

## TABLE OF CONTENTS

### **EMERGENCY PROCEDURES**

Emergency Telephone Numbers .....	3
Emergency Telephone Locations .....	4
Fire Emergency & Evacuation Procedures .....	5
Medical Emergencies .....	5
Non-Emergency Care .....	6
Chemical Spill Response .....	6
Chemical/Radiation Emergency Line .....	6
Biological Radiation Emergency .....	7
Bomb Threat Emergency .....	7
Unusual Event Reporting .....	8

### **RESPONSIBILITY FOR SAFETY**

Faculty, Employees, Volunteers, and Students .....	9
Supervisors .....	9
Patients and Visitors .....	9
Chairman of Academic Units/Directors of Non-Academic Units .....	9
Faculty and Staff Liability .....	9
<u>University Safety Committees</u> .....	10
VCUHS Environment of Care Committee .....	10
University Safety Liaison Committee .....	10
Radiation Safety Committee .....	10
Institutional Biosafety Committee .....	10
Institutional Review Boards .....	10
<u>VCU/VCUHS Safety Support Services</u> .....	11
VCUHS Safety and Security .....	11
Office of Environmental Health & Safety (OEHS) .....	11
VCUHS Plant Operations .....	11
VCU Campus Police .....	11
VCUHS Risk Management Office .....	11
Employee Health Services .....	11
Safety Policy - Supervisor's Responsibilities .....	12

### **GENERAL SAFETY PROCEDURES**

Non-Emergency Telephone Numbers .....	13
Chemical Safety .....	14
<u>Hazard Communication Overview</u> .....	14
I. Material Safety Data Sheets .....	15
II. Labels and Other Forms of Warning .....	16
Safe Handling of Chemicals .....	16
Chemical Waste Disposal .....	17
<u>Hazard Communication Program</u> .....	18
I. Hazardous Chemical Inventory .....	18
II. Material Safety Data Sheets (MSDS) .....	18
III. Labels and Other Forms of Warning .....	19
IV. Workers Right-To-Know Information & Training .....	19
V. Non-Routine Tasks .....	20
VI. Unlabeled Pipes .....	20
VII. On-Site Contractors .....	20
VIII. Program Review .....	20
Chemical Inventory List & Information Sheet (Form).....	21
Employee Training Records (Form).....	22
Employee Right to Know (Brochure) .....	23
Worker's Right To Know Statement (Form) .....	26
<u>Laboratory Safety Program</u> .....	28
I. Chemical Hygiene Plan.....	28
II. Hazardous Chemical Inventory List .....	29
III. Material Safety Data Sheet (MSDS) .....	29
IV. Labels and Other Forms of Warning .....	29
V. Program Review .....	29

Laboratory Safety Guidelines.....	30
Asbestos Program .....	31
Ethylene Oxide Program .....	32
Formaldehyde Program .....	32
Glutaraldehyde (Cidex) Program .....	33
Lead Program.....	33
Mercury Handling Procedures .....	33
Nitrous Oxide Program .....	34
Respiratory Protection Program .....	34
Biological Safety .....	35
Pregnancy Policy, Mutagenic, Teratogenic and Infectious Agents.....	36
Bloodborne Pathogens .....	36
Indoor Air Quality .....	36
Odor Complaints .....	36
Compressed Gas Safety Guidelines .....	37
Chemical/Biological Safety Training .....	40
Fire Safety .....	41
General Fire/Emergency Evacuation Procedures .....	41
Fire Extinguishers .....	43
Occupational Safety .....	44
Reporting of On-The-Job Injuries/Illnesses .....	44
Proper Lifting Techniques .....	45
Personal Safety Precautions .....	46
VCUHS Safety and Security Office .....	46
VCU Campus Police .....	47
Emergency Telephones .....	47
<u>Hazardous Energy Control (Lockout/Tagout) Program Policy .....</u>	<u>48</u>
I.    Purpose .....	48
II.   Scope .....	48
III.  Responsibility .....	48
IV.  Energy Control Procedures .....	49
V.    Training and Communication .....	49
APPENDIX A .....	50
APPENDIX B .....	51
Confined Space Entry Policy .....	55
Safety Audit Guidelines .....	58
<u>Electrical Safety Guidelines .....</u>	<u>58</u>
I.    General Electrical Safety Guidelines .....	58
II.   Unsafe Devices .....	58
III.  Portable Space Heaters .....	59
Safe Use & Storage of Flammable Guidelines .....	60
Holiday Decorations Guideline .....	61
General Safety Guidelines for All Areas .....	62
Safety Guidelines for Administrative & Office Areas .....	62
Environmental Services Safety Guidelines.....	63
Food and Nutritional Services Safety Guidelines .....	66
Shop Safety Guidelines .....	67
Hot Works Permit Program .....	70
Hot Works Permit (Form) .....	71
Interim Life Safety Measures (Forms & Checklist).....	73
Transportation Safety Guidelines .....	77
Fire and Occupational Safety Training .....	77
<b><u>RADIOACTIVE MATERIALS</u></b> .....	
Radiation Safety Training .....	78
Radiation Safety Program.....	78
Procedure for Obtaining Approval for Use of Radioactive Materials or Radiation Producing Devices in Humans .....	80
Radiation Emergency Plan .....	84
<b><u>DEPARTMENTAL SAFETY PROGRAM</u></b> .....	<b>85</b>
Safety Audit Checklist .....	88

<b>EMERGENCY TELEPHONE NUMBERS</b>
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**VCUHS Medical Campus 24-HOURS**

<b>VCU POLICE</b>	<b>828-1234</b>
<b>VCUHS SAFETY &amp; SECURITY</b>	<b>828-4300</b>
<b>FIRE / Dr. Red</b>	<b>*50</b>
<b>AMBULANCE</b>	<b>*50</b>
<b>CARDIAC INCIDENTS / Code Blue</b>	<b>*50</b>
<b>POISON CONTROL</b>	<b>828-9123</b>
<b>CHEMICAL SPILLS</b>	<b>*50</b>
<b>RADIATION EMERGENCY</b>	<b>828-9834</b>
<b>BOMB THREAT / Dr. Black</b>	<b>Depress same incoming line, Dial *97 (This activates call tracing) Then call *50</b>
<b>UTILITY FAILURE / Dr. Current</b>	<b>*50 or 628-4772</b>
<b>LOSS OF MEDICAL GAS / Dr. Gas</b>	<b>*50 or 628-4772</b>
<b>FLOODING / Dr. Wet</b>	<b>*50 or 628-4772</b>
<b>TELEPAGE / VCUHS Pager System</b>	<b>*60 or 828-0951</b>
<b>URGENT PAGE</b>	<b>*50</b>
<b>VCUHS EMERGENCY ALERT</b>	<b>*50</b>

## EMERGENCY TELEPHONE LOCATIONS

Emergency Response Telephones (ERTS) are located throughout the campus and in VCUHS and VCU parking decks. The inside telephones are red, the outside phones are located in blue or yellow boxes and have a flashing yellow light above them. To contact the police in an emergency, you need only to remove the phone from the cradle or push the button as indicated.

All emergency phones are location specific, to identify the caller's location. If there is no communication once a call has been placed, a uniformed police officer will be dispatched to the location of the telephone. To locate the phones near your office call 828-1196.

### ERTS Phones Medical Campus

#### **Sanger Hall / MEB** (1101 E. Marshall)

- \* Outside Marshall St. Entrance
- \* A-Ramp
- \* 11<sup>th</sup> St. Entrance Lobby
- \* 2<sup>nd</sup> Floor Bridge to Nelson Clinic
- \* B-2 Tunnel Entrance to A.D. Williams  
(on A.D. Williams side)
- \* B-2 Morgue Entrance
- \* Loading Dock Entrance

#### **West Hospital** (1200 E. Broad St.)

- \* 9<sup>th</sup> Floor Prison Ward
- \* Tunnel

#### **A.D. Williams** (1201 E. Marshall St.)

- \* 4<sup>th</sup> Floor Bridge Going to Sanger 2<sup>nd</sup> Floor
- \* Tunnel
- \* Each Level

#### **Medical Sciences Bldg.** (1225 E. Marshall St.)

- \* Main Entrance
- \* Each Floor to Right of Elevator

#### **Nursing Education** (1220 E. Broad St.)

- \* Front Door

#### **Clinical Support Center** (401 N. 13<sup>th</sup> St.)

- \* Oxygen Delivery Entrance

#### **Ambulatory Care Center** (N. 11<sup>th</sup> & E. Clay St.)

- \* Main Entrance (VCUHS Security Only)

#### **Nelson Clinic** (401-409 N. 11<sup>th</sup> St.)

- \* 11<sup>th</sup> St. Entrance
- \* Marshall St. Deck Entrance

#### **Smith Building** (410 N. 12<sup>th</sup> St.)

- \* 1<sup>st</sup> Floor Student Lounge

#### **Lyons Building** (520 N. 12<sup>th</sup> St.)

- \* Outside Main Entrance

#### **Cabiness Dormitory** (600 N. 8<sup>th</sup> St.)

- \* Front Door

#### **Bio-Tech III** (701 N. 5<sup>th</sup> St.)

- \* Parking Lot Entrances

#### Parking Lots and Bus Routes

##### **12<sup>th</sup> St. Bus Stop** (300 Block N. 12<sup>th</sup> St.)

#### **D-Deck** (515 N. 13<sup>th</sup> St.)

- \* Lower levels
- \* Upper Levels

#### **Patient/Visitors Deck** (1220 E. Clay St.)

#### **N-Deck** (615 N. 10<sup>th</sup> St.)

- \* Southwest Corners
- \* Northwest Corners
- \* Northeast Corners

#### **I-Lot** (800 N. 7<sup>th</sup> St.)

#### **VA Parking Lot** (16<sup>th</sup> & E. Broad St.)

- \* 3<sup>rd</sup> Telephone Pole to Left of Entrance)

## Fire Emergency & Evacuation Procedures *Upon Discovering A Fire or Smoke:*

### **R A C E R**

**R**emove anyone in immediate danger. If the fire is in a patient's room, remove the patient and CLOSE THE DOOR TO THAT ROOM.

**A**ctivate the alarm by pulling the nearest fire alarm pull station. Call the emergency number, \*50, give any information that you have.

**C**lose all doors. Have patients and visitors remain in their rooms and close the doors. Each patient room is equipped with a fire rated door and is designed to protect the patient in the room.

**E**xtinguish the fire if you have been trained to do so and if the fire is small and has not spread beyond the point where it started.

**R**elocate patients to a safe area when instructed to by the Administrator on call or a Fireman on the scene.

Personnel must account for patients on the floor and identify how they will be relocated. Relocate patients in rooms next to the fire to another room. If the area is full of smoke, move patients behind a smoke barrier. Move patients down the stairs only when the entire floor is filled with smoke. VCUHS Administration will provide relocation sites once they arrive.

Move ambulatory patients first, then patients on stretchers and wheelchairs.

If you must move patients by the elevator, Hospital Administration and Richmond Bureau of Fire will let you know which elevators to use.

Refer to the **VCUHS Emergency Preparedness Plan** for a full evacuation plan.

## **MEDICAL EMERGENCIES**

### **Cardiac Incident**

There are special teams that have special training and equipment who respond to cardiac emergencies in the VCUHS Hospitals' buildings. Call the emergency number (\*50) and indicate if the emergency involves a child or adult. (All other campus locations use 828-1234.)

## **INJURIES**

### **Emergency Care for Employees, Students or Visitors**

Cases requiring emergency care (severe burns, heavy bleeding, unconscious, fractures) are to be taken to the Emergency Department on the Ground floor of the VCUHS Main Hospital. If transportation is needed:

- Dial \*50 or 828-1234 for an ambulance
- Give the exact location of the injured person
- Number of people requiring transport
- Description of the injury/illness.

## NON-EMERGENCY CARE

### Employees, VCUHS and VCU

Employee Health Services (call 828-0584) provides medical treatment to employees who are injured on the job or acquire an occupational illness. Employees may be seen Monday through Friday from 8:30 a.m. to 4:00 p.m. After hours, injuries can be treated in the VCUHS Emergency Department.

If an employee should incur a work-related injury or occupational disease, they **must notify their supervisor as soon as possible** so they do not forfeit any rights they may have to Workers' Compensation. The employee and supervisor are both required to complete the University's Accident Report of Workers' Compensation Claim form, **P-100**, or the VCUHS Occupational Accident Report form, **P-1352**, **within 24-hours** of the accident/illness.

## CHEMICAL SPILL RESPONSE

VCU and VCUHS have a response program to help employees prepare for an event involving a hazardous material emergency. Each department or unit is responsible for handling emergencies within their own work environments. Emergency preparedness plans should be developed and communicated to all affected employees prior to an emergency occurring. Specific emergency assistance is available through the Office of Environmental Health and Safety.

Report any spills of hazardous chemicals immediately by calling the **Chemical / Radiation Emergency Line at 828-9834**.

Properly trained personnel will be available to evaluate and offer technical assistance to facilitate the cleanup of the spill. Be prepared to provide a description and location of the incident including the identity of the hazardous material and the extent of any personnel contamination. Appropriate chemical spill kits must be maintained on the unit/department for chemicals requiring special clean-up and disposal procedures. Do not call Housekeeping to manage these situations. If a spill does occur, the following general procedures may be used, but should be tailored to fit the individual needs of the unit's/department's Emergency Response Plan:

1. **Implement the unit's/department's Emergency Response Plan.**
2. Attend to any persons who may have been contaminated. Chemical spills on the skin or eyes must be treated immediately.
3. Notify persons in the immediate area about the spill.
4. Evacuate all nonessential personnel from the spill area.
5. Refer to the appropriate material safety data sheet and if the spilled material is flammable, turn off ignition and heat sources.
6. Avoid breathing vapors of the spilled material. If necessary, use an appropriate respirator, if approved to do so; otherwise, evacuate the area.
7. Leave on or establish exhaust ventilation if it is safe to do so.
8. Secure the supplies necessary for the cleanup. Most small liquid spills (<100 ml.) can be absorbed with paper towels, sand or an absorbent.
9. During the cleanup operation, wear appropriate protective equipment.
10. Notify OEHS if a hazardous material is involved.

After the cleanup of a chemical spill, all materials, including any paper towels used in the cleanup, must be disposed of as waste, according to the policies for Chemical Waste Disposal found in this manual. Particular care should be exercised in handling the absorbent materials used in the cleanup of flammable liquids to protect against potential fire hazards.

## Biological / Radiation Emergency

VCU has a response program to help employees when a hazardous material or radiation emergency occurs. If you are involved in an incident, or observe one, there is a 24-hour number to call.

Calling the Service Response Center (SRC) at 628-4772 will activate the University's chemical/radiation emergency response system. When you call, please provide the following information:

- \* Your name and telephone number.
- \* A description of the incident - is the incident life threatening?
- \* The location of the incident.
- \* Identity of the hazardous or radioactive material involved in the incident.
- \* Extent of personnel contamination.

## Bomb Threat Emergency

**Depress same incoming line, dial \*97** (This activates call tracing)

Then call **\*50** with the following information:

- Your name
- Your department
- Your building and room number
- Time of the call
- Wording of the bomb threat
- Section of the building involved
- Size and shape to the package used
- Type of fuse
- Sex of the person making the call
- Background noises heard

Follow the directions given by the VCUHS Safety and Security Officers and/or VCU Police who respond to your call.

**VCUHS has specific policies and procedures dealing with bomb threats in healthcare facilities. Refer to the VCUHS Internal Emergency Preparedness Plan (Dr. Black).**

## Unusual Event Reporting

### VCUHS

The VCUHS Department of Risk Management is a resource available to all staff for handling undesirable events that may occur during the delivery of health care services. The Department of Risk Management serves as a liaison with the facilities' liability insurance carriers and claims management staff. The following events need to be reported, as soon as possible, to the Department of Risk Management:

1. Any unusual event that occurs to a patient or visitor. The procedure for completing the "Report of Unusual Occurrence" can be found in the VCUHS Policy Manual, Policy 7204.03. Serious events must be reported to **828-1707**, or pager **#6107** immediately.
2. Any lost or damaged patient property needs to be reported in accordance with VCUHS Policy 7204.03.

## **RESPONSIBILITY FOR SAFETY**

### **Faculty, Employees, Volunteers, and Students**

Faculty, employees, volunteers, and students should be aware of all safety procedures for their particular area in addition to those in this manual which apply. They should report accidents, injuries, or unsafe conditions either to the supervisor or the appropriate university office. It is hoped that all faculty, employees, volunteers, and students will maintain a positive attitude toward safety at all times.

### **Supervisors**

Supervisors play a major role in providing a safe environment for students, patients, visitors, and employees. Refer to the separate policy statement at the end of this section.

### **Patients and Visitors**

Patients and visitors are responsible for following all posted safety regulations and the directives of authorized personnel in matters which pertain to safety.

### **Chairman of Academic Units/Directors of Non-academic Units**

Each chairman/director is responsible for the safe operation of their unit. The chairman/director is to appoint a safety committee consisting of a cross section of the unit (faculty, technical and non-technical staff, and students), which shall develop safety rules, including special procedures and precautions for any and all laboratories. Included in the responsibility is assessing the need for personal protective equipment and providing the equipment where required.

### **Faculty and Staff Liability**

Recent court decisions have established that the faculty and staff of an institution may be personally and legally liable for the accidents of students and employees under their supervision, if the accident results from their negligence, or if the accident causes personal injury or property loss. Liability may also arise from the failure of a superior to adequately supervise a subordinate or failure to establish and implement proper rules of conduct for the unit.

All personnel should be aware of the fact that they may be liable not only for their own acts or failure to act, but in many cases may be personally responsible for the acts or failure to act of others under their supervision.

Employees who are injured at work as a result of failure to use safety equipment or otherwise fail to comply with safety policies and procedures, may not be eligible for workers' compensation. VCUHS staff are subject to VCUHS policies and will be subject to discipline for failure to comply with safety guidelines. In addition, classified and other University employees violating the University's safety policies/procedures may be disciplined under the State's Standards of Conduct, which could result in suspension or termination from employment.

## University Safety Committees <sup>1</sup>

### 1. **VCUHS Environment of Care Committee**

This committee provides a safe, functional, supportive and effective environment for patients, staff members, and other individuals in the hospital. In order to achieve this goal, VCUHS utilizes the following processes:

- Strategic and ongoing master planning by hospital leaders for the space, clear circulation of occupants, equipment, supportive environment and resources needed to safely and effectively support the services provided.
- Educating the staff about the role of the environment in safely, sensitively and effectively supporting patient care.
- Developing standards to measure staff and hospital performance in managing and improving the environment of care.
- Implementing plans to create and manage the hospital's environment of care.

### 2. **University Safety Liaison Committee<sup>1</sup>**

This committee is composed of university faculty and staff who have expertise in safety. The committee is responsible for developing policies and guidelines relating to safety for the entire institution. The committee is composed of the Director of the Office of Environmental Health and Safety (Chair), Director Physical Plant Division, Director of Campus Police, Director of Employee Health, the VCUHS Safety Officer and others deemed appropriate by the Chair. The committee is responsible for developing policies and university safety guidelines. Annually the committee receives nominations for the "University Safety Awareness Award." Those individuals or departments making an outstanding contribution to the safety of the university and academic medical center are recognized.

### 3. **Radiation Safety Committee<sup>1</sup>**

Various members of the university and hospital community serve on this committee. The committee reviews and approves all research and clinical, human and non-human uses of radionuclides and radiation producing devices.

### 4. **Institutional Biosafety Committee<sup>1</sup>**

This committee has been established to review control practices for handling biohazardous agents, carcinogens, infectious agents, and recombinant DNA. The committee also serves in an advisory capacity to the University Office of Environmental Health & Safety. The committee is composed of individuals from different university departments and units.

### 5. **Institutional Review Boards<sup>1</sup>**

(Committee on the Conduct of Human Research) This committee is composed of faculty members and three non-VCU affiliated individuals. It is responsible for protecting the safety and rights of persons involved as subjects in research at the university.

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<sup>1</sup>For information about VCU Safety Committees, contact Environmental Health & Safety 828-6347.

## VCU and VCUHS

### Safety Support Services

- 1. VCUHS Safety & Security Department**  
The VCUHS Department of Safety & Security is responsible for maintaining a comprehensive safety program that assures a safe and secure environment for patients, visitors and staff. The department provides security surveys, patient information assistance and escort service during the evening hours.
- 2. Office of Environmental Health and Safety (OEHS)**  
The OEHS is responsible for a number of areas of safety including the following: radioactive materials and radiation producing equipment; infectious agents; mutagenic, oncogenic, and teratogenic agents; recombinant DNA; areas related to the handling of biohazards, fire and occupational safety. This office provides a number of services relating to environmental safety including consultation, training and inspections.
- 3. VCUHS Plant Operations**  
VCUHS Plant Operations is responsible for maintaining VCUHS buildings and facilities. This department is also responsible for providing preventive maintenance.
- 4. VCU Campus Police**  
The VCU Campus Police are responsible for answering police calls, patrolling both campuses providing crime prevention assistance, and investigating crimes. The security division provides guard service for various buildings and escort service during the evening hours.
- 5. VCUHS Risk Management Department**  
The VCUHS Risk Management Department is responsible for providing risk management services to include development of systems to provide risk prevention and assessment, risk control, and claims management. This department also works with regulatory compliance and performance improvement to ensure organizational compliance with federal, state and local regulations.
- 6. Employee Health Services**  
Employee Health Services screens new employees to detect active infectious diseases, establishes baseline data for infectious disease control, and provides medical surveillance of employees working with potentially significant biohazardous, chemical carcinogens, and toxins. Employee Health Services also provides evaluation and treatment of occupational injuries and illnesses.

### **Safety Policy - Supervisor's Responsibilities**

By definition, anyone who has responsibility to direct, power to control, or authority to hire, transfer, suspend, layoff, recall, promote, assign, reward, discipline, and respond to grievances, or to effectively recommend such actions, is considered a supervisor. All individuals who are employed in a supervisory capacity are responsible for:

1. Being thoroughly familiar with and practicing the safety policies and procedures related to their area.
2. Identifying the need for and developing procedures designed to enhance safe working practices and reduce the incidence of employee injuries.
3. Ensuring that all available safety equipment is utilized.
4. Enforcing safety policies and procedures for their area either by counseling employees who fail to follow safety procedures and/or by taking disciplinary actions as set forth in "Standards of Conduct"(or applicable VCUHS policies).
5. Ensuring employees are made aware of safety policies and procedures and any changes, which affect them.
6. Conducting periodic inspections of the work area to identify hazardous conditions.
7. Reporting dangerous or potentially dangerous situations to administrative personnel for corrective actions.
8. Measuring the extent the employee follows established safety practices or correcting the employee's unsafe work practices on the job.

## **GENERAL SAFETY PROCEDURES**

### **Non-Emergency Telephone Numbers (Safety Resources)**

<b>VCUHS SAFETY &amp; SECURITY</b>	<b>828-4300</b>
<b>CHEMICAL &amp; BIOLOGICAL SAFETY</b>	<b>828-4866</b>
<b>VCUHS EMERGENCY DEPARTMENT</b>	<b>828-9151</b>
<b>EMPLOYEE HEALTH SERVICE</b>	<b>828-0584</b>
<b>ENVIRONMENTAL HEALTH AND SAFETY</b>	<b>828-6347</b>
<b>FIRE / OCCUPATIONAL SAFETY</b>	<b>828-7899</b>
<b>POLICE (Non-emergency number)</b>	<b>828-COPS (828-2677) or 828-1196</b>
<b>SECURITY ESCORT SERVICE</b>	<b>828-WALK</b>
<b>RADIATION SAFETY</b>	<b>828-9131</b>
<b>REPAIRS (Service Response Center)</b>	<b>628-4772</b>
<b>RISK MANAGEMENT (VCUHS)</b>	<b>828-1707</b>

## Chemical Safety

Chemical safety has become a large part of modern life. There are more than one million different man-made chemicals currently used in this country every day. Many more are introduced every year. We use chemicals not only at work, but at home as well. Cosmetics, cleaning solvents, medicines, and even the food we eat are made up of chemicals. Some chemicals such as explosives, solvents, and strong acids or bases can be extremely harmful if not handled properly. Others are relatively safe. The first step in avoiding physical harm from chemicals with which you come in contact, is to become aware of their associated hazards.

Chances are, as an employee of VCU/VCUHS, you will work with chemicals in some way. Typical uses range from a laboratory technician who utilizes hundreds of chemicals to office personnel who may use correction fluid, copy machine toner or various cleaning agents. No matter who you are or where you work, carelessness with chemical products may result in serious injury or even death. It is essential that all employees discuss with their supervisors the types of chemicals they will be using on the job and the hazards associated with this use. Remember, chemicals can be anywhere and in order to handle them safely, you must be aware of the hazards they present.

## Hazard Communication Overview

Hazard Communication, also known as the “Worker’s Right-To-Know” standard is a federal law, which guarantees that all U.S. workers will be informed about workplace hazards. Employees must be told how to prevent injury from exposure to hazardous chemicals found within their work environment.

VCU and VCUHS under the direction of the Office of Environmental Health and Safety (OEHS) have instituted a Hazard Communication Program. This is an effort to comply with regulations mandated by the Occupational Safety and Health Administration (OSHA). The following items are required under OSHA’s Hazard Communication Standard:

- Each Unit/Department or work area must maintain a comprehensive chemical inventory of all hazardous materials found within that respective Unit/Department. (The list must be updated as often as necessary to keep it current.)
- Material Safety Data Sheets (MSDS) are to be maintained for each chemical listed on the chemical inventory. Copies of the MSDS must be accessible to all employees during all shifts.
- All containers of hazardous chemicals must be labeled with the chemical or product name and the appropriate hazard warnings of the product.
- A written program/plan must be developed to describe how compliance with the Hazard Communication Standard will be achieved.
- Employees must be informed of the chemical hazards in their work place, how to protect themselves from these hazards, and what to do in the event of an emergency. Employees must also be informed of the requirements of the Hazard Communication Standard.

## I. **Material Safety Data Sheets (MSDS)**

OSHA requires that manufacturers of chemical products provide consumers of those products with Material Safety Data Sheets (MSDS). An MSDS can answer the following questions regarding the chemicals you work with:

- Chemical and common names of all ingredients which contribute to known hazards and common name(s) of the mixture itself.
- Physical and chemical characteristics of the hazardous chemicals.
- Physical hazards (potential for fire, explosion, etc.)
- Known acute and chronic health effects and related health information.
- Primary routes of entry into the body (inhalation, absorption, ingestion, etc.).
- Information on exposure limits.
- Information on whether the hazardous chemical is considered a carcinogen by OSHA, the International Agency for Research on Cancer, or the National Toxicology Program.
- Precautions for safe handling.
- Generally acceptable control measures (i.e., engineering controls, work practices, personal protective equipment, etc.).
- Emergency and first aid procedures.
- Date of MSDS preparation or latest revision.
- Name, address, and phone number of person responsible for preparing/distributing the MSDS.

Units/Departments must maintain an accurate collection of MSDS for each substance found on the chemical inventory. MSDS are resources which can help one better understand safe handling of a chemical substance. MSDS must be reviewed by all employees to help them fully understand the associated health hazards. MSDS are not to be used to manage an emergency. Emergency procedures must be anticipated, planned for, and reviewed before an incident occurs.

MSDS may be obtained in a variety of ways. Units/Departments may contact OEHS at 828-1392 for assistance. Requests for MSDS must include: chemical name, product number, and manufacturer's name, address, and phone number. The MSDS may have been shipped directly with the product. MSDS may be accessed via the Internet or other computer media; however, hard copies must be readily available to unit/departmental employees. MSDS can be obtained directly from the manufacturer or distributor, and many companies will fax an MSDS immediately upon request.

## II. Labels and Other Forms of Warning

OSHA requires that manufacturers of chemicals label their products with the following information:

- Identity of the hazardous chemical.
- Appropriate hazard warnings.
- The name and address of the chemical's manufacturer, importer, or other responsible party. In addition, some labels will provide information regarding:
  - How to avoid injury (i.e., avoid exposures to skin).
  - Instructions on how to contain a leak or spill.
  - Handling and storage information.
  - First aid information.

If one transfers chemicals to other containers (i.e., spray bottles), these containers must also be labeled with the identity of the chemical and the appropriate hazard warning information.

### Safe Handling of Chemicals

The following guidelines should be practiced when handling chemical substances:

- Wash your hands thoroughly after using chemical substances and especially before going on breaks or to lunch.
- Ensure all containers are properly labeled. Only use products you are absolutely sure you know how to use safely.
- Dispose of unused, old, or outdated and unlabeled chemical substances only through proper methods as outlined in this Manual's section on Chemical Waste Disposal.
- Use products as they are intended to be used. Manufacturers' instructions must be followed precisely, particularly if dilution of the original product is called for.
- Use proper personal protective equipment when it is required for the safe use of a chemical substance.
- If a spill occurs and you or fellow workers are exposed to a hazardous chemical, contact your supervisor immediately. Be aware of the first aid procedures for the chemicals that you use.
- When storing chemicals, make sure the cover or lid for the container is secured. Keep storage areas neat and organized. Ensure emergency exits are never blocked. Keep quantities to a minimum. Avoid buying chemicals in bulk; buy only what is necessary to complete the project.

If you have any questions regarding the safe use of chemicals in your work environment, contact your supervisor and/or the OEHS Chemical & Biological Safety Section at 828-4866. The detailed written Hazard Communication Program is included in this Manual.

## Chemical Waste Disposal

OEHS is responsible for the proper disposal of chemical waste for the VCUHS and the University. There are many state and federal regulations regarding the handling, storage, transport, and disposal of chemical waste. The following guidelines concerning chemical waste should be adhered to:

- Chemicals are not to be disposed of in the sink, toilet, or floor drains.
- Chemical wastes are to be brought to OEHS for disposal. Waste appointments are accepted on Tuesdays and Thursdays from 9:00 - 10:30 a.m. An appointment can be made by calling 828-1392.
- Chemical wastes must be stored properly prior to disposal. Containers should be compatible with the waste and protected from shock or breakage.
- All containers must be properly labeled. A waste disposal form must be completed and signed by the principle investigator, or supervisor of the unit generating the waste.
- Compressed gas cylinders should only be purchased from vendors with a return cylinder policy.

If you have any questions regarding the disposal of chemical waste, please contact your supervisor and/or the OEHS Chemical & Biological Safety Section.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN CHEMICAL WASTE DISPOSAL PROGRAM.

**UNIT/DEPARTMENT SPECIFIC SAFETY PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Hazard Communication Program

### *Virginia Commonwealth University*

Virginia Commonwealth University, under the direction of the Office of Environmental Health and Safety (OEHS), has established a Hazard Communication Program to meet the requirements of the Virginia Occupational Safety and Health (VOSH) Standard 29 CFR 1910.1200. The Hazard Communication Standard states that all workers have a "right-to-know" what hazards they may come into contact with on their job. The program requires compiling a hazardous chemicals list or inventory, obtaining appropriate Material Safety Data Sheets (MSDS), ensuring that containers are properly labeled, and providing training to employees.

This program applies to all work operations within the University or Health System where workers may be exposed to hazardous substances under normal working conditions or during emergency situations. Due to the enormous variation in types and numbers of chemical hazards at VCU and VCUHS, it is necessary to implement the program within distinct management units. These units must be delineated by either the dean, department head, director, or unit manager. An individual from each unit or subdivision of a unit must be made responsible for consolidating the following components of the Hazard Communication Program for their area:

- I. Hazardous Chemical Inventory
- II. Material Safety Data Sheets (MSDS)
- III. Labels and Other Forms of Warning
- IV. Employee Information and Training
- V. Non-Routine Tasks
- VI. Unlabeled Pipes
- VII. On-Site Contractors
- VIII. Program Review

#### **I. HAZARDOUS CHEMICAL INVENTORY**

Each unit/department must prepare a list of all known hazardous chemicals (products) used by or present on the unit/department. The list must be updated as necessary, and reviewed at least annually.

#### **II. MATERIAL SAFETY DATA SHEETS (MSDS)**

MSDS must be maintained by all units/departments throughout the Health System. Although supervisors are responsible for providing health hazard information to employees, they should encourage their employees to further review MSDS for any chemical substance which they seek additional information. MSDS are not a tool to be used to manage an emergency and should, therefore, be reviewed periodically to ensure employees fully understand the health hazards associated with chemicals in their work environment. Personnel from the Office of Environmental Health and Safety are available to assist employees with the information contained in the MSDS.

### III. LABELS AND OTHER FORMS OF WARNING

Each unit/department must ensure that hazardous chemicals are labeled with the following information:

- Chemical identity
- Appropriate hazard warnings
- Name and address of the chemical manufacturer, importer, or other responsible party

When chemicals are transferred from the manufacturer's containers to secondary or portable containers, each unit/department must ensure that the containers are labeled with the identity of the chemical(s) and the appropriate hazard warnings.

### IV. WORKER'S RIGHT-TO-KNOW INFORMATION AND TRAINING

All employees are given a brochure explaining the requirements of the Hazard Communication Standard, as well as general safety information regarding chemical hazards. Units/departments are requested to furnish employees with supplemental health hazard information regarding the specific chemical substances with which they are required to work. Employee training should be documented through the "Worker's Right-To-Know Statement" which must be signed by the employee and the employee's supervisor. Documentation of training will be kept by the VCUHS Human Resources Department and in employee's personnel files.

New employees are required to attend a Safety Awareness Training Program, which explains Worker "Right-To-Know." They are provided with a copy of the Safety Awareness Program - Employee Handbook. The program and handbook will familiarize new employees with their responsibilities and rights under the law. Once the orientation program has been completed, each new employee's supervisor is required to furnish the employee with supplemental health hazard information regarding the specific chemical substances, which they are required to work with.

This training must include the following topics:

- An overview of the requirements of the Hazard Communication Standard.
- Information on the labeling system and how to use it.
- How to review MSDS and where they are kept.
- Information on the chemicals present in the various work operations.
- Physical and health effects of the hazardous chemicals present in the work environment.
- Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
- Personal protective equipment and work practices to lessen or prevent exposures to chemicals.
- Steps the unit/department has taken to lessen or prevent exposures to chemicals.
- Safety/emergency procedures to follow if a significant exposure occurs.
- Location and availability of the written Hazard Communication Program, Chemical Inventory, and MSDS binder.

Retraining for all employees is required when processes change which involve additional chemical hazards and, as necessary, to enhance employee awareness.

**V. NON - ROUTINE TASKS**

Each unit/department must identify all non-routine tasks. Before beginning a non-routine task, all chemical hazards must be reviewed.

**VI. UNLABELED PIPES**

Work activities are often performed in areas where chemicals are transferred through pipes. These pipes are not required to be labeled; however, the employee needs to be aware of potential hazards. Prior to starting work in areas having unlabeled pipes, the employee shall contact their supervisor to determine:

- a. The identity of the chemical in the pipes.
- b. Potential hazards.
- c. Safety precautions.

**VII. ON-SITE CONTRACTORS**

Units/Departments must provide contractors with the following information:

- a. A list of hazardous chemicals to which the contractor's employees may be exposed.
- b. Precautions necessary to protect employees during normal operating conditions and foreseeable emergencies.
- c. A description of the labeling system used in that unit or department.

**VIII. PROGRAM REVIEW**

Each unit/department should review each of the above seven components of the Hazard Communication Program annually and update them as necessary.

Assistance in training, interpretation, and implementation of this program can be obtained from OEHS.

Sample formats for Chemical Inventories and Employee Training records follow:





## WORKERS RIGHT-TO-KNOW



### Hazard Communication for a Safer Work Place

Prepared by:

The Office of Environmental Health &  
Safety  
Virginia Commonwealth University  
VCU Medical Center

#### About This Brochure

This document provides VCU and VCUMC employees with important information regarding the safe use of chemical substances. Under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, all workers are guaranteed the right to know about possible hazards associated with chemical substances found in their work environment. Please review this information carefully. It could help prevent serious injury to you or a fellow worker. This brochure is provided to all VCU and VCUMC employees. Individuals who work directly with hazardous chemicals will receive additional information and training from their supervisors.

#### Chemicals and Our Environment

There are more than a half-million different chemicals currently used in this country every day. Many more are introduced each year. They enhance our lives and have become an integral part of our lifestyles. Chemicals are found in nearly every work environment. Some are as commonplace as correction fluid, but in a research university and teaching hospital such as VCU and VCUMC, many complex and highly toxic chemicals are used as well. It is necessary to become familiar with all of the chemical substances present in your work environment, the appropriate precautions required to handle them safely, and the first aid and emergency procedures unique to those substances should an accident occur.

#### Routes of Entry Into the Body

There are three basic ways in which a chemical can enter the body:

1. Inhalation - The most common way for a chemical substance to enter the body

is by breathing a chemical that is mixed in the surrounding air. The lungs readily absorb particles and gases. Hazardous chemicals that can become airborne should only be used in well-ventilated areas or while using proper respiratory protection.

2. Ingestion - The second way that chemicals enter the body is through the mouth. Ingestion of chemicals is usually done unknowingly and unintentionally.

Occasionally, a person ingests a chemical they mistake for a food or beverage. More likely, however, chemical ingestion occurs when an individual eats, drinks, or smokes contaminated food, beverage, or cigarettes. To prevent ingestion of chemicals, wash your hands thoroughly before breaks.

3. Absorption - The third way that chemicals enter the body is through the skin. Chemicals such as organic solvents and mercury can be absorbed directly through the skin barrier. Other chemicals can cause damage to the protective layers of the skin and then be readily absorbed. To protect yourself from accidental absorption, wear appropriate personal protective clothing such as gloves, impervious aprons, face shield, etc.

#### The Hazard Communication Standard

The Hazard Communication Standard is not only a federal law, but it is incorporated into the compliance criteria for nearly every accrediting agency (e.g., JCAHO, CAP, AALAC, and others). The following outlines the various steps required to comply with the standard:

- Develop and maintain an accurate inventory of hazardous materials present in the work environment.
- Collect and maintain material safety data sheets (MSDS) for each item on the inventory.
- Make sure that hazardous chemicals are properly labeled. Under the law, the manufacturer has the responsibility to properly label their products.
- Train employees to safely handle hazardous materials. This includes selection, use and maintenance of appropriate personal protective equipment.
- Develop written standard operating procedures for safely managing chemical spills and non-routine tasks.
- Inform employees about the availability and use of the chemical inventory, MSDS, and standard operating procedures for managing hazardous chemicals safely.

#### **Chemical Inventory**

Units/departments at VCU and VCUMC must compile a list of hazardous chemical substances. The list must be maintained in an area which is readily available to all unit/departmental employees. As new substances are purchased or old ones are discontinued, the inventory must be updated to reflect these changes. The Office of Environmental Health & Safety (OEHS) maintains chemical lists representative of several general areas of the university and hospital such as nursing stations, housekeeping, general office, etc. These lists are available upon request. If a general list is utilized, it must be reconciled to accurately reflect the specific chemical inventory of the unit/department.

#### **Material Safety Data Sheets**

The Hazard Communication Standard requires that manufacturers of chemical

products provide the consumer with Material Safety Data Sheets (MSDS). An MSDS must provide the following information:

- Physical and chemical characteristics of the substance
- Known acute or chronic health effects
- Exposure limits
- Whether or not the chemical is known to be a carcinogen (cancer causing)
- Precautionary measures to take for handling the product safely
- Emergency and first aid procedures
- The name of the organization that prepared the MSDS

Units/departments must maintain an accurate collection of MSDS for each substance found in the chemical inventory. MSDS are resources which can help one better understand safe handling of a chemical substance. MSDS must be reviewed by all employees to help them fully understand the associated health hazards. MSDS are not a tool to be used to manage an emergency. Emergency procedures must be anticipated, planned for, and reviewed before an incident occurs.

MSDS may be obtained in a variety of ways. Units/departments may contact OEHS for assistance. Requests must be typed and include: chemical name, product number, and manufacturer's name and address. The MSDS may have been shipped directly with the product. In this case, it should be photocopied and the original sent to OEHS, Box 980112. MSDS may be accessed via the Internet or other computer media; however, hard copies must be readily available to unit/departmental employees. MSDS can be obtained directly from the manufacturer or distributor - many companies will fax a copy immediately.

#### **Labels and Other Forms of Warning**

OSHA requires that manufacturers of chemicals label their products with the following information:

- Identity of the hazardous chemical
- Appropriate hazard warnings
- The name, address, and phone number of the manufacturer

If chemicals are transferred to other containers, these containers must be labeled with the identity of the chemical and the appropriate hazard warning information.

#### **Employee Information and Training**

Before starting work, new employees are required to attend a new employee orientation program. Information about specific hazards within the work area is provided by the supervisor. This may include MSDS, unit/departmental policies, unit/departmental safety procedures, or other pertinent information. This training must cover (at a minimum) the following topics:

- Chemicals used in various work procedures
- Personal Protective Equipment to be worn to prevent or reduce exposures
- Work practices which could reduce or eliminate exposures (e.g., universal precautions)
- Safety and emergency procedures to follow if exposure occurs (i.e., spill cleanup kits, first aid, substance neutralizers, etc.)
- The location and availability of the chemical inventory, and MSDS

Unit/departmental training must be documented, and should

**VCU Health System – Safety Manual  
Medical Campus**

include the employee's name, job title, social security number, date of training, and type of training offered. Retraining is required whenever a job process changes which involves different or additional hazards and, as necessary, to enhance employee awareness.

**Chemical Effects**

Chemical substances come in several different forms and can have different effects on your body. Some chemicals cause "acute" problems that you feel right away such as breathing difficulties and rashes. Other chemicals cause "chronic" problems where the effects of exposure may not be evident for months or even years. An example of chronic effects are the respiratory problems caused by smoking.

**Types of Chemical Substances**

Some forms of chemicals with which you may come in contact are:

Fume, Mists, and Dusts - All of these substances are carried in the air and may be inhaled; they can cause breathing problems and may also cause burning and stinging of the nose, throat, and eyes. Adequate ventilation and proper protective equipment will limit your exposure to these substances.

Solvents - These products are used in several work locations and are used to dissolve other substances. Common examples are degreasers and paint thinners. These products commonly affect the skin, causing drying and cracking. The fumes or vapors from these products may also cause breathing problems. Wear gloves and work in well-

**Date: December 2005**

**Replaces: December 2002**

ventilated areas when using solvents.

Acids and Caustic Substances -

These products damage the skin and bum the eyes. Examples are drain cleaners and oven cleaners. Protection from acids and caustics would include protective clothing, gloves and goggles.

If you have any questions regarding the safe use of chemicals in your work environment, please contact your supervisor. For additional information, please contact the Office of Environmental Health & Safety.

Office of Environmental Health & Safety: 828-OEHS  
Chemical & Biological Safety Section: 828-4866  
Radiation Safety Section: 828-9131  
Fire & Occupational Safety Section: 828-7899



## WORKER’S RIGHT-TO-KNOW STATEMENT

Virginia Commonwealth University Health System – Virginia Commonwealth University

**SECTION I. The following potential hazards exist in my work area (check all that apply):**

<input type="checkbox"/> general office hazards <input type="checkbox"/> hazardous chemicals <input type="checkbox"/> radioactive materials <input type="checkbox"/> lasers, microwaves, UV, or RF radiation <input type="checkbox"/> radiation producing devices <input type="checkbox"/> blood, blood products, or other body fluids <input type="checkbox"/> carcinogens, reproductive hazards or cytotoxins	<input type="checkbox"/> ethylene oxide <input type="checkbox"/> work requiring the use of respiratory protection <input type="checkbox"/> formaldehyde <input type="checkbox"/> nitrous oxide <input type="checkbox"/> asbestos <input type="checkbox"/> glutaraldehyde <input type="checkbox"/> other (please specify) _____
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**SECTION II. I have reviewed the following health and safety information:**

<input type="checkbox"/> VCUHS Safety Manual <input type="checkbox"/> Employee Right-To-Know Brochure <input type="checkbox"/> Safety Awareness Handbook <input type="checkbox"/> Radiation Safety Manual/Guide <input type="checkbox"/> Carcinogen Safety Guide	<input type="checkbox"/> Infection Control Manual <input type="checkbox"/> Biohazard/Recombinant DNA Safety Guide <input type="checkbox"/> Departmental Safety Policies <input type="checkbox"/> other (please specify) _____
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**SECTION III. I have participated in the following training programs:**

<input type="checkbox"/> Safety Awareness (new employee orientation) <input type="checkbox"/> Hazard Communications (formal or informal) <input type="checkbox"/> Radiation Safety <input type="checkbox"/> Laboratory Safety (formal or informal) <input type="checkbox"/> Dangerous Goods	<input type="checkbox"/> Standard Precautions <input type="checkbox"/> Respiratory Protection <input type="checkbox"/> Asbestos Awareness <input type="checkbox"/> other (please specify) _____
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**SECTION IV. For employees who must utilize respiratory protection (e.g. the N-95 mask) to perform their work duties.**

I have been fit-tested with the respirator I will use at work: (Check one)

YES     NO

This document should be completed in conjunction with your supervisor. Signing this document does not relieve the VCUHS of responsibility or negate the employee’s rights to protection. It merely signifies that the individual has been informed of his/her *right-to-know* about hazards in the workplace.

Employee’s Printed Name	Signature	Employee Number	Date
Supervisor’s Printed Name	Signature	Date	

**THIS FORM IS TO BE MAINTAINED IN THE EMPLOYEE’S UNIT/DEPARTMENT FILE**  
 \*\*\*\*Photocopy As Needed\*\*\*\*

## Instructions for

### Worker's Right-To-Know Statement

(Place the completed form in the Employee's Personnel File)

#### Purpose

The *Worker's Right-to-Know Statement* helps ensure that all employees are aware of the hazards in their work environment and know how to protect themselves against them. This right is guaranteed under the Occupational Safety & Health Administration (OSHA) Hazard Communication Standard and a number of other federal and state statutes. Hazard clarification should be reviewed by the employee and the supervisor each year. The signatures at the bottom of this document indicate that this review has been performed. If additional hazards are identified, a new *Worker's Right-to-Know Statement* must be completed. Faculty is also encouraged to utilize this statement with student researchers. For the purposes of this document, *supervisor* means any employee or individual acting on behalf of the VCUHS in an official capacity, whether with or without compensation, who directs the work duties of another employee. Many employees may have little or no exposure to injurious occupational hazards. However, at a minimum, all employees should read the *Employee Right-to-Know* brochure and *Safety Awareness Handbook*, check-off the appropriate spaces in Section II, and check-off hazard communication and safety awareness under Section III.

**Section I** contains a list of potential hazards which may exist in the employee's work area. Additional space has been provided to add hazards that may not have been listed. The supervisor is responsible for informing the employee of these hazards prior to engaging in work activities, including any steps necessary to prevent exposures. Most employees would be exposed to general office hazards and should check this category.

**Section II** contains a partial list of documents available at VCU/VCUHS regarding workplace health hazards. *Worker's Right-To-Know* brochures and the *Safety Awareness Handbook* can be obtained through OEHS, or on the web at <http://www.views.vcu.edu/oehs>. Space has been provided to list documents that may not have been included (i.e. department safety guides specific to certain hazardous operations).

**Section III** contains a list of various occupational health training programs offered by OEHS, VCUHS and other sources. The employee/supervisor should identify which of these programs the employee has attended and those which would be appropriate for the employee to attend. Some training may be brief and informal. Due to the nature of employment or educational background, a formal training program may not benefit all employees. An example of this would be an adjunct faculty member who has no significant contact with workplace hazards and teaches a few hours a week. In a case such as this, briefly explaining the VCU/VCUHS Hazard Communication Program, reviewing the *Worker's Right-to-Know Brochure* and *Safety Awareness Handbook*, and signing the *Worker's Right-To-Know Statement* would be sufficient compliance. Space has been provided to list training that may not have been included (i.e., unit/departmental programs).

**Section IV** is required to be completed by all VCU/VCUHS employees who must utilize respiratory protection during the performance of their job. Typically, this will include individuals with patient contact who must wear the N-95 mask for the prevention of tuberculosis transmission. Employees must indicate whether or not they have been fit-tested to wear a respirator.

May 17, 2002

## Laboratory Safety Program

The VCU Laboratory Safety Program was developed to meet the requirements of the Occupational Safety and Health Administration (OSHA) Standard, 29 CFR 1910.1450 - Occupational Exposures to Hazardous Chemicals in Laboratories. The purpose of the standard is to protect employees from health hazards associated with hazardous chemicals in the laboratory and to keep exposures below OSHA permissible exposure limits. Laboratory workers have a "right-to-know" which hazards they may come into contact with on their job.

The Laboratory Safety Standard enhances many of the requirements of the Hazard Communication Standard for laboratories. The program requires compiling of a hazardous chemical list, attaining appropriate Material Safety Data Sheets (MSDS), ensuring that containers are labeled, developing written standard operating procedures for laboratory operations and providing training to employees.

This program applies to all laboratory operations within the University and Health System where workers may be exposed to hazardous substances. Due to the enormous variation in types and numbers of laboratories at VCU/VCUHS, it is necessary to implement the program within distinct laboratory units. These laboratory units must be delineated by either the dean, department head, director or laboratory manager. An individual from each laboratory unit must be made responsible for implementing the Chemical Hygiene Program (CHP). This individual is referred to by OSHA as the Chemical Hygiene Officer.

### I. Chemical Hygiene Plan (CHP)

Under the standard, employers using hazardous chemicals in the laboratory must develop and carry out the provisions of a written CHP. The CHP must include the necessary work practices, procedures, and policies to ensure that employees are protected from all potentially hazardous chemicals in their laboratory. Elements of a CHP include:

- a. Standard Operating Procedures (SOP) relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals.
- b. The procedures used to determine control measures (i.e. exhaust ventilation, personal protective devices, etc.).
- c. Steps to ensure that these controls are operating properly.
- d. Employee training methods and information.
- e. Circumstances where an employee must request permission to conduct a particularly hazardous procedure.
- f. Provisions for medical consultation and examinations.
- g. Designation of a Chemical Hygiene Officer.
- h. Provision for additional employee protection for work with particularly hazardous substances including:
  1. Establishment of a designated area
  2. Use of fume hoods, glove boxes, or other engineering controls
  3. Procedures for appropriate waste removal
  4. Decontamination procedures

All laboratory managers may request a model chemical hygiene plan from OEHS. The model CHP provides the chemical hygiene officer with the necessary foundation to complete the requirements of the standard. Specific training on the laboratory safety program and generic lab safety topics are provided by OEHS through the web-based laboratory safety training modules, scheduled training announced at the OEHS website, or specifically-requested training presentations.

## **II. Hazardous Chemical Inventory List**

Each laboratory unit must prepare a list of all known hazardous chemicals used. The list must be updated as necessary.

## **III. Material Safety Data Sheets (MSDS)**

MSDS must be maintained by all units/departments throughout the University and Health System. Although supervisors are responsible for providing health hazard information, they should encourage their employees to further review MSDS for any chemical substance which they seek additional information. Personnel from the Office of Environmental Health and Safety are available to assist employees with the information contained in MSDS. A brochure discussing hazard communication and worker's right-to-know is available from OEHS, which provides additional information to help.

## **IV. Labels and Other Forms of Warning**

Each laboratory must ensure that hazardous chemicals are delivered with the manufacturer's original label intact. When chemicals are transferred from the manufacturer's containers to secondary containers, the containers must be labeled with the identity of the chemical(s) and appropriate hazard warnings.

## **V. Program Review**

Each unit/department must review each of the above components of the Laboratory Safety Program annually and update them as necessary.

Assistance in training, interpretation, and implementation of this program can be obtained from the OEHS, Chemical & Biological Safety Section at 828-4866.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Laboratory Safety Guidelines

1. Smoking, consumption of food/beverage, application of cosmetics, chewing gum, etc., is prohibited in the laboratory work areas.
2. Flammable materials shall be manipulated inside of an explosion-proof exhaust hood.
3. Keep floors and aisles clear of obstructions.
4. When working with hazardous substances:
  - a. Do not wear contact lenses.
  - b. Always wear safety glasses.
  - c. Wear appropriate protective apparel such as gloves, lab apron, etc.
  - d. Know the properties of the substances you are working with. Read the MSDS.
5. Know the locations of emergency showers and eyewash stations and how to operate these devices.
6. Irrigate eyes continuously for at least 15 minutes whenever a hazardous substance is splashed into them. Unless there is also trauma, it is generally not advisable to go to the Emergency Department first, as this will delay irrigations of the eyes and more serious injury may result. Call a physician to the scene where felt necessary.
7. Use only equipment which has been safety checked by authorized personnel. Do not use equipment that is past the due date for re-inspection and/or calibration.
8. Do not place flammables into refrigerators unless they are designed as explosion-proof and so marked.
9. Store flammables in safety cans and safety cabinets.
10. Strong acids, strong bases, and flammables should always be stored separately. Do not place acids or bases into safety cabinets, which are only for the storage of flammable materials.
11. Store acids and bases on the lowest level possible to minimize damage should the container break.
12. All containers must be labeled to indicate their contents and whether it is flammable, toxic, corrosive, highly reactive, or infectious. Unlabeled containers must not be used.
13. Read and observe all applicable safety policies and procedures in this manual, including those for flammable and compressed gases.
14. Dispose of glass, needles, and other sharp objects only into the labeled sharps containers.
15. Dispose of hazardous waste properly. Contact the Office of Environmental Health and Safety when in doubt about a substance. The following is a listing of some common laboratory chemicals, which must be disposed of as hazardous waste:

<b>Xylene</b>	<b>Acetone</b>	<b>Picric Acid</b>
<b>Formalin/Formaldehyde</b>	<b>Methanol</b>	<b>Glutaraldehyde (Cidex)</b>
<b>NiCad</b> and all other rechargeable batteries.	<b>Lead</b> (anything containing lead).	<b>Mercury</b> in any form. Most commonly this is <b>HgCl</b> in fixatives used in Bacteriology.

## Asbestos Program

The *VCU Asbestos Program* was developed to protect faculty, staff, students, and patients from asbestos exposure hazards within University and VCUHS community. *Asbestos-containing materials* (ACM) are common within several University and Health System buildings. Abatement of ACM must occur prior to undertaking renovation or demolition activities within affected areas. OEHS, Chemical & Biological Safety Section staff provide key services throughout the abatement process including: conduct asbestos inspections in scheduled renovation areas to identify ACM; development of asbestos removal designs and project specifications; monitoring of abatement contractor work practices; collection of air quality samples during the removal process; and provision of quality control services during the abatement process to ensure that affected areas are suitable for reoccupation.

OEHS staff must frequently respond to asbestos emergency inspection requests, which may involve a wide array of situations, ranging from isolated areas of suspect materials disturbed by routine maintenance activities to large-scale incidents such as collapsing of ceiling sections. OEHS staff inspect the affected areas (may involve the collection of bulk and/or air quality samples), determine the related degree of asbestos exposure hazard to University employees and develop appropriate hazard response actions.

OEHS staff also provide an array of asbestos training services to VCU/VCUHS personnel. Two-Hour Asbestos Training is conducted annually for designated personnel. Upon request, OEHS will attend formal and informal meetings in order to address employee questions and concerns involving scheduled abatement projects or other asbestos issues within the workplace.

The written Asbestos Program is maintained on file within the Chemical & Biological Safety Section Office of OEHS. The Asbestos Program details all elements of the university asbestos management practices including: portfolio requirements for asbestos abatement contractors, bulk sampling and air sampling protocols, an outline of asbestos awareness training programs, and Operations & Maintenance (O&M) Plans and/or Management Plans for a limited number of university buildings. While O&M and Management Plans have not to date been completed for all structures, OEHS maintains a database which compiles information from past inspections, providing vast knowledge concerning the locations, condition and related hazards of ACM in nearly all areas of University buildings. File information concerning asbestos in specific University and Health System buildings can be obtained through contacting OEHS Chemical & Biological Safety Section at 828-4404.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN VCU ASBESTOS PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Ethylene Oxide Program

Ethylene oxide is a sterilization gas used by Central Sterile Supply. It is a flammable liquid and its vapors can easily form explosive mixtures in air. Ethylene oxide has been shown to present a carcinogenic, mutagenic, genotoxic, reproductive, neurotoxic, and a sensitization hazard to workers. As a result, the Occupational Safety and Health Administration (OSHA) has issued a standard (29 CFR 1910.1047) to promote proper protection of all workers exposed to ethylene oxide gas. The OSHA standard establishes a permissible exposure limit (PEL) of 1.0 part ethylene oxide per million parts of air (1.0 ppm), as an eight-hour time-weighted average, and a short-term exposure limit (STEL) of 5.0 ppm for 15 minutes. In order to assure that all workers with the potential for an exposure to ethylene oxide are adequately protected, the Office of Environmental Health and Safety (OEHS) conducts ethylene oxide personal and area monitoring, as well as provides consultation services to insure that ethylene oxide exposures do not exceed the PEL or STEL during the work day. Exposure monitoring is conducted at a minimum quarterly, or whenever there is a change in production equipment, process, personnel, or control measures which may result in new or additional exposures to ethylene oxide. Requests regarding information on the ethylene oxide monitoring program should be directed to OEHS, Box 980112, (828-4866). In addition, the VCUHS Epidemiology Department may be contacted for copies of the VCUHS Sterilization/Disinfection Policy.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN ETHYLENE OXIDE PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Formaldehyde Program

Formaldehyde is used in a variety of operations throughout the University and Health System, but tissue preservation is the primary source of exposure. Work areas specifically known to use formaldehyde include the Departments of Anatomy, Biology, Dialysis, Pathology, and the Morgue. Potential health hazards associated with an exposure to formaldehyde include cancer, irritation and sensitization of the skin, and respiratory system, eye and throat irritation, and acute toxicity. As a result, the Occupational Safety and Health Administration (OSHA) has issued a standard (29 CFR 1910.1048), to promote protection of all workers exposed to formaldehyde. The OSHA standard establishes a permissible exposure limit (PEL) of 0.75 parts formaldehyde per million parts of air (0.75 ppm), as an eight hour time-weighted average, and a short term exposure limit (STEL) of 2.0 ppm for 15 minutes. In order to assure that all workers with the potential for an exposure to formaldehyde are adequately protected, the Office of Environmental Health and Safety (OEHS) conducts formaldehyde personal and area monitoring, as well as provides consultation services to insure that formaldehyde exposures do not exceed the PEL or STEL during the work day. Exposure monitoring is conducted at a minimum at least quarterly, or whenever there is a change in production, equipment, process, personnel or control measures which may result in new or additional exposures to formaldehyde. Requests regarding information on the formaldehyde monitoring program should be directed to OEHS, Box 980112, or call 828-4866.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN FORMALDEHYDE PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Glutaraldehyde (Cidex) Program

Glutaraldehyde is a disinfectant that is especially effective for cold sterilization of instruments. As a disinfectant, glutaraldehyde has been used to clean sputum mouthpieces, suction bottles and tubing, and equipment used for ear, nose, and throat treatments. It is widely used in endoscopy suites to clean and disinfect endoscopes. Potential health hazards associated with an exposure to glutaraldehyde include irritation of the eyes, throat, and lungs; cough; chest tightness; headache; and, asthma or flu-like symptoms. As a result, the Occupational Safety and Health Administration (OSHA) has issued a standard to assure proper protection of all workers exposed to glutaraldehyde. The OSHA standard establishes a permissible exposure limit (PEL) of 0.2 parts glutaraldehyde per million parts of air (ppm), as an eight-hour time-weighted average. This is a ceiling value limit, which means this limit shall not be exceeded during any part of the workday, even for a brief period. In order to assure that all workers with the potential for an exposure to glutaraldehyde are adequately protected, the Office of Environmental Health and Safety (OEHS) conducts area monitoring, as well as provides consultation services to ensure that glutaraldehyde exposures do not exceed the ceiling limit. Exposure monitoring is conducted at least quarterly, or whenever there is a change in production, equipment, process, personnel or control measures which may result in new or additional exposures to glutaraldehyde. Requests regarding information on glutaraldehyde should be directed to OEHS, Box 980112, or call 828-4866. In addition, the VCUHS Epidemiology Department may be contacted for copies of the VCUHS Sterilization/Disinfection Policy.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN GLUTARALDEHYDE PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Lead Program

Lead containing paint or surface coatings may be found in almost any structure regardless of the age of the building. The inadvertent release of lead dust from construction activities represents a potential health hazard to exposed workers. Lead dust may be inhaled, ingested or both. The VCU Lead Inspection Program is designed to identify lead-containing surface coatings that may present a potential hazard to workers performing renovation or construction activities on the material. OEHS will assist units/departments in the selection of appropriate control measures, work practices, and personal protection equipment. All painted surfaces must be inspected for lead prior to any abrasive or destructive work being performed. For assistance contact the OEHS, Chemical & Biological Safety Section at 828-1392.

## Mercury Handling Procedures

The Office of Environmental Health and Safety, Chemical and Biological Safety Section, helps manage mercury spills for VCU/VCUHS. Units/departments utilizing instruments containing mercury (i.e., more than 10cc) should have a mercury spill kit on the floor and have individuals trained in the proper management of mercury spills.

During the hours of 7:30 a.m. to 4:30 p.m., Monday through Friday (excluding holidays), contact OEHS at 828-0118 for assistance with mercury spills. For all other hours, call either \*50 to report a mercury spill.

All mercury spills must be reported to OEHS (during regular hours). OEHS staff will ensure that proper cleanup has been performed by monitoring the area for mercury vapor.

## Nitrous Oxide Program

Waste anesthesia gases, although not yet covered by federal regulations, have long been recognized as possible health hazards to operating room personnel. Many different materials are used along with nitrous oxide to anesthetize patients, but the nitrous oxide component of anesthetic gas mixtures is generally regarded as an indicator of employee exposure. Nitrous oxide is used in general surgery, oral surgery, and in ambulatory surgery. It is the objective of the nitrous oxide program to ensure that the employees of VCU and VCUHS are not exposed to concentrations of nitrous oxide which exceeds the recommendations of the National Institute for Occupational Safety and Health (NIOSH) and the Joint Commission for Accreditation of Healthcare Organizations (JCAHO). NIOSH recommends that no worker be exposed to time-weighted average concentrations greater than 25 parts nitrous oxide per million parts of air (25 ppm) in hospital operating rooms and 50 ppm in dental facilities. The Office of Environmental Health and Safety (OEHS) conducts periodic monitoring of nitrous oxide concentrations in the affected areas of the Hospital and University to determine occupational exposures. Monitoring is conducted at a minimum at least quarterly, or whenever there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposures to nitrous oxide. Any requests concerning information about the nitrous oxide policy should be directed to OEHS, Box 980112, or call 828-4866.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN NITROUS OXIDE PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Respiratory Protection Program

The *VCU Respiratory Protection Program* is designed to ensure the proper selection and use of respirators in the workplace. Respirators encompass a wide range of equipment from dust/mist respirators (dust mask) to self-contained breathing apparatus (SCBA). Respiratory protection may not be used as a substitute for engineering controls and generally may only be used in situations where engineering controls are not feasible, during certain maintenance activities, or while engineering controls are implemented. The Respiratory Protection Program addresses selection, fit testing, training, maintenance/cleaning, storage, and medical surveillance. Employees/students must be medically cleared, fit tested, trained, and placed under a medical surveillance program prior to being allowed to wear respiratory protection. The program can be tailored to meet the specific needs and hazards associated with your workplace. OEHS will assist units/departments in implementing a program. All respiratory protection used by University and Health System personnel must be approved by OEHS. For further assistance on the *VCU Respiratory Protection Program*, please contact the OEHS, Chemical & Biological Safety Section at 828-4866.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN RESPIRATORY PROTECTION PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

**Biological Safety**  
**Regulated Medical Waste Program**  
**VCU/VCUHS**

The purpose of the Regulated Medical Waste (RMW) policy is to establish procedures pertaining to the management of regulated medical waste in the university and VCUHS community so as to protect the health and safety of employees and to enhance the environment and natural resources. The Virginia Department of Environmental Quality (DEQ) has issued guidelines for handling regulated medical waste. In these guidelines, the DEQ has defined characteristics which classify waste as regulated. In general, a regulated waste is considered capable of producing an infectious disease if it has, or it may have, been contaminated by an organism that is pathogenic to humans such an organism is not routinely and freely available in the community, and if such organism has a significant probability of being present in sufficient quantities and with sufficient virulence to transmit disease. Examples of these types of waste include: cultures and stocks of microorganisms and biologicals; blood and blood products; pathologic wastes; contaminated, used or broken sharps; animal carcasses, body parts, bedding and related waste; or any other miscellaneous waste that may have been used in the clean up of a spill of any other regulated medical waste. It is the intent of VCU/VCUHS to comply with all state and federal regulations regarding the management of regulated waste. Therefore, generators of regulated medical wastes are responsible for the proper handling, storage and disposal of these wastes. Central management of the university's regulated medical waste program is under the Office of Environmental Health and Safety (OEHS) and any request concerning information or regulated medical waste policies within the university/VCUHS should be directed to OEHS, Box 980112, or call 828-4866. For VCUHS infectious waste information, please see the VCUHS policy.

IF YOU DETERMINE THAT THIS PROGRAM IS APPLICABLE TO YOUR UNIT/DEPARTMENT, PLEASE CONTACT 828-1392 TO OBTAIN A DETAILED WRITTEN REGULATED MEDICAL WASTE PROGRAM.

**UNIT/DEPARTMENT SPECIFIC PROGRAMS MUST BE MAINTAINED IN AN AREA AVAILABLE TO ALL STAFF AT ALL TIMES.**

## Pregnancy Policy, Mutagenic, Teratogenic and Infectious Agents

The purpose of this policy is to establish guidelines to be followed when female employees working with mutagenic, teratogenic and/or infectious agents, either become pregnant or consider conception. These guidelines supplement, but do not supersede or replace the present policy for infectious agents, or the Nuclear Regulatory Commission's requirement set forth in the university's By-Product Materials License.

Should a female employee working with mutagenic, teratogenic or infectious agents become pregnant, or consider conception, it is her responsibility to contact the Employee Health Office. The Employee Health physician, in conjunction with the Office of Environmental Health and Safety, will assess the potential embryo/fetus risk associated with the materials found in the employee's normal working environment. A summary of these findings will be distributed to the employee, her immediate supervisor, and to the Human Resources office.

The Human Resources office will be responsible for counseling the employee and discussing the options available regarding employment status. The employee may choose to:

1. Apply for a transfer (permanent or temporary) in assignment to a lower risk area. Transfers are not guaranteed; however, every effort will be made to accommodate such a transfer.
2. Elect to go on a leave of absence.
3. Remain in her current position during her pregnancy. If the employee elects to remain in her current position, the employment relations counselor will schedule a conference for the employee with the Employee Health physician. It will be the responsibility of the Employee Health physician to once again inform the employee of the risks involved. The employee once she has had an opportunity to ask questions about the risks being taken will be asked by the Employee Health physician to sign a statement that she understands and accepts the risks involved.

## Bloodborne Pathogens

All workers with potential exposure to human blood, blood products, or body fluids are covered by the OSHA bloodborne pathogen standard. The VCUHS Preventative Medicine Guidelines section on Bloodborne Pathogens covers all personnel so exposed. The VCUHS Epidemiology Department should be contacted at 828-2121 for any questions concerning this policy. Twenty-four hour coverage for exposures is available through Student Health at 828-8828 or Employee Health Services at 828-0584 from 8 a.m. to 4:30 p.m. The Prep team will respond on pager 4805 from 4:30 p.m. to 8:00 a.m. and on holidays and weekends.

## Indoor Air Quality

The purpose of the VCU/VCUHS Indoor Environmental Quality (IEQ) program is to respond to employee complaints regarding indoor environmental considerations in their workplace. Areas generally affected include classrooms, offices, or areas where sedentary work is performed in energy efficient or closed buildings. If you suspect indoor environmental quality issues in your area, contact OEHS at 828-1392.

## Odor Complaints

Similar and perhaps related to indoor environmental quality complaints, *odor complaints* are a relatively common occurrence in university and Health System buildings. In general, odors arise from the ventilation or plumbing systems. They are transitory in nature, and therefore difficult to isolate. The Chemical & Biological Safety Section will respond as quickly as possible to identify the source of the odor. Once an odor source is identified, building occupants are responsible for initiating corrective actions.

## Compressed Gas Safety Guidelines

More than a dozen gases commonly used are supplied in pressurized cylinders. The gases are supplied in this way simply because more gas can be shipped, stored, and distributed to a work area under high pressure than can be at atmospheric pressure. Gases under high pressure can be hazardous if not used properly. Therefore, the following basic safety rules must be followed to ensure safe use of cylinders in the workplace:

### General Guidelines for Cylinder Use

- Always chain gas cylinders upright to a wall, cylinder truck, or cylinder rack or post. This rule is especially important when the gas is in use because the regulator is on the cylinder valve and the cap is not in place. It is dangerous to store cylinders in any position other than upright. These rules apply to full or empty cylinders.
- Always replace the cylinder cap when the cylinder is not in use and when it is being moved.
- Never lift a cylinder by its valve or its cap, or with chains, slings, or magnets. Cylinders should only be moved by a cylinder hand-cart or cylinder dolly.
- Never place cylinders near elevators or in hallways, passageways, or work areas where they could be struck or hit by large objects.
- If a cylinder is leaking, mark it and put it outdoors, away from all sources of ignition. Post warning signs on it and keep it well away from other cylinders. Call the cylinder supplier or gas distributor to manage the leaking cylinder.
- Do not use cylinders as table legs to hold up other objects.
- Never hammer, pry, or wedge a stuck or frozen cylinder valve to loosen it, and never use a wrench. If a valve will not open by hand, call the supplier or gas distributor.
- Do not drop a cylinder.
- Do not allow grease, oil, or other combustible materials to touch any part of a cylinder. This rule is especially important when oxygen cylinders are involved. Grease or oil that oxidizes very slowly in air will burst into flame in pure oxygen.
- Never use a cylinder unless the gas it contains is clearly stenciled or marked with a decal. Altering or defacing the name, numbers, or other markings on a gas cylinder is illegal and hazardous. Do not paint a cylinder.
- Do not rely on the color of a cylinder to identify the gas inside. Different suppliers use different color codes. Return an unidentifiable cylinder to the supplier.
- Keep cylinders away from electrical circuits and excessive heat. Cylinders are made of steel and, therefore, will conduct electricity.
- Never ground a cylinder or place it near an electrical conductor, including piping, plumbing, or anything that might carry stray electric current.
- Never strike an arc or tap a welding electrode on a cylinder.
- Keep cylinders away from sparks and out of direct sunlight.
- If a cylinder that has been stored outside is frozen to the ground, use only warm water to free it. If the valve is frozen, use only warm water to thaw it, or bring the cylinder inside and let it thaw at room temperature.
- Abandoned or stray cylinders (cylinders found in hallways or corridors) will be disposed of at the expense of the offending unit/department. Call the supplier to pick-up empty cylinders.
- Smoking is not allowed in any area where an oxygen cylinder is present, including rooms where a flow meter is plugged into the wall outlet. Signs must be posted to designate these locations as no smoking areas. If whole building is signed and designated "No Smoking" additional individual room signs are not required.
- Cylinders of compressed gases should be accepted only if equipped with protective stem covers and valve covers and are properly labeled.
- Cylinders should only be purchased from companies with a return cylinder policy. The cost of disposing of a cylinder purchased from a company without a return policy will be the responsibility of the unit/department who originally purchased the cylinder.

### Valves and Regulators

- Gas regulators reduce the pressure inside the cylinder to a safe level for use. They are designed for use with specific gases and within prescribed pressure ranges. Always use the proper regulator for the gas in the cylinder.
- Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used. Damaged threads on the connecting nut or valve outlet can also make a regulator difficult to attach and likely to leak. Remove regulators from service if the glass in the gauge face is broken.
- Always “crack” the cylinder valve (open it slightly and close it immediately) before attaching a gas regulator to any cylinder - except a hydrogen or fuel gas cylinder. Cracking removes any dirt that may be lodged in the valve outlet and prevents dirt from entering the regulator. Do not stand in front of the valve outlet while cracking it and do not point the outlet at anyone. Never put your hands in front of the escaping gas.
- Wipe the outlet with a clean, dry, lint-free cloth once the cylinder valve has been cracked. The threads and mating surfaces of the regulator and hose connections should also be cleaned before the regulator is attached.
- Always use a cylinder wrench or other tightly fitting wrench to tighten the regulator nut and hose connections.
- Attach the regulator securely before opening the valve wide.
- Stand to the side of the regulator when opening the cylinder valve.

### Leaks and Contamination

- Once regulators and hoses have been attached they should be tested for leaks. Apply soapy water to the valves, joints, connections, and around the regulator gauges. If bubbles appear, a leak is present.
- Never hang tools, gloves, lab coats, or other clothing on top of the cylinder. They may interfere with the operations of the valve and prevent the gas from being shut off quickly in case of emergency. In addition, clothes hung on an oxygen cylinder can become saturated with oxygen if there is a leak at the valve or connecting threads. Oxygen-saturated clothes will burn intensely if they come in contact with an ignition source, even a small spark.

### Removal of Regulator

- Close the cylinder valve first.
- Bleed off the gas remaining in the regulator.
- Unscrew the regulator.

**NOTE:** If a regulator is removed from an open-valved cylinder, the gas pressure would probably blow the regulator off the valve head with violent force potentially causing injury or death to nearby persons.

Faulty equipment should be taken out of service at the first sign of a leak or a mechanical problem. Keeping an eye on regulator gauges often reveals defects before they become serious. If the pointer on a regulator’s low-pressure gauge creeps upward when the downstream line is closed, the regulator is defective. If the pointer fails to move from its stop pin when the regulator is pressurized, the gauge is faulty. And, if the pointer fails to return against the stop pin when the pressure is released, the equipment is defective and should be repaired. Have defective or faulty equipment taken out of service immediately and repaired only by properly qualified and authorized personnel.

## Cylinder Storage

Rules for storing gas cylinders complement, but differ from, rules for using them. Although storage rules depend somewhat on the kind of gas in the cylinder, some general rules apply:

- Store all cylinders in designated areas.
- Store and use cylinders on a first-in, first-out basis.
- Label every cylinder with the name of the gas it contains. Never remove identifying labels. Never paint a cylinder.
- Keep all empty cylinders for the same kind of gas together. Separate full cylinders from empty ones.
- Keep fuel-gas cylinders well away from oxygen cylinders. OSHA regulations require that oxygen cylinders in storage be separated from fuel-gas cylinders and combustible materials by at least 20 feet or by a noncombustible barrier at least 5 feet high and having a fire-resistance rating of at least half an hour.
- Store cylinders outside whenever possible, but always protect them from the weather and from direct sunlight. Cylinders that must be stored inside should be placed in a dry, well-ventilated storage area, preferably constructed of fire-resistant materials. Never store any gas cylinder where the temperature may rise above 130° F.
- Never store cylinders near elevators, hallways, or corridors.
- Place caps on cylinders that are being stored or moved.

Precautions, procedures and information on the safe handling and storage of cryogenic liquids will be handled on a case-by-case basis and may be obtained by contacting the Chemical & Biological Safety Section at 828-4866.

## Chemical & Biological Safety Training

Many employees use hazardous materials in both university and hospital work settings. Two major programs have been established to provide the necessary safety training. Laboratory workers who use hazardous chemicals are covered by OSHA's Laboratory Standard; affected employees include those in dental, physician, animal, hospital, pharmaceutical, research, and academic laboratories. All other employees are covered by OSHA's Hazard Communication Standard, also known as Worker's-Right-to-Know. In addition, some employees must be apprized of other potential on-the-job hazards, such as asbestos, ethylene oxide, formaldehyde, nitrous oxide, or recombinant DNA.

The Chemical & Biological Safety Section has developed training classes and written programs in these areas. Below are listed the courses and manuals available to appropriate personnel.

### Training Course

Asbestos Awareness  
Hazard Communication  
Hazard Communication In-service  
Laboratory Safety  
Respirator Training and Fit Testing

### Target Audience

Plant Operations employees  
All paid workers  
Specific for area, as requested  
Laboratory workers using hazardous chemicals  
Specific for area, as requested

### Training Manual

Asbestos Program  
Chemical Waste Management Program  
Ethylene Oxide Program  
Formaldehyde Program  
Nitrous Oxide Program  
Chemical Carcinogen  
Biohazard & Recombinant DNA Safety Guide  
Chemical Hygiene Plan (generic)  
Respiratory Protection Program  
  
Hazard Communication Brochure  
Regulated Medical Waste Program

### Target Audience

Plant Operations Superintendents  
Laboratory supervisors  
Supervisors of sterilization workers  
Laboratory supervisors  
Supervisors of anesthesia workers  
  
Principal Investigators using those materials  
Chemical Hygiene Officers  
Chemical Hygiene Officers/PPD & Plant  
Operations Management, as needed  
New employees  
Supervisors in areas handling body fluids and tissues

Questions and requests for written materials should be directed to the Chemical & Biological Safety Section of OEHS at 828-4866.

## Fire Safety

Familiarize yourself with at least two ways to exit your building in the event of a fire emergency. Make it a habit to look for two ways out of all buildings.

If you hear a fire alarm, do not wait to act. Follow RACER procedures immediately.

### General Fire / Emergency Evacuation Procedures

#### Before A Fire / Emergency

- \* Know the location of fire alarm pull stations and how to use them.
- \* Know the location of the nearest stairwells for your area.
- \* Know the locations of, and how to use, the portable fire extinguishers in your area.
- \* Know your designated meeting area away from the building
- \* Know your floor monitors, evacuation assistants and evacuation coordinators as applicable.
- \* If you need special assistance during an evacuation, please contact your supervisor or a member of your evacuation team representative beforehand.

#### On Discovering a Fire

- \* **Rescue** anyone who is in immediate danger.
- \* **Activate an alarm and call \*50 for on-campus buildings and 911 for off-campus locations** to give the location and description of the fire. These numbers should be posted on phones.
- \* **Close** and unlock all doors in the vicinity of the fire to contain smoke.
- \* **Extinguish** the fire (Only small fires and only if you have been trained in the proper use of fire extinguishers).
- \* **Relocate** to a safe area, following your area specific fire plan.
  - \* **Do not use the elevators.**
  - \* If the exit is blocked by fire, heat, or smoke, go to another exit. If all exits are blocked, return to your room, close the doors and call \*50 to report your location.

## **IF YOU ARE IN A BUILDING THAT REQUIRES EVACUATION OUTSIDE THE BUILDING**

The following three staff positions are responsible for evacuation procedures:

**1. Floor Monitor Duties** (Person responsible for evacuating a specific area, usually a floor):

- \* When the alarm sounds, go door to door telling everyone in your section that they must leave the building. Ask them to close the door as they exit the room.
- \* Start at the furthest point from the exit you will be using and work back toward the exit.
- \* Direct people to their nearest exit.
- \* After everyone in your section has been told to evacuate, report to the Evacuation Coordinator:
  1. Your area is clear, or
  2. There is someone in your area that is unable to evacuate, and/or
  3. There is someone in your area that refuses to evacuate, and/or
  4. Any other information, such as if the fire is in your area.

**2. Evacuation Assistant Duties** (Person trained and responsible for assisting patients, staff and visitors that cannot evacuate without assistance):

**NOTE:** Evacuation Assistants should be assigned in all areas where non-ambulatory patients, staff or visitors may be present. They should follow the protocol as listed:

- \* **IF NO FIRE OR SMOKE IS PRESENT**  
Instruct staff to stabilize or move all non-ambulatory patients to the nearest stairway door AND await instructions from the Richmond Bureau of Fire.
- \* **IF FIRE OR SMOKE IS PRESENT**  
Evacuate all non-ambulatory patients that are in immediate danger.

Once outside the building, move patients to other locations as directed by the fire department or Hospital Incident Commander.

**3. Evacuation Coordinator Duties** (Person trained and responsible for the evacuation program in each building):

- \* Call the emergency number, \*50 and let them know you are evacuating. These numbers should be posted on phones.
- \* Go to the designated area outside the building to meet the floor monitors as they finish evacuating their sections.
- \* Keep track of which floor monitors have reported and which ones have not.
- \* When the fire department arrives, give them any information that you have, including which areas have not been evacuated.
- \* Use the floor monitors to help keep people away from the building.

- \* After the emergency, get permission from the fire department before reentering the building.
- \* Inform the VCU Police if there is anyone who refuses to evacuate.
- \* Give the fire department the locations of anyone who is unable to evacuate.
- \* Inform the VCU Police if there is anyone who refuses to evacuate.

### **IF YOU ARE IN A BUILDING THAT IS CONSTRUCTED TO ALLOW RELOCATION WITHIN THE BUILDING**

Each unit/department must develop an area specific relocation and evacuation plan. This plan requires specific staff instructions to ensure the safety of other staff and visitors and provide a continuum of care for patients.

The evacuation and relocation areas assigned to your area are listed in the Internal Emergency Preparedness Plan.

### **Fire Extinguishers**

Fire extinguishers are to be used only after the evacuation plan of the building is underway. The VCU Office of Environmental Health and Safety offers training classes on how to use a fire extinguisher. Call 828-7899 to schedule a class for you or your department. If you know how to use an extinguisher, locate and identify the ones in your area before you need them. OEHS supplies and maintains several kinds of fire extinguishers.

- \* **Class A:** for wood, paper, and cloth
- \* **Class B:** for grease, paint, and gasoline
- \* **Class C:** for fires involving energized electrical equipment
- \* **Class ABC:** for all fires, except combustible metals

Remember, only use an extinguisher after you start the emergency evacuation procedures.

## Occupational Safety

Your safety on the job is a concern to us. The VCUHS Safety and Security Office, and the VCU Occupational Safety Section of the Office of Environmental Health and Safety are available to assist you in your goal of an accident free work environment. The Occupational Safety Section is responsible for ensuring that regulations established by Virginia Occupational Safety and Health (VOSH) are communicated to administration and the appropriate actions taken. The section is responsible for safety policy and procedure development, implementation, monitoring and documentation. This is achieved through close cooperation between OEHS, University, and VCUHS staff. OEHS provides direct and/or contract assistance to departments as well as active committee membership in order to carry out this critical function.

Your supervisor is responsible for ensuring that you have knowledge and skills necessary to operate in the university, hospital and clinic environment. The Occupational Safety Section can provide assistance when safety questions arise at 828-0040.

### Reporting of On-The-Job Injuries/Illnesses

Under of the provision of the Workers' Compensation Act (the Act), we are required to provide certain benefits to employees who incur an injury/illness in the course of official work-related duties. All of our employees (faculty, full-time staff, part-time staff, and hourly workers), are eligible to receive workers' compensation benefits:

- If an employee should incur a work-related injury or occupational disease, they **should notify their supervisor and the VCUHS Security Department at 828-4303 as soon as possible** so that they do not forfeit any rights they may have to workers' compensation.
- The **employee and supervisor** should then complete the VCU Health System's **Occupational Accident** form, **within 24 hours** of the accident/illness.
- The **employee is required** to select a physician to treat his/her injury/illness from the panel of physicians listed on the **VCUHS Physician Selection** form.
- Both forms listed above should be made available in every department. A supply of the forms can be ordered by contacting the Workers' Compensation Office at 827-2358.
- The completed forms should be sent or taken directly to **Employee Health Services**, First Floor, West Hospital, Box 980134.
- Employee Health completes the medical information on the claim form and forwards the claim to the Workers' Compensation Office.
- All claims for workers' compensation are then forwarded to the VCUHS Claims Administrator.
- The worker's compensation case manager reviews the claim and determines if it is covered under the provisions of the Act.
- Although an employee may have been injured at work, the claim may not always be considered compensable under the workers compensation laws in Virginia.
- The employee's injury must be determined to be "by accident" and "arising out of and in the course of employment" in order to be covered under the Act. In other words, the employee must have been injured by an unusual and unexpected event, which occurred in the performance of his/her duties. The accident must also have happened suddenly and at a specific time. Injuries caused by misconduct, failure to use safety equipment, repetitive motion, stress, and/or horseplay, are generally not covered under the Act.

## REPORTING OF ON-THE-JOB INJURIES/ILLNESSES *continued*

- VCUHS will pay for one initial visit to an emergency room as well as all treatment deemed necessary by the physician the employee selects from the panel of physicians. The employee must select one of these panel physicians, as VCUHS may deny the claim if the employee seeks medical treatment from a non-panel physician.
- The employee is required to keep all medical appointments and accept the treatment recommended by the panel physician as well as by any other medical care provider to whom the employee is referred.
- In general, medical coverage is provided for a period of up to 2 years from the date of the employee's injury/illness. If the employee is disabled from work (as determined by the panel physician) for more than 7 calendar days, the employee will be eligible to receive medical benefits for as long as necessary.
- Employees must use accrued leave or if leave is exhausted, leave without pay for the first seven days of absence associated with a worker's compensation claim. PTO or sick time bank leave may be used.
- After the first seven days, the employee will be paid by worker's compensation funds. The first 7 days will be retroactively paid if the employee remains out of work for more than twenty-one days. Compensation is at the rate of 66 2/3 percent of your weekly average salary.

## Proper Lifting Techniques

While many different kinds of injuries may occur in the work place, back injuries are the most frequent. Improper lifting technique is the most common cause. You will probably have to lift something nearly every day. If the load is not light enough to be handled easily, use a mechanical lift, such as a hand truck, or ask someone to help you, whenever possible. If you must lift an object by yourself, follow these steps:

1. Put one foot next to the load, the other foot behind the load. Stand as close to the load as possible.
2. Bend your knees, keeping your back and head straight.
3. Use your whole hand - not your fingertips - to grasp the load. Bring the load close to your body.
4. Lift the load by straightening your knees.
5. Hold the load close to your body while carrying it, centered over your legs rather than to one side of your body.
6. Never twist or turn while lifting. Do not bend your back. Instead, use your legs to push the load upwards. In this manner, your legs and arms do the work, not your back.
7. Follow this procedure in reverse to put the load down.

The Fire and Occupational Safety section of OEHS is available to assist departments in developing and implementing Back Injury Prevention or Proper Lifting Programs, call 827-0357.

## Personal Safety Precautions

While walking or driving on the campuses after hours, follow these precautions:

1. Whenever possible, walk with another person or several people. If this is not possible, a Security Escort Service is available on both campuses. You can use the emergency phones or call 828-WALK from 6 p.m. to 7 a.m. to use the Security Escort Service.
2. If you must walk alone, stick to well-lighted, well-traveled parts of the campuses. Avoid walking near shrubbery or in dark areas or alleys.
3. Have your keys in your hands before you leave your car or your office.
4. Note the locations and learn to recognize the emergency telephones on both campuses and in the parking decks.
5. The VCU Police emergency number is 828-1234. (Note: 911 will not dial direct from university phones.)
6. If you are working alone after hours, keep your office door locked. Do not prop or leave doors open!
7. If you are followed while walking, cross the street and change directions. Go toward people or well-lighted areas. If you are followed by a vehicle, turn around and walk in the opposite direction, or if possible, walk down a one-way street going against the flow of traffic.
8. If you are followed while driving, do not drive directly home. Drive to a public area, hospital, or police station.
9. If you are approached in a threatening way, don't panic. Try to remain calm and think clearly. No set of guidelines will insure your safety because each situation is unique. However, obey your natural instincts and don't take chances that will result in your injury.

## VCUHS Safety & Security Office

The VCUHS Safety & Security Office is committed to providing a safe and secure environment for staff, patients and visitors. Further, the department is committed to a safe environment, which will be conducive to pursuing the Hospital's mission of excellence in Patient Care, Research and Education. The department employs fifty non-sworn, unarmed security officers, five supervisors and two managers. The department is also committed to the protection of physical assets, education of staff in personal and property safety, data collection, analysis and incident reporting. In furtherance of this commitment, the VCUHS Department of Safety & Security operates twenty-four hours, 365 days a year. The department manages and monitors a computerized access system, provides patient and visitor information assistance, physical security surveys, general safety training, and vehicle and walking escort services to and from individual's vehicles and their work site.

The Safety & Security Department is committed to reviewing security plans from off-campus facilities.

**The VCUHS Safety & Security 24-hour phone number is 828-4300**

**The VCUHS Safety & Security Office phone number is 828-6595**

## **VCU Campus Police**

The VCU Campus Police consists of 63 professionally trained men and women who help safeguard and protect the university community. The Officers are sworn and certified as police officers within the Commonwealth of Virginia.

Uniformed Officers maintain foot and mobile patrols and perform the various functions of public service, including enforcement of state law, local ordinances and university regulations. Continuous in-service training classes are conducted to help support the functions of the department, promote university crime prevention programs, and encourage individual career development and training.

The VCU Campus Police is also supported by 20 non-sworn full and part-time security personnel. Their assignments and responsibilities include monitoring pedestrian traffic in campus buildings, dormitories and parking decks; making building security checks; maintaining the bicycle registration program; and providing security escort services.

**The Campus Police Emergency phone number is 828-1234**

**Non-Emergency number 828-1196**

VCU Campus Police Offices are located at 918 West Franklin Street and 940 West Grace Street.

## **Emergency Telephones**

Emergency telephones are located throughout the campuses and in VCU's parking decks. The inside telephones are red, the outside phones are located in blue or yellow boxes and have a flashing yellow light above them. To contact the police in an emergency, you need only to remove the phone from the cradle or push the button as indicated.

All emergency phones are location specific, to identify the caller's location. If there is no communication once a call has been placed, a uniformed police officer will be dispatched to the location of the telephone. To locate the phones near your office check the Emergency Telephone Locations list of the Emergency Procedures chapter on page 2 of this Manual, or call 828-1196.

## Hazardous Energy Control (Lockout/Tagout) Program Policy

### I. PURPOSE

The purpose of the Hazardous Energy Control Program (Lockout/Tagout) is to prevent injury to employees caused by the unexpected energization, start-up, or release of stored energy. Prevention methods will consist of attaching **Lockout/Tagout** mechanisms to **energy isolating devices**, to disable machines or equipment. This program meets or exceeds the requirements found in the Virginia Occupational Safety and Health Standard (VOSH) 1910.147, "The Control of Hazardous Energy (Lockout/Tagout)." A copy is available at the Office of Environmental Health and Safety. **Highlighted** words are found in the Definitions in Appendix A, which follows this section. (This policy was reviewed and approved by the University Safety Liaison Committee December 1991.)

### II. SCOPE

Any employee servicing or maintaining machinery or equipment, where the unexpected energizing start up or release of stored energy could occur and cause injury, is to isolate and make inoperative the machinery or equipment before servicing. **Tagout** is acceptable only if **lockout** cannot be done. Areas allowing **tagout** only are to be approved by the employee's supervisor.

When equipment/machinery is purchased, repaired, renovated, or modified, **energy isolating devices** will be installed to accept a **lockout** device. This is required by Virginia Occupational Safety and Health (VOSH).

This policy does not apply to supervised cord and plug connected equipment, or **hot taps**.

### III. RESPONSIBILITY

The Office of Environmental Health and Safety (OEHS), developed this policy and is responsible for maintaining the written hazardous energy control program. OEHS is also responsible for developing a **lockout/tagout** training program.

The Physical Plant Division, Plant Operations, Bio-med Engineering, Student Affairs, Business Services and any department with employees that may be involved in servicing equipment will be responsible for:

1. Identifying individuals who need training, including employees needing retaining when changes are made,
2. Developing specific procedures for controlling hazardous energy for each machine or piece of equipment that applies to the Control of Hazardous Energy Standard 1910.147,
3. Testing machines to verify the effectiveness of energy controlling measures,
4. Inspecting annually to ensure compliance with this **lockout/tagout** policy,
5. Identifying those employees to be trained as an **authorized employee** to service equipment, as defined in Appendix A.
6. Ensuring that new equipment, or existing equipment that is repaired, renovated, or modified is designed to accept a **lockout** device,
7. Providing protective materials and hardware needed to isolate, machines from **energy sources** (such as: locks, tags, chains, wedges, self-locking fasteners, adapter pins),
8. Enforcing this university policy through supervision, using when necessary warnings, suspension, and termination.

## Hazardous Energy Control (Lockout/Tagout) Program Policy *continued*

### IV. ENERGY CONTROL PROCEDURES

Plant Operations, Student Affairs, Business Services, and any department that has employees, which may be involved in the task of servicing equipment are required to have detailed **lockout** procedures for each similar piece of machinery or equipment. The following needs to be included in each procedure:

1. The name of the equipment or machinery
2. The types and magnitudes of energy(s) and hazards
3. Names/job titles of **authorized employees** to **lockout** or **tagout**
4. Names/job titles of **affected employees** and how to notify
5. Types and location of **energy isolating devices**
6. Types of stored energy and methods to dissipate or restrain
7. Methods selected IE: locks, tags, additional safety measures
8. Specific requirements for testing equipment to see that **lockout/tagout** devices, or other energy control measures are effective
9. Names/job titles of employees authorized for group **lockout** or **tagout**.

The VCU Lockout/Tagout Procedure, APPENDIX B, explains the implementation of this policy.

### V. TRAINING AND COMMUNICATION

A train-the-trainer program designed for supervisors will be developed and administered by OEHS. All employees are to be trained by their supervisor before performing maintenance or service to machines and equipment. The training program includes the following:

1. Recognition of applicable hazardous **energy sources**,
2. Methods of energy isolation and control,
3. **Lockout/tagout** system procedure,
4. Removing locks and tags and restoring machines to normal operation,
5. Group **lockout/tagout**,
6. Personnel or shift changes,
7. Testing or positioning of machines,
8. Types and magnitudes of energy available at VCU.

**Authorized** and **affected employees** are to be trained when there is a change in their job assignments; or in machines, equipment or processes that present a new hazard. If there is a change in VCU's energy control procedures, the appropriate employees will be trained.

## APPENDIX A

### HAZARDOUS ENERGY CONTROL (LOCKOUT/TAGOUT)

#### DEFINITIONS

**Affected Employee:** An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under **lockout** or **tagout** or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**Authorized Employee:** A person who locks or implements a **tagout** system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment. The authorized employee has been designated to perform such duties by the employer. The authorized employee not only attaches the lock and tag but must also perform the servicing or maintenance.

**Capable of Being Locked Out:** An **energy isolating device** will be considered to be capable of being locked out either if it is designed with a hasp or other attachment or integral part of which, or through which a lock can be attached, or it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if **lockout** can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

**Energized:** Connected to **energy source** or containing residual or stored energy.

**Energy Isolating Device:** A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, not pole can be operated independently; a slide gate; a slip blind; a line valve; a block; and any similar device used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.

**Energy Source:** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

**Hot Tap:** A procedure used in the repair, maintenance and service activities that involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

**Lockout:** The placement of a lockout device on an energy isolating device, consistent with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lockout Device:** A device that utilizes a positive means such as a lock, either key or combination type to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment.

**Normal Production Operations:** The use of a machine or equipment to perform its intended production function.

**Servicing and/or Maintenance:** Work place activities such as constructing, installing, setting up, adjusting, inspecting, modifying and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start up of the equipment or release of hazardous energy.

**Setting Up:** Any work performed to prepare a machine or equipment to perform its normal production operation.

**Tagout:** The placement of a tagout device on an energy isolating device, using an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

**Tagout Device:** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device consistent with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

## APPENDIX B

### HAZARDOUS ENERGY CONTROL PROCEDURE LOCKOUT / TAGOUT

#### **A. Purpose**

This procedure establishes the minimum requirements for the lockout or tagout of *energy isolating devices*. It is to be used to ensure that the machines or equipment are isolated from all potentially hazardous energy, and locked out before employees perform any servicing or maintenance activities where the unexpected energization, start-up or release of stored energy could cause injury.

#### **B. Responsibility**

Facilities Management, Student Affairs, Business Services employees (including supervisors), and all other appropriate employees are to be instructed in the safety requirements of the lockout (or tagout) procedure. Each new, transferred, and other employee whose work operations are or may be in the area, are to be instructed in the purpose and use of the lockout or tagout procedure. Documents are to be current and maintained by the department/employee authorized to lockout/tagout. Each shop should conduct inspections and review the energy control procedures at least annually.

The lockout/tagout procedure also specifies the requirements for:

1. Lockout/tagout system procedure
2. Normal removal of locks/tags
3. Transfer of locks, tags, or responsibility at shift change
4. Group lockout/tagout
5. Testing or positioning of equipment

#### **C. Training**

All employees performing maintenance or servicing on machines and equipment are required to be trained in the control of hazardous energy procedures prior to performing maintenance or servicing. Training can be arranged and scheduled through the Occupational Safety Office at 828-0040.

*Affected* employees are required to have training whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

#### **D. Preparation for Lockout or Tagout**

A survey should be conducted to locate and identify all isolating devices to be certain which switch(es), valve(s), or other *energy isolating devices* apply to the equipment to be locked or tagged out. More than one *energy source* (electrical, mechanical, or others) may be involved.

#### **E. Sequence of Lockout or Tagout Procedures**

1. Notify all *affected* employees that a lockout or tagout system is going to be utilized and the reason for it. This normally includes notifying the JC-85 Control Center. The *authorized* employee should know the type and magnitude of the energy that the machine utilizes, the possible hazards, and the method for controlling the energy.
2. If the machine or equipment is operating, shut it down by the normal stopping procedure.
3. Isolate the equipment from its *energy source(s)*. This may be done by an operating switch, valve, or other *energy isolating devices*. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.

## HAZARDOUS ENERGY CONTROL PROCEDURE *continued*

4. Lockout and tagout the *energy isolating devices* with tags and assigned individual locks. If the device will not accept a lockout device, additional safety measures are to be taken to control the potential for the hazardous release of energy. This may include isolating circuit elements, blocking of a controlling switch, or removing a valve handle, etc.

Lockout or tagout devices are to be affixed to each *energy isolating device* by *authorized* employees in a manner that will hold the energy isolating devices in a "safe" or "off" position. Tagout devices are to be fastened at the same point at which the lock is attached or as close as possible to the energy isolating device.

5. Relieve all potentially hazardous stored or residual energy by disconnecting, restraining, etc. to render the equipment safe. Prior to working on machines or equipment verify that isolation or de-energization has been accomplished by operating the push button or other normal operating controls to make certain the equipment will not operate.
6. Failure to follow the set lockout/tagout procedures could result in suspension from work or dismissal, to be determined by individual department administrators.

### F. Removal of Lockout/Tagout Devices

Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the following procedures are to be followed by the *authorized* employee(s).

1. After service and/or maintenance is complete and equipment is ready for *normal production operations*, check the area around the machine(s) or equipment to ensure that no one is exposed, and notify *affected* employees that lockout devices have been removed.
2. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, all lockout/tagout devices are to be removed by the employee who applied the device.
3. Operate the *energy isolating devices* to restore energy to the machine or equipment. Check for proper operation.

### G. Exception to the Above:

When the *authorized* employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the supervisor of the craft or department, provided that the following is done:

1. Verify that the *authorized* employee who applied the device is not at the facility.
2. Make all responsible efforts to notify the *authorized* employee that his/her lockout/tagout device has been removed.
3. See that the *authorized* employee has been informed before resuming work.

### H. Requirements for Locks and Tags

Tags are only warning devices and are to accompany locks, which provide the physical restraint on *energy isolating devices*. Tags will be accepted only if lockout cannot be accomplished. Tagout devices are to be attached at the same location that the lockout device would have been attached.

Lockout devices and tags are to be provided by the employing department. Lockout devices must be marked so that they can identify to whom they belong. These locks should only be used for controlling energy, and are never to be used for other purposes.

## HAZARDOUS ENERGY CONTROL PROCEDURE *continued*

### I. Lockout/Tagout Device Guidelines

Lockout devices and tagout devices must indicate the identity of the employee applying the device.

Lockout and tagout devices are to be capable of withstanding the environment to which they are exposed, for the maximum period of time that exposure is expected.

Lockout devices need to be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

Tagout devices including their means of attachment, must be substantial enough to prevent inadvertent or accidental removal.

Tagout devices are to be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

Lockout and tagout devices are to be standardized within each division in at least one of the following criteria: color, shape, or size.(in the case of tagout devices, print and format shall be standardized).

Tagout device attachments are to be of a non-reusable type, attachable by hand, a minimum unlocking strength of no less than 50 pounds.

Tagout devices shall warn against hazardous conditions if the machine or equipment is *energized* and shall include a legend such as the following: DO NOT OPERATE, DO NOT START, DO NOT CLOSE.

### J. Periodic Inspection

The department responsible for the employees performing lockout/tagout is required to conduct a periodic inspection (at least annually) of the energy control procedures to ensure that the requirements of the Hazardous Energy Policy are being followed. The inspection is to be conducted by an *authorized* employee other than the employee(s) utilizing the energy control procedure being inspected.

The deficiencies or problems observed should be recorded and reported to the appropriate supervisor for correction. Each department is to keep on record a copy of these inspections, and forward a copy to OEHS.

### K. Shift or Personnel Changes

Specific procedures are to be used during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout devices between off-going and on-coming employees.

1. The off-going employee should remove his/her lockout or tagout device before the on-coming employee arrives.
2. The off-going employee should apply a tagout device after removing his/her lockout device, indicating that the lock had been removed, but that the machine or equipment had not been *energized*.
3. The on-coming employee verifies that the system is still de-energized, and removes the interim tag and substitutes his/her lockout device, insuring that continuous protection is maintained from one shift to another.

## HAZARDOUS ENERGY CONTROL PROCEDURE *continued*

### L. Group Lockout/Tagout

When service or maintenance is performed by a crew, craft, department or other group, they are required to use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

1. Primary responsibility is vested in an *authorized* employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock).
2. The *authorized* employee is to have a way to ascertain the exposure of individual group members with regard to the lockout or tagout of the machine or equipment.
3. When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility should be designated to an *authorized* employee to coordinate *affected* work forces and ensure continuity of protection.
4. Each *authorized* employee is to affix a personal lockout or tagout device to the group lockout device, group lock box, or comparable mechanism when beginning work, and is to remove those devices when stopping work.
5. The equipment cannot be re-energized until all individuals in the group have removed their lock or tag.

### M. Testing or Positioning of Machines or Equipment

When testing or positioning of machine during service or maintenance requires temporary removal of the lockout/tagout device, the following sequence of actions are to be followed.

1. Clear the machine or equipment of unnecessary tools and materials.
2. Remove employees from the machine area.
3. Remove lockout or tagout devices, remember to notify *affected* employees that the devices are going to be removed.
4. Energize and proceed with testing or positioning.
5. De-energize all systems and reapply energy control measures to continue with servicing or maintenance.

## Confined Space Entry Policy

VOSH requires compliance with 1910.Subpart-J of the OSHA standards for any confined space entry. VCU/VCUHS will not allow employees to enter confined spaces in violation of that standard.

### DEFINITIONS:

**Confined Space** means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
3. Is not designed for continuous employee occupancy.

**Entry** means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

**Permit-Required Confined Space (permit space)** means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

**Permit-Required Confined Space Program (permit space program)** means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

**NOTE:** VCU departments do not currently have such a program in place that would allow their employees to enter such spaces.

**Permit System** means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

**Entry Permit (permit)** means the written or printed document that is provided by the employer to allow and control entry into a permit space.

**Non-Permit Confined Space** means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

**Hazardous Atmosphere** means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL;  
**NOTE:** This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;  
**NOTE:** An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.
5. Any other atmospheric condition that is immediately dangerous to life or health.  
**NOTE:** For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

## Confined Space Entry Policy Definitions *continued*

**Immediately Dangerous to Life or Health (IDLH)** means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health

**Oxygen Deficient Atmosphere** means an atmosphere containing less than 19.5 percent oxygen by volume.

**Oxygen Enriched Atmosphere** means an atmosphere containing more than 23.5 percent oxygen by volume.

**Testing** means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

**NOTE:** Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

## General Requirements

Work areas will be evaluated to determine if any spaces are permit-required confined spaces. Known areas include Storage tanks, pits, boilers, vats, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, excavations, elevator pits, large pipes and pipelines.

When identified departments shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

**NOTE:** A sign reading DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER, or using other similar language would satisfy the requirement for a sign. Signs can be obtained from OEHS at 827-0357.

**VCU/VCUHS staff will not enter such spaces.**

**NOTE:** Departments who wish to undertake the intensive training, equipment purchases, and permit process to permit entry into confined spaces must contact the OEHS Occupational Safety office at 828-7899 in order to assure the department will be able to meet all applicable OSHA standards for such entry.

**Non-permit confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm may be entered provided that departments (with OEHS assistance):**

1. Can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere;
2. Can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry;
3. Develops monitoring and inspection data that supports the demonstrations required by paragraphs above.
4. If an initial entry of the permit space is necessary to obtain the data required by this section, the entry is performed in compliance with the OSHA permit required confined space regulations (most likely by use of a contractor.)
5. The determinations and supporting data required by this section are documented by and are made available to each employee who enters the space under the terms of this section or to that employee's authorized representative.
6. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
7. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
8. Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph.
9. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

**Continuous forced air ventilation shall be used, as follows:**

1. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;
2. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space;
3. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing required by this paragraph.

**If a hazardous atmosphere is detected during entry:**

1. Each employee shall leave the space immediately;
2. The space shall be evaluated to determine how the hazardous atmosphere developed;
3. Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

The employer shall verify that the space is safe for entry and that the pre-entry measures required by this section have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space or to that employee's authorized representative.

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the employer shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

**When contractors perform work that involves permit space entry, the department and OEHS will:**

1. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the VOSH requirements.
2. Inform the contractor of the elements, including the hazards identified by experience with the space that make the space in question a permit space.
3. Inform the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;
4. Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces.

**NOTE:** VCU/VCUHS employees will not enter confined spaces with contractors unless a full confined space entry procedure for that employee's department has been developed in conjunction with OEHS.

5. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

**In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:**

1. Obtain any available information regarding permit space hazards and entry operations from the host employer;
2. Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces.
3. Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

Any questions concerning this policy should be directed to the OEHS Occupational Safety Section at 827-0357.

## Safety Audit Guidelines

OEHS Safety Inspectors routinely inspect all VCUHS on-campus buildings twice a year for general and Life Safety compliance. Buildings are inspected in compliance with OSHA and JCAHO Standards. Facility inspection and fire suppression/detection system testing is also conducted to comply with state and federal fire safety regulations. Corrective action is initiated as appropriate through VCUHS Plant Operations work orders, or through outside contractors. All inspection activity is reported to the appropriate building or department managers. Documentation of all activity is maintained in the OEHS Fire and Occupational Safety section.

These inspections do not substitute for regular departmental inspections or audits of the work place. Checklists for conducting departmental safety audits can be found in the **Departmental Safety Program** section of this Manual.

## Electrical Safety Guidelines

### I. General Electrical Safety Guidelines

- A. The use of electrical power cord adapters and extension cords of any kind is prohibited.
- B. Do not handle electrical devices with wet hands, or when standing on a wet floor. "Wet" includes all fluids such as water, body wastes, sweaty hands, pharmaceuticals, etc.
- C. Be sure to turn electrical power switches to the OFF position BEFORE either connecting or disconnecting the plug from the power outlet.
- D. Electrical cords that are protected by a fuse or circuit breaker may be used. All circuit breaker protected cords must be plugged directly into a wall outlet. All abraded or otherwise damaged cords must be replaced immediately.

### II. Unsafe Devices

It is the responsibility of every staff member to take each electrically powered device which is known or suspected of being unsafe - including all devices which do not seem to work entirely as they should - out of service immediately.

- A. Such devices shall be promptly labeled with a sign reading "DEFECTIVE - DO NOT USE"
- B. Such devices are to be promptly taken out of service for evaluation, repair or disposal as appropriate.
- C. No toaster or toaster ovens or other devices with exposed coil elements may be used, except in approved kitchens. Break areas, in general, are not approved kitchens. Questions about whether or not an area is an approved kitchen may be directed to the VCUHS Safety Office at 828-6595, or OEHS Fire Safety Section at 828-7899.

## Electrical Safety Guidelines *continued*

### III. Portable Space Heaters

The VCUHS Safety Office discourages the use of portable space heaters in any building. Prior to resorting to the use of a space heater:

#### A. Space Heater Need

1. Please ensure that all exterior windows, and doors are properly closed in your building/area in an effort to keep the building warmer.
2. Please contact the Physical Plant Service Response Center (SRC) at 628-4772 and request them to increase the building/room heat.

**NOTE:** *If a portable space heater must be used as a temporary heat source, the following guidelines must be followed.*

#### B. Space Heater Specifications

1. Space heaters must be electric powered only. Fuel powered (propane, kerosene) space heaters are not permitted. Space heaters must not take more than 110-volts to operate.
2. Electric space heaters with heated coils are **not** permitted. **ONLY OIL FILLED (WITH INTERNAL HEATING ELEMENTS) AND CERAMIC ELECTRIC SPACE HEATERS ARE PERMITTED.**
3. Space heater must be UL (Underwriters Laboratory) listed or FM (Factory Mutual) listed.

#### C. Space Heater Operations

1. Space heaters must be kept at least three feet away from any combustible material and should **never be placed under desks**, tables or shelving.
2. Space heaters must always be turned off when an area being heated is not occupied.
3. Space heaters should always be plugged directly into a wall receptacle or power strip with surge protection. Extension cords are not permitted.
4. Nothing should ever be placed on top of or touching a space heater.
5. If used, space heaters should be located in plain sight and clearly visible.
6. Maintain all paperwork (instructions, registrations, etc.) for as long as the heater is being used within the Health System.

**Please contact the VCUHS Safety Office at 828-6595 if you have any questions, or further assistance is needed.**

## Safe Use & Storage of Flammable Materials Guidelines

**DEFINITION:** For purposes of this guideline, the term FLAMMABLE refers to all liquids and gases, which will burn under ordinary conditions.

### I. STORAGE

- A. Flammable materials shall be stored only in rooms, which are free of combustible solids, Oxygen and Nitrous Oxide cylinders.
- B. When stored in cabinets with doors, the cabinets must be marked "FLAMMABLE" on the door. This applies to even small quantities of flammables.
- C. Flammable liquids in quantities larger than what would normally be used in about 1 day (or in small containers), shall be stored only in approved safety cabinets, specially designed and labeled rooms, safety cans, or outside of the building.

Safety cabinets may contain no more than 60-gallons of flammable liquids at any time.

- D. Flammable materials may be placed into refrigerators ONLY if the refrigerator is a specially designed "explosion-proof" type and is so labeled.

### II. USE

- A. All rooms where flammable materials are present shall be conspicuously posted as NO SMOKING areas.
- B. Where flammable liquids in large quantities must be heated, the Office of Environmental Health and Safety (OEHS) shall be consulted prior to such use. OEHS may request that certain preliminary safety precautions be taken.

### III. DISPOSAL

- A. OEHS Chemical Safety Section 828-4866 shall be consulted on the disposal of all flammable and otherwise hazardous substances.
- B. Open vaporization of flammable materials for disposal is prohibited.

## Holiday Decorations Guideline

### Purpose

To provide that all Holiday decorations present minimal fire hazard and danger to patients, visitors and staff. Adequate preparation and inspection will enable everyone to safely enjoy the presence of attractive decorations during the holiday season.

### Specific Instructions

Units wishing to decorate shall be required to follow these guidelines to provide for safety and uniformity in the selection and installation of decorations:

1. All decorations, including artificial trees, should be made of noncombustible or flame retardant materials. All flame rating literature must be maintained in the area of display. Decorations should be removed as soon as possible following the holiday period.
2. No live or cut trees, or greenery, can be used within any building.
3. Always use "UL listed" lights and extension cords that are in good condition. Discard any electrical lights or cords with frayed, cracked, or exposed wiring.
4. Any lights used should be the "miniature" type, to keep heat levels to a minimum. Restrict lighting generally to displays in the main lobby areas.
5. No wires should extend across doorways, under doors, carpets, or in walkways of any sort.
6. No decorations may obstruct exits, corridors, egress doors, smoke detectors, fire extinguishers, sprinkler heads, manual pull stations, horns, bells, or alarm lights.
7. **NO decoration may be placed on cross-corridor doors.**

**If you have any questions, please contact the VCUHS Safety Office at 828-6595.**

## General Safety Guidelines For All Areas

1. All spilled liquids that are not hazardous materials must be immediately cleaned up by the person who created the spill. If circumstances prevent such immediate action, contact the Service Response Center (SRC) at 628-4772 for assistance.

Do not call Environmental Services to clean hazardous materials spills. Follow your HazMat Emergency Preparedness Unit/Department Specific Plan.

Under either circumstance, the person who created the spill is responsible for assuring the spill is properly cleaned up.

2. Beverages may not be transported unless the container is either tightly covered or placed onto a tray.
3. Open doors slowly - there may be somebody on the other side.
4. Walk down the center of corridors, passing oncoming traffic on the right.
5. Promptly notify your supervisor of defective equipment and other safety hazards.
6. All aisles, corridors, and exits are to be kept clear of obstructions in order to provide clear and safe exits in case of an emergency.
7. All fires and/or smoke must be immediately reported.
8. Never prop or chock open fire doors or disable door closer devices. Do not disable automatic hold open devices installed on fire doors, or in anyway allow them to be obstructed. Report such problems to the VCUHS Safety Office at 828-6595.

## Safety Guidelines For Administrative & Office Areas

1. Do not lift or move furniture or any other heavy piece of equipment without help. Call the Service Response Center at 628-4772 to request the moving of file cabinets, desks and similar large and/or heavy items of furniture.
2. Do not stand on chairs with wheels, or on folding chairs, at any time.
3. Keep all drawers and chairs pushed in under the desks and tables so as not to create stumbling hazards.
4. No electrical power cords are allowed to cross walkways and aisles.
5. Keep aisles clear of debris - papers, paper clips, pencils, and other slip/tripping hazards.
6. Keep stored items orderly. In a sprinkled building nothing should be permitted within 18 inches of the fire sprinkler head in order to ensure proper operation of the fire sprinkler heads.
7. Notify your supervisor of all safety hazards so that they can be corrected.
8. Report all equipment, which you think may be defective to your supervisor.

## Environmental Services Safety Guidelines

1. Check for and report all unsafe conditions, such as:

- \* defective equipment
- \* loose floor coverings
- \* defective carts
- \* sharp edges
- \* loose light fixtures
- \* damaged light switch and power outlet covers

Do not attempt to fix any equipment yourself, at any time. Report defective equipment to your supervisor who will arrange for repairs to be made.

2. Safe floor cleaning and finishing procedures are important in reducing the number of slips & falls.
  - a. Mop only one side of a corridor at a time. Use the same procedure with floor finish.
  - b. Post wet floor signs that clearly identify the wet floor areas and to prohibit traffic on the wet floor side.
  - c. Stay in the area until the entire floor is dry. Direct people to walk on the dry side.
  - d. When possible, avoid leaving hoses and cords lying across halls.
  - e. Do not block doorways or elevator entrances with equipment.
  - f. Ensure that all wet mops and equipment are removed from rooms and public areas when you are done.
3. Do not place articles on top of stepladders, cabinets, lockers or other high places.
4. Use gloves when cleaning with strong chemicals. These gloves will be provided by the department. If there are none where you are working, ask your supervisor about them.
5. Do not mix or use unauthorized chemicals or chemicals you are unfamiliar with. Ask your supervisor to show you how safely mix and use them.
6. Cart Safety:
  - a. Park carts against walls, away from fire doors, fire extinguishers and fire alarm pull stations.
  - b. Always stay to the center of corridors, so as not to run into people leaving rooms. Pass oncoming traffic on the right.
  - c. Pull carts through swinging doors. Do not ram them through the door.
  - d. Store materials in the cart in an orderly manner and ensure no cleaning products are left unlocked or unattended.
  - e. Approach all intersections, doorways and elevators SLOWLY so that you will not run into anyone.
7. DO NOT PICK UP BROKEN GLASS WITH YOUR HANDS. Sweep it up with a brush and dustpan. Pick up small splinters and chips with a brush and dustpan or with a wet or damp cloth, (and dispose of the cloth after doing this).
8. Be sure to unplug electric cords before wiping the cord with a damp or wet cloth.
9. ALWAYS HANDLE ELECTRICAL EQUIPMENT WITH DRY HANDS.

**Environmental Services Safety Guidelines** *continued*

10. ALWAYS unplug electrical cords by holding onto the plug - NEVER pull on the cord. Turn off machines before plugging them in or removing the plug from the wall.
11. DO NOT PUT YOUR HANDS INTO WASTEBASKETS TO EMPTY THEM. Remove the plastic bag by the edges. Do not swing bags against your legs as the bags may contain sharp objects.
12. Do not stand on the top step of any ladder. Make sure that the ladder's safety lock is in place and that the ladder is secure before putting your weight onto it.
13. Label all containers to indicate the contents. All unmarked containers must be promptly discarded. Unlabeled chemicals should not be used. Report all unlabeled chemicals to your supervisor for proper disposal through the OEHS Chemical Safety Section (828-4866).
14. Report slipping & tripping hazards to your supervisor promptly.
15. Keep housekeeping closets and other storage spaces clean and organized. Housekeeping closets must be locked when not in use.
16. Electrical closets and stairwell landings are not designed for housekeeping storage.
17. An unattended upright buffing machine should not be plugged in until you are ready to use it. If a buffer must be left unattended, make sure that the buffer is in a lying-down position.
18. Notify your supervisor of any wastes, which may be hazardous as they may need special disposal.
19. Use proper handling procedures when removing and handling linen and trash.

## Food and Nutritional Service Safety Guidelines

1. All work areas must be kept neat and orderly.
2. Manufacturer's safety instructions on food service equipment must be maintained in the department and made available to all personnel.
3. Warn all staff of any potential hazards in the use or handling of equipment.
4. All staff must be aware of emergency procedures to take in case of an accident.
5. Staff must be informed of the proper occurrence/incident reporting procedures. All incidents must be reported in writing by the employee and their supervisor. The supervisor is responsible for taking corrective action, where possible, to prevent a recurrence.
6. Employees must immediately report the following to their supervisor:
  - \* Defective equipment
  - \* All injuries and accidents, regardless of how slight.
  - \* All cuts, sores, rashes, coughs, respiratory or gastrointestinal infections.
  - \* All unsafe conditions they are aware of.
7. SAFE HANDLING OF KNIVES:
  - a. Always cut away from your body. Walk with knives flat against your thigh.
  - b. Store all knives in their proper location when not in use. Never leave a knife lying around.
  - c. Do not put knives in a sink.
  - d. Keep knives sharp - dull knives are a greater hazard.
  - e. Do not use knives as can openers or screwdrivers, or for any purpose other than for cutting food.
8. PREVENTION OF BURNS:
  - a. Always use mitts, potholders, or tongs when working with hot items, or near steam.
  - b. Staff should warn others when they are carrying hot liquids, and be sure that the path is clear before starting in that direction.
9. Keep doors closed at all times. Open oven doors carefully to allow heat and steam to escape safely.
10. Wipe up spills and grease spots from floors IMMEDIATELY.
11. Walk - don't run.
12. Wear safe shoes with rubber soles and heels. Open toed shoes are not to be worn.
13. Follow the proper procedures for lifting and moving materials.

**Food and Nutritional Service Safety Guidelines *continued***

14. FOOD CART SAFETY
  - a. Push only by handle.
  - b. Keep to the middle of corridors. Pass oncoming traffic on the right side.
  - c. Move carts slowly. Get help if you need it.
  - d. Use extra caution at corners. Use mirrors, where available, to watch for pedestrians at intersections.
  - e. Do not leave carts in the center of corridors, blocking doorways, or where they can cause an obstruction.
  - f. Pull carts through swinging doors. Do not push doors open with food carts.
15. Use approved stepladders or step stools to reach high items. Where possible, place heavier objects at waist height, to cut down the possibility of muscle strains or back injury.
16. Use a brush or pan to pick up broken glass or china. Dispose of the pieces in the proper container. Do not handle broken glass or china with hands.
17. Use only employer supplied can openers.
18. Keep cleaning supplies, insecticides, chemicals, etc., away from food and food preparation areas.
19. Walk-in freezers and refrigerators must be easily opened from the inside, without tools. Test the emergency release occasionally to make sure it works.
20. All staff must know how to report a fire, and what to do if the fire alarm sounds.

## Shop Safety Guidelines

### Plant Operations

#### 1. Training

All staff must be qualified to perform duties to which they are assigned. Training must be documented.

#### 2. Hand Tools

- a. Use each tool correctly and for the purpose it was intended. If you don't have the right tool with you, get it - don't improvise.
- b. Keep tools in good condition.
- c. Put tools away when you are through with them.
- d. Safety glasses must be worn by all persons using impact tools such as chisels, punches etc.
- e. Do not keep edged tools loose in a common workbox, or sitting on a bench.

#### 3. Power Tools

- a. Safety glasses are to be worn by all persons using power tools.
- b. All power tools are to be either grounded or double-insulated.
- c. Inspect all power tools before using them to make sure they are in good operating condition.
- d. Power tools are to be used only by staff whom supervisors have authorized to use them.
- e. Do not drag power cords through water, oil, or over sharp metal edges.
- f. Guards on stationary power tools must be kept in place.
- g. Whenever possible, suspend cords overhead if there is traffic which may run (or trip) over them. If this is not possible tape them down with duct tape to prevent tripping hazards. Assure the cord cannot be damaged by traffic however.
- h. Have tools with frayed cords, broken plugs, or other damage repaired before using.
- i. Clean tools only with non-flammable safety solvents.
- j. Disconnect power cords whenever changing blades or otherwise working on power tools.
- k. When using power tools while on a ladder or scaffold, take into consideration the weight of the equipment, job to be done, and the increased chance of injury.
- l. Always shut off valves or switches when working on electrical systems. Apply warning tags and locks at lockout points such as fuse boxes and control panels.
- m. Do not overload electrical circuits. Never fuse too heavily. Electrical wiring is to be done only by a qualified electrician.

## **Shop Safety Guidelines - Plant Operations *continued***

### **4. Ladder Safety**

- a. Wood ladders are not to be painted over. Painted ladders must be discarded promptly, if found.
- b. Wood ladders are to be free from large checks, shakes, decay or knots.
- c. Promptly tag defective ladders for repair or destruction.
- d. Never use metal ladders when working on or around electrical devices or wiring, or where they (or the person on them) may come into contact with electricity.
- e. Ladders need non-slip bases.
- f. Never use ladders as scaffolds.
- g. Do not climb ladders with both hands filled with materials.
- h. Always face the ladder.
- i. Do not lean over too far.
- j. Do not stand on the top 2 rungs of a ladder.
- k. Rope off public areas and/or place warning signs below wherever ladders are being used.

### **5. Machinery**

- a. All equipment must have appropriate guards. Never remove guards that are provided.
- b. All flywheels, gears and other rotating parts of machines must be guarded against contact unless they are higher than 7 feet from the floor. Guards may not have openings larger than ½ inch.
- c. Table saws must be equipped with an upper blade guard, splitter and kick-back preventer.
- d. Gasoline powered equipment must not be operated indoors unless adequate ventilation is provided to properly vent exhaust fumes. Gasoline will only be used in approved containers, properly marked and stored.

### **6. Painting and Spraying**

- a. A "No Smoking" rule must be enforced in paint and wood shops, and any other location where paints and thinners are used or stored.
- b. Fire extinguishers must be available wherever flammable paints or thinners are used or stored. Flammables must only be kept in approved containers properly labeled and stored. A properly labeled container includes the product name and the hazard warnings applicable to the product.
- c. When spray-painting, a respirator and gloves shall be worn. Respiratory protection will be selected and approved by OEHS.
- d. Gasoline powered air compressors should not be used indoors.

## **Shop Safety Guidelines - Plant Operations *continued***

7. **Electrical Safety** (See the Lockout/Tagout Policy section of this manual).
  - a. Before machinery is worked on the electrical controls must be shut off, tagged and locked. Tags and one-key locks should be removed only by the person who originated their use.
  - b. Electricians should not repair, service, or perform any operations on energized electrical lines or equipment, except as follows:
    1. Where cutting of power would present an immediate hazard to life.
    2. If voltage adjacent to equipment being worked on exceeds **250 volts**, two or more electricians must be present.
  - c. All electrically operated equipment must be provided with a grounding cord and cap.
  - d. Panel board circuit identification directories must be kept current.
  - e. Panel boxes must have all unused openings (knock-outs) sealed. Blank-ups need to be installed in all breaker panels where circuits are exposed, due to unfilled breaker slots.

## HOT WORKS PERMIT PROGRAM

### HOT WORKS -WELDING, CUTTING, SOLDERING & OPEN FLAME OPERATIONS

All welding, cutting, soldering & open flame operations performed in any VCU and VCUHS controlled facility on either campus requires the issuance of a Hot Works Permit from the OEHS, Fire and Safety Office. This permit system applies to all work performed by in-house or by contractors to the University and VCUHS. To comply:

- A.** Follow the Hot Works Permit Program that requires:
1. Contact OEHS (828-7899) to obtain the required Hot Works Permit, prior to beginning work.
  2. Visit and register with the Service Response Center (SRC), Clinical Support Center, 4<sup>th</sup> Floor, phone 628-4772, Before Work Is Started and Upon Completion.
  3. Providing a fire watch during and after the “hot” activity. The fire watch should be familiar with all procedures to report fires and activate alarms.
- B.** Acetylene, oxygen and other compressed gas cylinders must be:
1. Capped at all times except when connected to the welding cart.
  2. Secured upright at all times.
- C.** Appropriate fire extinguisher(s) must be on the welding cart, and or in the area at all times.
- D.** All personnel shall wear protective apparel when welding, cutting and/or soldering. This should include gloves, hoods, goggles, and aprons, as applicable. Ankle-high shoes, with trousers outside of them, should be worn to prevent molten material from falling into shoes.
- E.** Screens and warning signs should be set up to prevent eye injuries to nearby persons.
- F.** Make sure that all explosive vapors have been removed from containers before working on them.
- G.** Never snap or throw solder to get it off a hot iron.

**NOTE:**

- A sample of the Hotworks Permit can be found on the next page. If needed, please photocopy.
- Completed forms should be brought to the OEHS Fire Safety Office, Sanger Hall, B2-004.

## VCUHS

### HOT WORKS PERMIT FOR CUTTING, WELDING, AND ROOF REPAIR (Complete all blank spaces, or write N/A)

BEGINNING DATE OF HOT WORK: \_\_\_\_\_  
PROJECTED COMPLETION DATE: \_\_\_\_\_

(Notify Control Center at 828-9364 when finished)

BUILDING: \_\_\_\_\_  
FLOOR OR ROOM: \_\_\_\_\_  
DAILY STARTING TIME: \_\_\_\_\_  
DAILY COMPLETION TIME: \_\_\_\_\_

WORK TO BE DONE: \_\_\_\_\_  
\_\_\_\_\_

ROOF REPAIR METHOD\*WATER HOSE AVAILABLE (Y/N): \_\_\_\_\_  
TYPE OF WELDING PROCESS: \_\_\_\_\_  
SPECIAL PRECAUTIONS: \_\_\_\_\_

I VERIFY THAT ITEMS 1 THRU 15 ON THE OPPOSITE SIDE OF THIS PERMIT HAVE BEEN REVIEWED AND COMPLETED, AS NECESSARY. (ARRANGEMENTS HAVE BEEN MADE FOR ITEM 18).

#### I. VCU-VCUHS SUPERVISOR/INSPECTOR:

NAME (please print): \_\_\_\_\_  
SIGNED: \_\_\_\_\_

#### II. ON-SITE LEAD-MAN/FOREMAN (if different from above):

NAME (please print): \_\_\_\_\_  
DEPARTMENT OR COMPANY NAME: \_\_\_\_\_  
TELEPHONE NUMBER: \_\_\_\_\_ BEEPER NUMBER: \_\_\_\_\_  
RADIO NUMBER (IF ANY): \_\_\_\_\_

\*\*When the permit has been filled out, return to the VCU FIRE & OCCUPATIONAL SAFETY SECTION of the Office of Environmental Health and Safety to receive final authorization to proceed.

#### III. FOS STAFF MEMBER--NAME (print): \_\_\_\_\_

SIGNED: \_\_\_\_\_

\*\*Post copy on door or wall near the entrance to the hot work area.

**IN CASE OF FIRE, CALL \*50 or 828-9364**

**FOR INFORMATION, CALL  
Fire & Occupational Safety at 828-7899 or 828-0040**

**DO NOT CUT, WELD, OR USE OTHER OPEN FLAME OR SPARK PRODUCING EQUIPMENT  
UNTIL THE FOLLOWING PRECAUTIONS HAVE BEEN TAKEN:**

**CHECK EACH ITEM**

- \_\_\_ 1. Appropriate fire extinguishers are on-site and workers are trained in using them.
- \_\_\_ 2. The Control Center (JC-80) will be notified before beginning work each day, and at the end of each day (phone 828-9364).
- \_\_\_ 3. Floor/walls/ceiling are clear of combustible materials within 35-feet of the work area, or the surfaces are covered with fire retardant covers.
- \_\_\_ 4. There is no flammable lint, dust, vapors, liquids, or containers and equipment that contained such materials, in the area.
- \_\_\_ 5. Floor openings within 40-feet are tightly covered.
- \_\_\_ 6. All hot-works equipment to be used has been inspected, and is in good repair.
- \_\_\_ 7. The sprinkler system, where provided, is in service.
- \_\_\_ 8. Smoke detectors, where provided, have been prevented from alarming, through appropriate methods used by qualified technicians (i.e., covered, removed, or system disabled).
- \_\_\_ 9. The nearest manual pull station has been located, and all workers know how to operate it.
- \_\_\_ 10. A responsible Fire Watcher has been assigned to watch for dangerous sparks in the area, as well as the floors above and below, and opposite walls.
- \_\_\_ 11. A responsible Fire Watcher will remain on the job site for 30-minutes after completion of the job.
- \_\_\_ 12. If a fire occurs, a telephone or radio is immediately available to call the Control Center (JC-80) at 828-9364.
- \_\_\_ 13. Fire evacuation routes are not blocked or altered. All fire exits are open.
- \_\_\_ 14. Do staff in the building need notice of evacuation route changes or drills?

**In Confined Spaces Only:**

- \_\_\_ 15. Review OSHA regulations concerning confined space work.
- \_\_\_ 16. Appropriate monitoring for combustible gas, oxygen deficiency, and toxic chemicals has been conducted.
- \_\_\_ 17. Ventilation device will be used.
- \_\_\_ 18. Respiratory equipment will be used.

FIRE WATCHER NAME (please print): \_\_\_\_\_

DEPARTMENT OR COMPANY: \_\_\_\_\_

FIRE WATCHER SIGNATURE: \_\_\_\_\_

### Interim Life Safety Measures (ILSM)

**Interim Life Safety Measures** are a series of administrative actions that must be taken to compensate temporarily for the hazards posed by existing construction activities or Life Safety Code deficiencies. ILSM must be implemented in or adjacent to, all construction areas and throughout buildings with existing Life Safety Code deficiencies. ILSM apply to all personnel, including construction workers, and must be implemented during project development and continuously enforced through project completion.

**Interim Life Safety Measures** are to be reviewed weekly and documented by the project manager. Any changes are to be noted. All project managers must keep records of this documentation available for review.

**Project Name:** \_\_\_\_\_

**Project Location:** \_\_\_\_\_

**Start Date:** \_\_\_\_\_

**Completion Date:** \_\_\_\_\_

***When the project is completed, a copy of the weekly documentation record must be given to the Director of Plant Operations.***

### INTERIM LIFE SAFETY MEASURES - REQUIREMENTS CHECKLIST

I. Do Life Safety deficiencies or construction/renovation activities pose a Life Safety hazard as defined by NFPA 101, 1997 Life Safety Code (LSC)? Yes\_\_\_\_ No\_\_\_\_

II. If Yes, list possible hazard, beginning date of hazard, and projected ending date:

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

III. Interim Life Safety Measures consist of the following actions:

a. Ensuring free and unobstructed exits. Personnel receive additional training when alternative exits are designated. Buildings or areas under construction must maintain escape routes for construction workers at all times. Means of exiting construction areas are inspected daily.

**ACTION TAKEN:**

\_\_\_\_\_  
\_\_\_\_\_

b. Ensuring free and unobstructed access to emergency services and for fire, police and other emergency forces.

**ACTION TAKEN:**

\_\_\_\_\_  
\_\_\_\_\_

c. Ensuring fire alarm, detection, and suppression systems are in good working order. A temporary, but equivalent system, shall be provided when any fire system is impaired. Temporary systems must be inspected and tested monthly, and inspection reports maintained, by VCU Fire and Occupational Safety.

**ACTION TAKEN:**

\_\_\_\_\_  
\_\_\_\_\_

d. Ensuring temporary construction partitions are smoke tight and built of noncombustible or limited combustible materials that will not contribute to the development or spread of fire.

**ACTION TAKEN:**

\_\_\_\_\_  
\_\_\_\_\_

**INTERIM LIFE SAFETY REQUIREMENTS CHECKLIST *continued***

- e. Prohibiting smoking throughout the organization’s buildings, and in and adjacent to construction areas.

**ACTION TAKEN:**

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- f. Developing and enforcing storage, housekeeping, and debris removal practices that reduce the buildings flammable and combustible fire load to the lowest feasible level.

**ACTION TAKEN:**

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**IV. VCU Fire and Occupational Safety**

- a. Where necessary, provide additional fire-fighting equipment and training personnel in its use.

**ACTION TAKEN:**

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- b. Conduct a minimum of two fire drills per shift per quarter.

**ACTION TAKEN:**

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- c. Are the units or departments in or near the effected area prevented from evacuating per previously established procedures?

**ACTION TAKEN:**

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- d. Increasing hazard surveillance of buildings, grounds, and equipment, with special attention to excavations, construction areas, construction storage, and field offices.

**ACTION TAKEN:**

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- e. Conducting organization wide safety education programs to promote awareness in Life Safety Code deficiencies, construction hazards, and Interim Life Safety Measures.

**ACTION TAKEN:**

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SIGNATURES

DATE

TELEPHONE #

PROJECT MANAGER: \_\_\_\_\_

VCUHS SAFETY OFFICER: \_\_\_\_\_

VCU FIRE & OCCUPATIONAL SAFETY: \_\_\_\_\_

### INTERIM LIFE SAFETY MEASURES ITEMS REVIEW LIST

For each item, is this existing equipment, system, or construction affected by new renovation or construction?

- \_\_\_\_\_ 1. Alarm indicating appliances, including horns, strobes, bells and speakers.
- \_\_\_\_\_ 2. Fire or smoke wells, floors, ceilings and doors.
- \_\_\_\_\_ 3. Smoke or heat detectors, including duct detectors.
- \_\_\_\_\_ 4. Manual fire alarm pull station.
- \_\_\_\_\_ 5. Fire and/or smoke dampers.
- \_\_\_\_\_ 6. Exit egress corridors.
- \_\_\_\_\_ 7. Fire exits and stairways.
- \_\_\_\_\_ 8. Exit signs.
- \_\_\_\_\_ 9. Emergency lighting, including lights on emergency power circuits.
- \_\_\_\_\_ 10. Sprinkler system, including sprinkler heads and control valves.
- \_\_\_\_\_ 11. Standpipes, standpipe cabinets and valves, and fire department connections outside the building.
- \_\_\_\_\_ 12. Fire Extinguishers and cabinets.
- \_\_\_\_\_ 13. Fire and smoke doors.
- \_\_\_\_\_ 14. Automatic door closures or hold open device.
- \_\_\_\_\_ 15. Firefighter's communication stations.
- \_\_\_\_\_ 16. Area of rescue assistance station and panels.
- \_\_\_\_\_ 17. Oxygen systems, medical gas systems, and control valves. **If yes, Medical Gas Interruption form must be completed.**
- \_\_\_\_\_ 18. Storage of materials in inappropriate locations, including non-fire rated rooms.
- \_\_\_\_\_ 19. Hotworks, including cutting, welding, soldering, and roofing. **If yes, Hotworks Permit form must be completed.**
- \_\_\_\_\_ 20. Kitchen hood exhaust removal and kitchen hood fire suppression system.
- \_\_\_\_\_ 21. Electrical panels, including all fire systems panels, communication speakers and safety related panels.
- \_\_\_\_\_ 22. Emergency eyewash stations and showers.

## Transportation Safety Guidelines

All employees who drive VCUHS vehicles need to show their valid driver's license to their supervisor to be copied for the employee's employment file. This must be done before the vehicle is driven and preferably before the employee is hired, and should be re-verified annually. If an employee will drive any vehicle as a primary job duty, list a valid driver's license in the requirements for recruitment, with a request for a current DMV record.

Safety belts are to be used at all times, as required by state law and. If a vehicle is ticketed or towed the department needs to have a policy as to who is responsible for paying the costs. A vehicle sign out log is useful when more than one driver uses the vehicle.

### Accidents Involving VCUHS Vehicles

All VCUHS vehicles should have packets in the glovebox with detailed instructions to follow if the vehicle is involved in an accident. If the accident occurs on campus, call the VCU Police at 828-1234. If you are off-campus, please call the Virginia State Police to report the accident. Any accident involving VCUHS vehicles must be reported as soon as possible to the Fleet Safety Office by calling 828-9418, and the Risk Management Department at 828-1707.

## Fire and Occupational Safety Training

The Fire and Occupational Safety Section of the Office of Environmental Health and Safety has developed training classes in these areas. Listed below are the courses, manuals and targeted staff:

### Training Course \*

Safety Awareness  
Essential Education. Blitz  
Evacuation Training  
Hands-on-Fire Extinguisher Training  
Dr. Red Drill Training  
Resident Assistant/Security Training  
Biology Graduate Assistants  
VCU Police Academy  
Lockout/Tagout  
Confined Space  
Forklift Training  
Safety for Supervisors  
Proper Lifting Technique  
Ergonomic Survey

### Target Audience

All non-healthcare, paid workers  
Existing VCUHS Staff  
Specific for area and building  
Specific for area (as requested)  
Per schedule and special requests  
Housing Student Employees  
Graduate Students  
VCU Police Officers  
Maintenance Employees  
Maintenance Employees  
Anyone using a lift truck  
VCUHS Supervisors  
Specific for area (as requested)  
Specific for area (as requested)

### Training Manual

Safety Awareness Handbook  
Interim Life Safety Program  
Hot Works Permit Program

### Target Audience

All new employees  
Outside Contractors, VCUHS Plant Operations, VCU Capital Planning  
Outside Contractors, VCUHS Plant Operations, VCU Capital Planning

Questions and requests for written materials should be directed to the Fire and Occupational Safety Section of OEHS at 827-0357.

## Radioactive Materials

### RADIATION SAFETY TRAINING

The Radiation Safety section of Environmental Health & Safety provides radiation safety training for radiation workers at VCUHS and maintains documentation of this training. Following is a list of radiation safety training programs and manuals:

#### Training Course

Safety Awareness Program  
Radiation Safety Lecture  
Radiation Safety Short Course  
Radiation Safety Inservice Training

#### Target Audience

Orientation for new employees  
Radiation workers and refresher training  
1 credit, 15 hour course  
Specific for area, as requested

#### Training Manual

Safety Awareness Employee Handbook  
Radiation Safety Manual for Nuclear Medicine  
Radiation Safety Manual for Radiation Oncology  
Radiation Safety Manual for Nurses  
Radiation Safety Manual for Radiology  
Radiation Safety Guide  
Radiation Safety Manual for Dental Radiography  
Radiation Safety for Animal Facility

#### Target Audience

Orientation for new employees  
Radiation workers in Nuclear Medicine  
Radiation workers in Radiation Oncology  
Nurses who work with brachytherapy patients  
Radiation workers in Radiology  
Radiation workers in laboratories  
Radiation Workers in Dentistry  
Radiation Workers in the Animal Facility

Questions and requests for information about the radiation safety training programs and manuals should be directed to the Radiation Safety Section of OEHS at 828-9131.

## Radiation Safety Program

### Radiation Workers

Some employees are likely to be exposed to radiation in the course of their normal job duties. Radiation and radioactivity are used in several areas of VCU/VCUHS, including the departments of Nuclear Medicine, Diagnostic Radiology (X-Ray), Radiation Oncology, Clinical Pathology, and in many of the university's research laboratories. Some employees who work in these areas are classified as radiation workers and subject to radiation protection controls.

### Radiation and Risk

Exposure to high levels of radiation have been associated with cancer, birth defects, and health problems. At the dose levels permitted for employees at VCU there are no known health effects, but it is sensible to keep radiation exposure as low as possible. In general, the risks associated with occupational exposure are smaller than the risks associated with most day-to-day activities.

### Natural Radiation

Natural radiation is everywhere. We are exposed to a constant stream of radiation from outer space. Radioactivity is in the ground, the air, the buildings we live in, the food we eat, the water we drink, and the products we use.

## **Radiation Safety Program continued**

### **Radiation Exposure**

Radiation exposure is measured in Sieverts or rems. An individual in the United States averages approximately 2.6 milliSieverts (or 260 millirem) of exposure each year from natural sources. In addition, many of us will average another 1 milliSievert (or 100 millirem) per year from medical procedures.

### **Sources of Radiation at VCU/VCUHS**

Sources of radiation exposure at include laboratories, which perform research using radioactive materials, patients undergoing medical procedures using radioactive medicines or sources, and radiation producing devices such as X-ray machines. Radiation exposure can occur by contamination of skin or clothing, eating and breathing radioactive materials, exposure to radiation from patients, and from activated x-ray or therapy machines. Patients can also be a significant source of radiation when they have undergone treatment using radioactive medicines or sources. The chart and door to the patient's room are labeled during such therapies. Patients who are given very small amounts of radioactive medicine do not pose significant radiation hazards and their rooms are not labeled.

### **ALARA**

VCU is committed to keeping radiation exposures as low as reasonably achievable (ALARA). Coordinated by the University's Radiation Safety Committee, the ALARA program sees that every activity involving radiation is planned to minimize exposure for employees, students, patients, and visitors.

### **Radiation Safety at VCU/VCUHS**

The use of radiation and radioactivity is governed by the Nuclear Regulatory Commission and the State Health Department. The Radiation Safety staff directs and coordinates the university's radiation safety program and is responsible for its day-to-day operation, including 24 hour radiation emergency response. The Radiation Safety Committee, which is appointed to review the radiation safety program, is committed by written policy to keep radiation doses for employees, students, patients and visitors as low as reasonably achievable. The Radiation Safety staff is responsible for ensuring that all radiation safety regulations set forth by the Nuclear Regulatory Commission (NRC), the Commonwealth of Virginia, and VCU are observed.

Copies of NRC and State licenses, results of NRC and State inspections, and Parts 19 and 20 of 10 CFR, which are the NRC regulations concerning "Notices, Instructions and Reports to Workers; and Inspections" and "Standards for Protection Against Radiation" are available from the Radiation Safety Office.

Instruction in safety measures which individuals should use to minimize their radiation exposure have been developed for all applicable areas. In some cases specific procedures must be followed. Your supervisor should advise you of the precautions to be taken and identify all applicable procedures.

### Procedure for Obtaining Approval for Use of Radioactive Materials or Radiation Producing Devices in Humans

In accordance with VCU, State and Federal regulations, all applications involving the use of radioactive material in humans must be approved by the Radiation Safety Committee (RSC) before final approval can be given by the Committee on the Conduct of Human Research (CCHR). Applications involving the use of radiation producing devices (X-rays) on humans in a manner that does not directly benefit the individual\*, must also be approved by the RSC before final approval can be given by the CCHR. The applicant must include the following information in the body of the protocol:

1. The dose equivalent to the gonads, breast, red bone marrow, lung, thyroid and bone surfaces.
2. The dose equivalent to any other organs that are exposed to more than 6% of the effective dose equivalent.
3. The whole body effective dose equivalent (EDE)\*\*.

**In the consent form, radiation doses that fall into the ranges specified in the following table must be characterized by the appropriate risk statement (see Table).**

Dose	Risk Statement
EDE ≤ 50 mrem	Essentially Without Risk
EDE > 50 mrem and ≤ 500 mrem and ≤ 500 mrem to any organ not considered in the EDE.	Minimal Risk
EDE > 500 mrem and ≤ 5,000 mrem and ≤ 3,000 mrem to the whole body, active blood-forming organs, lens of the eye or gonads from a single study, and ≤ 5,000 mrem annually, and ≤ 5,000 mrem to other organs from a single study and 15,000 mrem annually.	Slight Risk

Applicants should contact Radiation Safety at 828-9131 and make an appointment with the Radiation Safety Officer or his delegate to discuss their research proposal. All protocols involving the use of radiation must be reviewed by the RSO prior to CCHR submission. Any amendments of conditions or protocols approved by the CCHR which affect radiation dose must also be submitted to the Radiation Safety Committee for re-approval.

\* *If all the radiation components of a protocol being submitted have been previously approved by the Radiation Safety Committee, and these component procedures are for the direct benefit of the individual, no further Radiation Safety Committee approval is necessary. For instance, approved diagnostic Nuclear medicine procedures that are included in a proposal, and would have normally been used to diagnose or treat the individual's condition, do not require Radiation Safety Committee approval.*

*If a protocol involves procedures utilizing radiation, and those procedures have not been approved by the Radiation Safety Committee, or the procedures have been approved by the Radiation Safety Committee but are not being performed for the direct medical benefit of the individual, Radiation Safety Committee approval is required. For example, a protocol includes an approved lung scanning procedure, the results of which will be correlated with routine chest x-rays. If the lung scan would not normally be done and is being performed for reasons other than the individual's direct medical benefit, this protocol now requires Radiation Safety Committee approval.*

\*\* As defined in ICRP Publication 26 "Recommendation of the International Commission on Radiological Protection", Pergamon Press, Volume 1 No. 3, 1977.

## **Rationale and Guidelines for Development of Radiation Risk Statement to be Included in Consent Forms for Research Involving Human Subjects**

### **Radiation Safety / Radioactive Drug Research Committee Virginia Commonwealth University**

This document has been created by the Radiation Safety Committee (RSC) in response to a request from the Committee on the Conduct of Human Research (CCHR) to present the scientific and philosophic justifications for the radiation risk statements included in human use consent forms. In granting approval to proceed with a study, the RSC assumes that the Responsible Investigator supports this philosophy and conveys its intent in discussing issues of risk raised by research subjects.

The RSC's present position on radiation risk is based on the National Research Council's Committee on the Biological Effects of Ionizing Radiation Report, Health Effects and Exposure to Low Levels of ionizing Radiation, otherwise referred to as BEIR V (December 1989) and national council on Radiation Protection and Measurements Report No. 91, Recommendation On Limits For Exposure To Ionizing Radiation (June 1, 1987).

Radiation effects are divided into three major categories: heritable effects, carcinogenic effects and mental retardation. Low-level radiation risks are generally extrapolated from effects observed at doses that are higher than 10 rad. The 10 rad dose level is usually looked upon as the dividing line between low level and high-level doses. Most of the observations of low-LET radiation effects are restricted largely to high dose rates. The carcinogenic effect of low-LET radiation is generally reduced at low doses or dose rate.

The average annual exposure to individuals living in the United States may be used for comparison purposes. Background radiation levels from cosmic, terrestrial, and internal sources average 95 millirem a year. The effect dose associated with radon exposure in the home averages 200 millirem a year. Taken together with the average x-ray and nuclear medicine exposure to the general public, the average annual population exposure in the United States is now estimated to be 360 millirem a year.

**Heritable Effects.** By extrapolation from to man, it is estimated that at least 100 rad of low dose rate, low LET radiation is required to double the mutation rate in man. Heritable effects of radiation have not yet been demonstrated in man. The risk coefficient to the first generation is  $1 \times 10^{-6}$  dominant disorders per rad. In general the heritable risks is an order of magnitude less than that associated with radiation carcinogenesis.

**Carcinogenic Risk.** The excessive lifetime risk associated with an acute exposure of 10 rad of low LET radiation is 0.8% according to the BEIR V report. The accumulation of the same dose over weeks or months is expected to reduce the risk by a factor of 2 or more. The upper limit for this dose reduction effect factor (DREF) may be as great as 10. An acute dose of 10 rad to the entire U.S. population would result in about a 4% increase in the current baseline cancer risk assuming no dose reduction effect factor. If the upper limit of the DREF is assumed, this results in only a 0.4% increase.

**Mental Retardation.** The frequency of severe mental retardation associated with in utero exposure is highest in the 8th to 15th week of gestation. The risk is approximately 0.4% per rad. Diminution of IQ at a rate of 0.3 points per rad has also been noted. This again has its highest probability in the 8th to 15th week of gestation. Other fetal effects may include a cancer risk, which is estimated to be 2 to  $2.5 \times 10^{-4}$  per rad in the first ten years of life. Other epidemiology studies suggest an association between utero exposure and carcinogenic risks in adult life.

The BEIR V report conclusions on radiation risk include two very specific statements, which should be strongly considered when evaluating the risk/benefit of low level radiation:

1. "Studies of population chronically exposed to low level radiation, such as those residing in regions of elevated natural background radiation, have not shown consistent or conclusive evidence of any associated risk in the increase of cancer."
2. "Epidemiological data cannot rigorously exclude the existence of a threshold and that at low dose and low dose rates the lower limits of the range of uncertainty in the risk estimate extends to zero."

The heritable, carcinogenic, and mental retardation risks associated with low dose, low LET radiation are risks which are based on theoretical models rather than actual epidemiological data. At this point in time it is unclear as to whether or not we will ever be able to demonstrate whether or not a risk exists at these levels of radiation.

The doses associated with most research protocols reviewed by the RSC are generally very low, often comparable to the average annual exposure received by the general population (360 mrem/yr). The risks associated with these levels is very small especially when compared with the spontaneous occurrence of cancer and genetic effects in the population or the risk associated with the activities of everyday life.

Based on these factors the RSC has adopted the following dose guidelines when considering the risks associated with both research and clinical uses of radiation. The justifications are based on information found in the references previously referred to as well as FDA and NRC regulations. The statements have been developed to conform with the general philosophy of the CCHR regarding consent:

- (1) Inform subjects that they will receive some (or additional) radiation exposure as a participant in the study and to indicate the level of risk,
- (2) Avoid the inclusion of emotional terms like cancer, death, etc., so as not to alarm the subject, and
- (3) Avoid comparison to risks associated with other radiological procedures, which are not familiar to the subject.

Dose	Justification
EDE $\leq$ 50 mrem	Background radiation levels vary in the range of 60-70 mrem/yr in North America and apparently play no role in an individual's decision as to where to live or work. <sup>1</sup> Based upon this fact the committee feels that the risk associated with doses in this range may be described as essentially without risk implying that the risk should not be considered as an essential factor in any individuals decision to participate in the study.
EDE > 50 and $\leq$ 500 mrem and $\leq$ 500 mrem to any organ not considered in the EDE	Both the NCRP <sup>2</sup> and NRC <sup>3</sup> recommended this level as a limit for infrequent annual exposure to the general public. This level is viewed as reasonable in comparison to risks associated with other common activities of everyday life and need not be regarded as especially hazardous. Based upon this fact the committee feels that doses in this range may be described as having minimal risk implying that it is small in amount or degree and should be of minor concern to a subject when considering whether or not to participate in the study.
EDE > 500 and $\leq$ 5,000 mrem and $\leq$ 3,000mrem to the whole body, active blood-forming organs, lens of the eye and gonads from a single study, and $\leq$ 5,000 mrem annually, and $\leq$ 5,000 mrem to other organs from a single study and 15,000 mrem annually.	Both the NCRP and NRC recommend this level as a limit for occupational exposure. These limits are also specified by the FDA for use by the RDRC <sup>4</sup> . These limits are characterized as having little biological significance for the individual since the lifetime risk will be only slightly increased. The risk is also viewed as comparable to that of working in a safe industry for one year. Based upon this fact the committee feels that doses in this range may be described as having slight risk implying that the risk is of small importance or concern to a subject when considering whether or not to participate in the study.

<sup>1</sup> Nuclear Regulatory Commission Policy Statement, *Below Regulatory Concern*, July 3, 1990.  
<sup>2</sup> NCRP Report No. 91, *Recommendation On Limits for Exposure To Ionizing Radiation*, Bethesda, MD, June 1, 1987  
<sup>3</sup> 10 CFR 20 *Standards for Protection Against Radiation*, Federal Register, Vol 56., No 98, May 21, 1991.  
<sup>4</sup> 21 CFR 361, *Prescribed Drugs for Humans Use Generally Recognized as Safe and Effective and Not Misbranded: Drugs Used in Research*, Federal Register, April 1, 1990.

## An Overview of the Effects of Low Level Radiation on Humans

Virginia Commonwealth University

The RSC present position on radiation risk is based on the National Research Council's Committee on the Biological Effects of Ionizing Radiation Report, Health Effects and Exposure to Low Levels of Ionizing Radiation otherwise referred to as BEIR V (December 1989) and National Council on Radiation Protection and Measurements Report No. 91, Recommendation On limits For Exposure To ionizing Radiation (June 1, 1987).

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The average annual exposure to individuals living in the United States may be used for comparison purposes. Background radiation levels from cosmic, terrestrial, and internal sources average 95 millirem a year. The effective dose associated with radon exposure in the home averages 200 millirem a year. Taken together with the average x-ray and nuclear medicine exposure to the general public, the average annual population exposure in the United states is now estimated to 360 millirem a year.

**Heritable Effects.** By extrapolation from mouse to man, it is estimated that at least 100 rad of low dose rate, low LET radiation is required to double the mutation rate in man. Heritable effects of radiation have not yet been demonstrated in man. The risk coefficient to the first generation is  $1 \times 10^{-6}$  dominant disorder per rad. In general the heritable risks is an order of magnitude less than that associated with a radiation carcinogenesis.

**Carcinogenic Risk.** The excessive lifetime risk associated with an acute exposure of 10 rad of low LET radiation is 0.8% according to the BEIR V report. The accumulation of the same dose over weeks or months is expected to reduce the risk by a factor of 2 or more. The upper limit for this dose reduction effect factor may be as great as 10. An acute does of 10 rad to the entire U.S. population would result in about a 4% increase in the current baseline cancer risk assuming no dose reduction effect factor. If the upper limit of the DREF is assumed, results in only a .4% increase.

**Mental Retardation.** The frequency of severe mental retardation associated with in utero exposure is highest in the 8th to 15th week of gestation. The risk is approximately 0.4% per rad. Diminution of IQ at a rate of 0.3 points per rad has also been noted. This again has its highest probability in the 8th to 15th week of gestation. Other fetal effects may include a cancer risk, which is estimated to be 2 to  $2.5 \times 10^4$  per rad in the first ten years of life. Other epidemiology studies suggest an association between utero exposure and carcinogenic risks in adult life.

BEIR V risks conclusion include two very specific statements, which should be strongly considered when evaluating the risk/benefit of low level radiation.

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2. "Epidemiological data cannot rigorously exclude the existence of a threshold and that at low dose and dose rates the lower limits of the range of uncertainty in the risk estimate extends to zero."

The heritable, carcinogenic, and mental retardation risks associated with low dose, low LET radiation are risks which are based on theoretical models rather than actual epidemiological data. At this point and time it is unclear as to whether or not we will ever really be able to demonstrate whether or not a risk exists as these levels of radiation can be clearly defined.

## Radiation Emergency Plan

The Radiation Emergency Plan is distributed to the departments and offices, which are involved in planning or participating in radiation emergency drills and actual incidents. The locations listed below should have copies of the plan:

- VCUHS Administration
- VCUHS Risk Manager
- Office of Marketing and Public Affairs
- Emergency Department
- Nuclear Medicine Division
- Telepage (Notification pages)
- VCU Campus Police
- Central Services
- Hospital Transportation Department
- Pharmacy Services
- Radiation Safety Section of the Office of Environmental Health & Safety (OEHS)
- Chemical Safety Section of OEHS
- VCUHS Safety & Security Department

Questions and requests for information about the Radiation Emergency Plan should be directed to the Radiation Safety Section of OEHS at 828-9131.

## Departmental Safety Program

This section is provided to assist you in maintaining a safe environment for patients, visitors and staff.

The following two safety survey programs (pages 85 through 87) require departmental cooperation and response:

### 1. Operational and Facility Survey

Each on-campus facility is surveyed twice per year for compliance with all applicable VCUHS Safety Policies and Procedures.

These surveys include a physical inspection and observation of both facilities and operations, documentation of staff training, and query/evaluation of staff knowledge of safety policies and procedures. Recommendations resulting from these surveys are sent to managers and/or directors of the units/departments surveyed. A response to all recommendations must be sent to the VCUHS Safety Office within 30 days.

Summary results of these surveys are submitted to the Environment of Care Committee in a written report. A copy of the completed survey should remain in the unit's/department's copy of this manual.

### 2. Self-Safety Audit and Review Procedures and Documentation

All units/departments must complete an annual Unit/Department Self-Safety Audit. The VCUHS Safety Office will notify each unit/department manager/supervisor when the audit is due. The audit consists of a **Self-Safety Audit Checklist** with questions to define physical conditions and unit/department specific emergency procedures.

The Checklist is the minimal information required. Survey and review procedures may require different approaches by different units/departments. Units/departments of varying size and operations may require more sophisticated survey instruments than those provided in this manual. Some units/departments may need to perform self-surveys much more frequently than annually to assure compliance. This document is meant to be instructive, but may be altered to meet the needs of individual units/departments.

## Policy and Procedure Review

In addition, all unit/department staff are required to review all applicable VCUHS policies and procedures. All relevant safety policies and procedures must be available to staff.

Please Print and Complete All Areas in Box

DATE COMPLETED:	UNIT/DEPARTMENT:				
	LOCATION	Building:	Floor:	Wing:	Room #:
	CAMPUS MAILBOX #:	SURVEYOR: Phone #:		MANAGER:	

**SELF-SAFETY AUDIT CHECKLIST**

<b>General Safety</b>			
YES	NO	N/A	
1.			Are accurate Worker's Right-To-Know Statements on file for all employees? <i>(NOTE: This statement is available on Page 24 in the December 2005 Safety Manual)</i>
2.			Are drawers kept closed at all times when not actually in use?
3.			Are chairs and other furniture in good condition?
4.			Are all compressed gas cylinders that may be in your area secured from falling over?
5.			During the survey, was all staff observed using proper body mechanics?
6.			In areas where items are stored or placed overhead, is there ready access to a suitable step stool, stepladder, or similar device?
7.			In storage areas, are the heavier items stored at waist level, with the lightest objects placed on the higher shelves?
8.			Are all vehicles (carts, wheelchairs, etc.) in good operating condition?
9.			Has personal protection equipment (as required by MSDS or other standards) been provided to all employees needing it?
10.			Has staff been trained on how to inspect and use patient care equipment?
11.			Is the area free of clutter?
12.			Is excess paper and combustible material properly stored (not creating a fire risk)?
13.			Are Material Safety Data Sheets (MSDS) available for ALL chemicals?
14.			Is there a Chemical Inventory Listing that has been reviewed within the past 12 months? <i>(NOTE: This form is available on Page 19 in the December 2002 Safety Manual)</i>
<b>Fire &amp; Disaster</b>			
YES	NO	N/A	
15.			Are all fire alarm pull stations and fire extinguishers accessible?
16.			Does all staff know the locations of fire alarm pull stations?
17.			Does all staff know the locations of fire extinguishers in their work area?
18.			Does staff know the proper reporting procedures (RACER) if they see smoke or flame?
19.			Is all storage kept at least 18" below the sprinkler head keeping sprinklers unobstructed?
20.			Are all containers of powders, liquids, and gases labeled as to contents?
21.			Are all areas in compliance with "No Smoking" policies?
22.			Are all areas, other than approved kitchens, free of Toasters or Toaster Ovens?
23.			If portable space heaters are used, are they the ceramic or oil-filled type?
24.			Have all staff been trained in Oxygen and Medical Gas Cut-Off Locations and Procedures (where applicable)? <i>NOTE: Each Dept./Unit must develop and implement specific Oxygen and Medical Gas procedures to specify who and when valves are closed.</i>
25.			Are all Unit/Department Specific Emergency Preparedness Plans completed?
26.			Does all staff know the emergency evacuation and/or relocation areas?
<b>Hallways, Stairs, &amp; Exit Paths</b>			
YES	NO	N/A	
27.			Are the corridors kept clear of obstructions?
28.			Are all wet floors marked with "CAUTION, WET FLOOR" (or similar) signs?
29.			Is carpeting secure to the floor, unfrayed, free from tripping hazards, and generally in good condition?
30.			Are hard floor surface mats secure and free of tripping and slipping hazards?
31.			Are carpeted floor surfaces level and in good repair?
32.			Are all EXIT signs illuminated?
33.			When opened and then released, do all fire doors close and latch properly?
34.			Are stairwell handrails in good condition?
35.			Are stair treads in good condition?

**SELF-SAFETY AUDIT CHECKLIST *continued***

36.			Are stairwells completely clear of obstructions and any objects? <i>(Stairwells may not be used for storage)</i>
37.			Is the housekeeping in this area adequate?
<b>Electrical Safety</b>			
	<b>YES</b>	<b>NO</b>	<b>N/A</b>
38.			Is access to electrical panels clear and not obstructed?
39.			Are all electrical switches & circuit breakers identified? <i>If not, list the location of all electrical panels with unidentified switches and/or breakers on the Attachment Page.</i>
40.			Are all electrical receptacles and cover plates in good condition?
41.			Are electrical cords and plugs in good condition? <i>Check for damaged insulation, cut cords, splices, and tape wrapped around the cord - none of which should be present.</i>
42.			Are only fused power strip extension cords, surge protectors, used (all 3 pins on the plug)?
43.			Does all electrical equipment in the area appear to be in good condition?
<b>NOTE: Remove any defective equipment from service immediately!</b>			
<b>Laboratory</b>			
	<b>YES</b>	<b>NO</b>	<b>N/A</b>
44.			Are the emergency showers, eyewash stations, and fire extinguishers accessible?
45.			Are aisles clear and unobstructed to permit ready access out of the area in case of fire or other emergency?
46.			Are flammable storage cabinets located out of hallways and exit paths?
47.			Are corrosives stored only on the lowest shelves?
48.			Are flammables, acids, and bases all stored separately from each other?
49.			Are all refrigerators labeled to indicate whether or not they are safe for the storage of flammables?
50.			Are all non-explosion proof refrigerators entirely free of flammables?
51.			Are all chemical containers labeled to indicate their contents?
52.			Are all chemical containers labeled to indicate any hazard that may be present, i.e. TOXIC, CORROSIVE, FLAMMABLE, etc.?
53.			Are food products, including beverages of any sort, kept out of the laboratory work environment at all times?
54.			During the survey, was all staff wearing the appropriate lab clothing? <i>(No open toed shoes, no shorts)</i>
<b>Vehicles</b>			
	<b>YES</b>	<b>NO</b>	<b>N/A</b>
55.			Oil Level OK
56.			Battery, Radiator, Brake and Windshield Washer Fluid Levels OK
57.			Battery Terminals, Air Filter OK
58.			Tires - Condition Good
59.			Rubber Hoses, Belts - (Fan, Generator, Alternator) OK
60.			Doors, Mirrors, Windshield and other Glass In Good Condition
61.			Head Lights, Signal Lights, Brake Lights, and Other Lights OK
62.			Windshield Wiper Blades, Arms and Motor Operation OK
63.			Seat Belt for Each Passenger
64.			Horn Works
65.			Other Items OK - (Defroster, Mechanical Condition, Paint, etc.)
66.			Safety Equipment (Bumper Jack, Lug Wrench, Flares, 5 lb. ABC Extinguisher, Bungee Cords and/or Equipment needed to secure loads) in the vehicle?
67.			Mileage and Maintenance Log Used

“No” responses may require you to initiate a Work Order to the Service Response Center (628-4772).

Please explain all "No" responses and note their locations on the “Attachment Page”. Be as specific as possible.

List actions taken to eliminate or correct the hazard, and list the person responsible for follow-up.

