Responsible persons may require that abandoned property be moved when it impedes the normal flow of traffic, creates a hazard, or for other reasons.

Loading Docks

The loading docks are for loading and unloading trucks. The docks are not to be used for material storage. Materials left on the dock shall be subject to removal if they impede movement of supplies and/or personnel egress from the building.

10.D. Office Safety

Policy

All work performed in CVM offices and administrative areas will be conducted using safe work practices. Office and administrative areas will be maintained free of recognized hazards.

Responsibilities

Supervisor

- The ultimate responsibility for office safety rests with the supervisor. All work hazards should be anticipated and appropriate safeguards utilized.
- Ensures all employees are properly trained and instructed in safe office practices and are aware of all hazards associated with their work.

Employee

- The employee follows the CVM health and safety policies and instructions of the responsible supervisor and brings to the attention of the supervisor and/or Safety Officer potential hazardous situations.

Departmental Representatives from CVM EH&S Committee

- Assists supervisors in correcting hazardous situations and designating safe working practices.

Safe Work Practices

- Guard the sharp edges of furniture to prevent personal injury. Keep desk "pull-out" writing surfaces closed when not in use.
- Practice good housekeeping. Keep floors free of items that might cause tripping. Keep waste cans out of the way; do not overfill them.
- Prevent slipping accident by cleaning up spills immediately.
- Report all defects such as loose tiles, broken steps, railings and doors immediately to Facilities (2-6711).
- Do not participate in horseplay.
- Keep razor blades, tacks, and other sharp objects in closed containers.
- Use the proper tool for the job at hand (e.g. a staple remover to remove staples).
- Do not overload electrical outlets. Do not plug a multiple outlet strip into a second multiple outlet strip.
- Report immediately, any damaged electrical cords, broken switches, loose connections, or bare wires to Facilities.

- Unplug any office machine that smokes, sparks, or delivers an electrical shock. Have it inspected by the appropriate repair personnel.
- KSCVM is a smoke free environment and smoking is prohibited inside all CVM buildings.
- Avoid overloading the top drawers of filing cabinets to avoid the possible tipping of the cabinet when the drawers are opened. Open one drawer of the file cabinet at a time to prevent tipping. File cabinets should be placed where their use will not interfere with office traffic patterns.
- Close file and desk drawers when not in use to prevent tripping accidents.
- Be sure to use proper lifting techniques. Make arrangements with personnel skilled in moving to shift furniture and other heavy objects.
- Do not lean too far back in chairs. This may result in a fall.
- Use only safety step stools or ladders for climbing. Don't stand on swivel chairs or use them as step stools.
- Be careful with flammable liquids. Only the quantity needed for use should be in the work place. They should be kept and used in a ventilated area, away from excessive heat or ignition sources.
- Book cases or file cabinets taller than 64 inches must be secured or anchored. Keep book case doors closed when not in use.
- Power switches must be off, or the cord unplugged, when electrical equipment, such as a typewriter, is being cleaned or serviced.
- Office doors shall be free of obstructions at all times to permit egress in case of an emergency.
- Jewelry, long hair, and clothing must be kept clear of the moving parts of all office machines.
- If it is necessary to run a cable or electrical cord across the floor, a cable cover must be used to protect the wiring and prevent tripping.
- Do not cover air vents or obstruct air flow from registers. Do not place furniture, equipment, or materials in locations that will interfere with air movement around thermostats.
- Report any observed pest control problems to Facilities. Never attempt to apply any pest control chemical yourself.

10.E. Safety and Health Program for Video Display Terminal Operators

Background

The proliferation of video display terminals (VDT) in the modern office setting has generated concern relative to potential health hazards associated with their use. There have been numerous operator complaints of a wide range of symptoms including headaches, general malaise, eye strain and other visual/musculoskeletal problems. The National Institute for Occupational Safety and Health (NIOSH) has investigated these complaints and made measurements of both ionizing (x-ray) and non-ionizing (ultraviolet, visible, and radio-frequency) radiation emissions from video display terminals. Results of these investigations were published by NIOSH in a research report entitled, "Potential Health Hazards of Video Display Terminals". Major findings of the NIOSH investigations were:

- all radiation measurements indicated exposures to be below current occupational exposure standards and, often, below detectable limits.
- eye strain experienced by video display operators was related to screen illumination and screen glare.

- Work station design such as viewing distance, screen height and keyboard height contributed significantly to operator musculoskeletal complaints.

Definitions

- Video display terminals include CRT terminals used for computer data or word processing. Data terminals and word processors are considered video display terminals.
- Video display terminal operators are CVM employees whose job duties require continuous use of VDT terminals for more than 3 hours per day or a total of more than 20 hours in a given week. Employees whose duties require only occasional or intermittent use of VDT equipment are not considered operators for purposes of these safety and health programs.

Policy - VDT operators will be provided appropriately designed work stations to minimize eye strain and to maximize operator comfort.

Responsibilities

Supervisor

- Maintains a current awareness of CVM VDT policies and procedures and certifies whether or not an employee meets the department's definition of a VDT operator.
- Provides appropriately designed work stations for VDT operators.

Employee

- Follows the Institute's VDT policies and instructions of the supervisor.
- Brings to the attention of the supervisor any potential problems associated with VDT operation.

Departmental Representatives from CVM EH&S Committee

- Assists supervisor and employees in correcting problems associated with VDT workstations.

VDT Program

Workstation Design

- CVM will provide office work stations which satisfy the following design features in accordance with NIOSH recommendations:
 - viewing distance 16-27 inches
 - viewing angle of 15-35 degrees
 - keyboard height of 28-30 inches
 - adjustable chair with lumbar support

Illumination/Glare Control

- Lighting levels in work areas will be set at the recommended levels for the specific equipment (e.g., office, lab). Measurements may be requested through EH&S.
- Individual work stations will be evaluated for glare upon request. Screen hoods and anti-glare filters will be installed as needed.

Work-Rest Regimens

- Video display operators will be allowed 15 minute break periods after two hours of **continuous VDT work**.

Visual Testing

- VDT operators who experience eye strain should have eye tests consistent with minimum optometric testing standards recommended by the American Optometric Association and consistent with NIOSH recommendations.