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1.0 Instructions for Use of the Manual

The Health and Safety Manual (HSM) for the George Washington University Medical Center (GWUMC) is a reference for all health and safety policies, regulatory compliance, training requirements, and compliance oversight committees. The HSM is distributed to all principal investigators, laboratory supervisors or researchers in charge of laboratories and is available to anyone with routine access to labs, including staff, students, and visitors.

The HSM standardizes, to the extent possible, documentation for compliance with federal, local, and institutional guidelines, policies, and regulations. Each investigator, researcher, or laboratory supervisor is responsible for compliance to the HSM in the operation of his or her laboratory and in the management of his or her staff. The Office of Laboratory Safety and Compliance (OLSC) provides guidance through this manual, compliance training, and consultation on the management of hazardous chemical and biological material in the laboratory and throughout the Medical Center.

The HSM is periodically revised to reflect changes in institutional policies, regulations, or procedures. Laboratory staff is urged to ask questions or suggest changes to this manual. Implement the HSM with the following steps:

- Inform your staff that the HSM is available either as a hard copy or on the OLSC web page.
- Require each new professional staff member, student, research assistant, and employee to read appropriate sections of the manual.
- The HSM must be available in the event of an inspection by Occupational Health and Safety Administration (OSHA) or an audit by OLSC.

The GWUMC and federal regulatory agencies with jurisdiction over medical research activities assign primary responsibility for compliance to safe laboratory work practices and safety-related issues to the investigator or researcher directly in charge of laboratory operations.

Questions about the HSM or related health and safety compliance issues are to be directed to the Office of Laboratory Safety and Compliance at 4.2630, 4.2085, or resmse@gwumc.edu.

Mark S. Ennen, MA, MPH
Acting Director, OLSC
2.0 Guidelines, Policies, and Regulations

A guideline is an operational imperative for a policy. A policy is an institution's plan for meeting objectives and defining acceptable procedures. A regulation is a rule or order having the force of law. Common to each is an implicit or explicit charge to inform those working in laboratories of potential hazards and the safe laboratory practices that can protect the individual, property, the environment, and the community. Investigators, researchers, and laboratory personnel are expected to know and comply with guidelines, policies, and regulations affecting their work in clinical and research laboratories. Failure to follow these procedures and safe work practices can result in injury, property loss, and institutional discipline and/or citations and fines by federal regulatory agencies. The following list, while not exhaustive, includes many of the regulations that may cover laboratories.

1. **Health and Safety Manual** – This is the reference manual for all health and safety policies, regulatory compliance, training requirements, and compliance oversight committees. Each laboratory must have a copy readily available as a reference and training document for laboratory staff.

2. **Biosafety in Microbiological and Biomedical Laboratories (BMBL)** - CDC/NIH, 4th edition, 5.99.
   This is the official reference document for initial hazard assessment of biological agents for the determination of facility requirements, engineering controls, and safe laboratory work practices. The BMBL is available from the CDC site referenced in Section 4.

   This is the primary OSHA regulation governing permissible exposure limits (PELs), laboratory employees' right-to-know, and a written Chemical Hygiene Plan. The Chemical Hygiene Plan is a written document establishing work practices and procedures to protect employees from the hazards of any chemicals used in the laboratory. See Section 3.

   This regulation requires employers to inventory and identify chemical hazards, specify the nature of the hazards, ensure proper labels and the availability of Material Safety Data Sheets (MSDS), establish safe work practices, and provide and enforce the use of personal protective equipment as necessary. Hazard Communication is directed primarily to employees other than laboratory personnel, such as housekeeping, security, maintenance, and skilled trades. The critical elements of this standard are present for laboratory personnel in the Chemical Hygiene Plan. See Section 3.
   This standard requires identification of employees with potential exposure to bloodborne pathogens, implementation of engineering controls, establishment of safe work practices, provision of personal protective equipment, and training of employees in all the aforementioned issues. See Section 6.

   These guidelines specify the practices for constructing and handling recombinant DNA molecules, organisms, and viruses. The guidelines are available at [http://www4.od.nih.gov/oba/guidelines.html](http://www4.od.nih.gov/oba/guidelines.html)


    Regulation of chemical waste, including antineoplastic and cytotoxic agents. The DC Environmental Health Administration (EHA) administers the DC Municipal Regulations (DCMR) in lieu of EPA's federal hazardous waste rules. Either authority can enforce their rules. The Med Ctr/Univ is a Large Quantity Generator (LQG).

    For information on institutional policies and federal regulations regarding radiation refer to the Radiation Safety Office web page or call 4.2630.


15. **Requirements for Facilities Transferring or Receiving Select Agents** – CDC 42 CFR 72.6
    Facilities are required to register the use of listed viruses, bacteria, rickettsiae, fungi, and toxins (and the recombinant use of these agents) under the antiterrorism act. Contact OLSC for further information.

16. **Emergency Action** – OSHA 29 CFR 1910.38(a) and 1910.120(q).
    A requirement for a response plan when employees are potentially exposed to
hazardous chemicals. There is similar response plan requirement from EPA. An integrated plan approach is being considered.

   This is a plan for the management of hazardous chemical and biological waste and the management of stored or in-use hazardous materials. See Section 9.4.

**Regulatory reference resources are available through OLSC or these net sites:**

- **OSHA** – [www.osha.gov](http://www.osha.gov)
- **EPA** - [www.epa.gov](http://www.epa.gov)
- **NIH** - [www.nih.gov](http://www.nih.gov)
- **CDC** - [www.cdc.gov](http://www.cdc.gov)
- **HHS** - [www.hhs.gov/agencies/](http://www.hhs.gov/agencies/)

**Material Safety Data Sheets and links to health and safety sites** – [siri.uvm.edu/msds](http://siri.uvm.edu/msds)
3.0 Chemical Hygiene Plan
Revised 6.28.01

1.0 Regulatory Reference and Statement of Purpose
This Chemical Hygiene Plan (CHP) is required by the Occupational Safety and Health Administration's (OSHA) Occupational Exposure to Hazardous Chemicals in Laboratories 29 CFR 1910.1450. The intent of this plan is to identify hazardous chemicals in the laboratory and to specify that engineering controls, work practices, and personal protective equipment are capable of protecting laboratory staff and the building environment.

2.0 Scope of Application
This CHP applies to all investigators, researchers, lab assistants, and students working in research and clinical laboratories in the GWU Medical Center (GWUMC).

3.0 Assigned Responsibilities and Implementation

3.1 Ross Hall Safety Committee (RHSC)
This committee provides professional, scientific, and medical judgment on issues affecting the health and safety of laboratory staff and building occupants.

3.2 Office of Laboratory Safety and Compliance (OLSC)
OLSC is charged with developing, implementing, and updating this CHP. The OLSC provides consultation, training, and technical assistance for implementing the CHP in each laboratory in the GWUMC.

3.3 Principal Investigators, Researchers, and Chemical Hygiene Officer
Each principal investigator, laboratory supervisor, or researcher in charge of a laboratory in the Medical Center is the assigned Chemical Hygiene Officer (CHO) unless another qualified individual is designated in writing. The CHO is qualified by training, experience, and interest, to provide technical guidance in the implementation of the CHP provisions for each laboratory. The CHO will be the primary contact with OLSC in regard to the location of the CHP, updating the CHP, and scheduling laboratory audits. The CHO is empowered to advise and enforce laboratory safety procedures.

3.4 Laboratory Director/Principal Investigator
Each laboratory director, principal investigator, or researcher with primary responsibility for the management and oversight of a laboratory is required under this CHP to:

- Ensure compliance by all laboratory personnel with the provisions of this CHP, and all other applicable policies and procedures.
- Ensure that this CHP is amended, if necessary, to reflect the hazardous chemicals and research procedures that may be unique to the laboratory, i.e., a lab working with an unusual number of chemical carcinogens should have some explicit reference to managing the hazard.
- Ensure that laboratory staff, their representatives, OLSC, and OSHA inspectors have access to this CHP.
• Ensure that all laboratory staff have read the CHP and are trained in the safe work practices designed to protect them, their co-workers, and the building environment from exposure to hazardous chemicals. This training must include the proper use and maintenance of engineering controls, personal protective equipment, and other procedures specified in this document to control the exposure to hazardous chemicals.

• Request the monitoring of laboratory personnel if there is reason to believe that the exposure levels for a regulated hazardous chemical routinely exceed the action level or Permissible Exposure Level (PEL). The results of such monitoring are to be reported to employees within 15 days of monitoring.

• Maintain a current list of all hazardous chemicals used in the lab. The Material Safety Data Sheets (MSDS) for these chemicals may be stored in the lab or obtained from OLSC 24 hours a day, seven days a week. OSHA requires that MSDS be available to any employee at any time.

• Insure compliance with federal regulations and institutional policies in regard to the collection, management, and storage of hazardous chemical waste materials.

3.5 Laboratory Personnel
Investigators, researchers, lab assistants, and students are responsible for complying with the provisions of this CHP in regard to all research activities in GWUMC laboratories.

3.6 Support Staff
Support staff is not covered under the CHP. Housekeeping, security, maintenance, and skilled trade personnel are informed of hazards through Hazard Communication training, Health and Safety Bulletins, and Laboratory Hazard Information signs. See section 6, Training and Education, "Training Matrix" in the HSM.

4.0 Action Levels and Permissible Exposure Limits
An action level is an airborne concentration of a chemical listed in 29 CFR 1000, Subpart Z, calculated as an eight-hour-time-weighted average that initiates exposure monitoring and medical surveillance. A permissible exposure level (PEL) is the level of exposure that shall not be exceeded in an eight-hour-time-weighted average.

The proper use and maintenance of engineering controls (proper storage, fume hoods, BioSafety cabinets, spark-proof refrigerators, etc.), compliance with safe laboratory procedures, and personal protective equipment will ensure that laboratory personnel are not exposed to hazardous chemicals that meet or exceed either a specific action level or PEL. In the event that a new research project or procedure could result in an unknown level of exposure, it is necessary to conduct monitoring before the procedure is routine.

4.1 Exposure Monitoring and Notification of Results
In the event of a spill, leak, or explosion, or if there is any question about the level of chemical exposure in the lab, or if an employee develops signs or symptoms associated with a chemical exposure—immediately refer to section 11.0, Emergency Response Procedures, of this document.
If monitoring is conducted, employees will be informed of the results within 15 days of the monitoring. If monitoring confirms that employees were routinely exposed above the action level or PEL, the employee will be provided with a medical examination. In the event of any acute exposure of consequence, the employee will be provided with an immediate medical examination.

5.0 Controls for Chemical Exposure

5.1 Substitution, Elimination, and Minimization
It is the responsibility of researchers, investigators, and laboratory staff to use the least hazardous chemicals available and to eliminate hazardous chemicals whenever possible. Research procedures should be designed to minimize the use of hazardous chemicals.

5.2 Engineering Controls
It is critical that laboratory staff is trained in the use of the equipment; it must not be assumed that they are familiar with the operation and maintenance of all laboratory equipment. All laboratory equipment should be on a schedule for routine or periodic maintenance. Chemical fume hoods and BioSafety cabinets are tested yearly for airflow velocity, leaks, and filter replacement; this testing and certification conducted by an outside contractor under the direction of OLSC.

5.3 Safe Laboratory Practices
Although the CHP is addressed to chemical hazards in the laboratory, it is apparent that any lab in the Medical Center presents a range of potential physical, mechanical, and biological hazards. It is also evident that potential hazards may be unique to a given research project. Therefore, any list of safe laboratory practices is incomplete without additions or emphasis added by those working in the lab. Do not presume that your staff or co-workers understand how to manage all the hazards in the lab environment—discussion and training are necessary. All labs must post the list of "Safe Lab Procedures and Practices," contained in Appendix A.

5.4 Personal Protective Equipment
The first line of defense in the management of chemical hazards is engineering controls: facility design, airflow, containment devices, chemical fume hoods, and BioSafety cabinets. Personal protective equipment (PPE) is the second line of defense for protection from hazardous chemicals. If this line of defense is challenged, it means that engineering controls have failed or procedures are being used that can seriously compromise the health and safety of laboratory staff and other building occupants. PPE is inherently less reliable than engineering controls, but essentially for safe laboratory practices.

PPE includes gloves, splash aprons, safety glasses, face shields, lab coats, and respirators. Laboratory personnel who are required to wear PPE shall be trained in its use, fitted when appropriate, and use PPE appropriate to the chemicals. The use of PPE in each lab is determined by laboratory procedures, the hazard of chemicals in use, and instructions contained in the chemical's Material Safety Data Sheet (MSDS). If there are any questions about the need to use PPE, respirator fit testing, problems with the use of PPE contact OLSC.

The use of required PPE in a GWUMC laboratory is not an option or subject to individual judgment. Federal regulations require this institution to enforce the use of PPE. Failure to enforce these regulations can result in a substantial fine levied against the department.
6.0 **Chemical Hazard Information**

Each laboratory is responsible for maintaining its own list of hazardous chemicals used in the laboratory. This list must be updated when new procedures or research is started, and a hard copy must be available at all times for inspection by OSHA, during lab audits by OLSC, or when requested by an employee. The important principle is that an employee has a legal right to know about the potentially hazardous chemicals in the workplace and the employer is responsible for informing the employee of any hazards associated with potential exposure to a chemical. This responsibility is carried out by identifying the chemicals, determining the hazard(s), labeling the chemicals, establishing safe work practices, and enforcing the use of personal protective equipment when required.

The category of hazard(s) a chemical presents is identified on the manufacturers' label or in a Material Safety Data Sheet (MSDS). Laboratory personnel are expected to understand the hazard categories as a minimal qualification to work in a laboratory. A hazardous chemical will fall in one or more of the following hazard categories:

- Flammable
- Corrosive
- Carcinogenic
- Oxidizer
- Reactive
- Toxic
- Mutagenic
- Teratogenic

6.1 **Material Safety Data Sheets**

Chemical manufacturers and suppliers are required by OSHA to supply customers with an MSDS for each chemical. These safety sheets follow a standardized format, providing the following detailed information about a chemical:

- Chemical Identity
- Hazardous Ingredients
- Physical and Chemical Characteristics
- Fire and Explosion
- Reactivity
- Health Hazards
- Personal Protection Required
- Disposal Procedures
- Storage, Spill, and Leak Procedures

Both the Hazard Communication (1910.1200) and the Laboratory Standard (1910.1450) regulations require that MSDS's be available to employees at any time. *Each lab may have its own set of MSDS's.* OLSC will provide an MSDS 24 hours a day, seven days by calling 4.2630, 4.2085, or page the on-call Safety Specialist at 54.4141. MSDS's are also available on the internet, one site is http://www.haz1.siri.org.

6.2 **Labels**

Chemical container labels must not be defaced, covered, or removed. Labels often contain information on health, fire and reactivity hazards, and first aid.

6.3 **Laboratory Hazard Information Sign**

Each laboratory is posted with a Laboratory Hazard Information sign at the primary entrance. The information on this sign must be current, complete, and filled out according to the instructions on the back of the sign. Each lab is responsible for completing and posting the sign.

6.4 **Unique Hazards and High Risk Procedures**
OLSC and the Ross Hall Safety Committee are responsible for reviewing and approving the use of hazardous chemicals and materials in sponsored academic and informal research projects in Ross Hall. The chemicals/materials of primary concern are those that present a unique hazard such that access to the laboratory would be restricted and the protocol would emphasize strict laboratory practices for the manipulation and containment of the material. This requires the principal investigator to make a risk assessment about the potential hazards of chemical and biological agents used in proposed research.

The review process is conducted through the submission of the form, Identification of Hazardous Materials in Research Projects to OLSC. The form is available from OLSC.

7.0 Training
Mandatory health and safety training for those working in or around the GWUMC labs is specified in the Health and Safety Training Bulletin. For assistance in providing training, contact OLSC.

CHP training is mandatory for all laboratory personnel. This training can only be provided by someone skilled in the research of each specific lab; CHP is not general lab safety training. At a minimum, such training requires reading the CHP, being given an opportunity to ask questions based on the CHP, and documenting that training has occurred and will be updated when there is a change in research activities or operations in the lab. Documentation of CHP training must be stored in this manual.

8.0 Medical Consultation and Medical Examinations
Laboratory employees who work with hazardous chemicals shall have an opportunity to receive medical attention, including medical examinations or tests, under the following circumstances:

- Whenever an employee develops signs or symptoms associated with exposure to a hazardous chemical.
- Whenever exposure monitoring shows evidence that an exposure level is routinely above the action level or PEL for the chemical.
- Whenever there is a hazardous chemical spill, leak, or explosion.

In the event of one of these circumstances, contact OLSC immediately for specific instructions in compliance with the regulation covering medical consultations and medical examinations. The laboratory director, supervisor, or principal investigator must provide the examining physician with the identity of the chemicals and a description of the exposure event.

9.0 Storage of Hazardous Chemicals
The following list of precautions addresses only the most hazardous and/or common problems in SMHS. The list is not inclusive of all safety procedures applicable to other chemicals or other conditions.

- Minimize the amount of hazardous chemicals stored in the laboratory. This will require more frequent ordering, but it will control the space needed for storage, improve inventory control, and minimize the fire load in the lab. Do not store hazardous chemicals beneath the sink.
- Flammable or combustible chemicals in excess of 10 gallons/42 liters must be stored in a solvent storage room or a flammable storage cabinet in the lab with the permission
of OLSC.

- Store separately: Organics and Inorganics, Acids and Solvents, Acids and Bases.

- Peroxidizable compounds (especially ethyl ether) must be disposed of within a specific period of time (3 to 12 months) after they have been opened. Once exposed to air, these compounds become heat and shock sensitive --- EXPLOSIVE. These chemicals should be stored separately and the date opened should be marked on the label.

- Toxic, reactive, or flammable/combustible chemicals should never be stored above eye level; containers in excess of one quart/liter should be stored in cabinets or shelves close to the floor.

- The best source of information about the chemicals in your lab is a Material Safety Data Sheet (MSDS), which is available from the manufacturer/supplier or OLSC.

10.0 **Disposal of Hazardous Chemicals**

Hazardous chemical wastes are defined as any chemical that is corrosive, reactive, flammable, or toxic (EPA 40 CFR 261). **The CHO (3.3) is responsible for the safe collection and storage of hazardous chemical materials. This includes:**

- Designating one hazardous chemical waste storage location.
- Labeling and dating all containers with label provided by OLSC.
- Insure all containers are placed in secondary containment.
- Post a sign at the location identifying the materials as hazardous waste.
- Inspect the hazardous waste area weekly for integrity of containers, labeling, and for timely removal of materials.

Small quantities of non-flammable, non-combustible chemicals can be diluted or neutralized and disposed in a lab sink or when absorbed onto bench pad, paper towel, or sorbent material may be disposed in an infectious waste bag.

Chemical wastes that are flammable, combustible, or exceed two ounces in volume must be labeled as to the contents and as hazardous waste and picked up by OLSC within 24 hours.

Chemical wastes that are accumulated over time—usually mixed liquid waste—must be collected in a secure container, labeled Hazardous Waste with the date when the accumulation starts and a second date identifying a period of 60 days from the initial accumulation date. This container(s) must be stored inside of another container or in a high-sided lab tray—this provides secondary containment in the event of a spill, leak, or a break in the primary container. On the 60-day date call OLSC for a pick-up. This allows the waste to be disposed of within the EPA 90-day requirement.

Whenever possible substitute less hazardous chemicals in order to control hazards in the lab and minimize the expense of disposal.

Use the original container if possible. The lid, screw top, or cap must be secure and not leak. The outside of the container must be clean and free from contamination.

Chemicals that are not identified will be identified by the hazardous waste contractor at a charge from $45 to $65.
For Hazardous Chemical Waste pickup call OLSC at 4.2630, 4.5059 or email rsojmg@gwumc.edu.

11.0  **Emergency Response Procedures**

- In the event of an uncontrolled release, spill, or leak of a hazardous chemical, follow these procedures:
  - Secure the leak if possible. Evacuate all non-essential personnel from the immediate area. Seek immediate medical attention for known or suspected exposures. If you are uncertain of what actions to take --- *Evacuate* the lab and *close* the door.
  - Do not attempt any spill control or clean up *unless* you know---with confidence---the hazards of the chemical, the spill is of manageable size, you have the materials to clean up/control the spill, and you have the personal protective equipment necessary for the clean-up operation.
  - Report *all* spills or releases to OLSC---Whoever is contacted needs the following information: your name, location, and whether or not anyone was exposed or injured. Remain in the area. During regular working hours call 4.5059, 4.2630; if no answer, call the Page Operator 54-4141 and request a Safety Specialist. All other times call the Page Operator and request the Safety Specialist on-call.

12.0  **Laboratory Certification**

Each GWUMC laboratory is certified for compliance to laboratory safety guidelines, policies, and regulations. The process requires completing a self-assessment survey and a follow-up on site lab audit. Each lab will either be in a pending or certified status---failure is not an option.
APPENDIX A

SAFE LABORATORY PROCEDURES AND PRACTICES

The following practices and procedures address only the most common hazardous conditions that typically exist in the GWUMC laboratories. This list is not intended to be inclusive of all specific safety procedures necessary in every lab in the building. Additional safety practices and procedures specific to work conducted in each lab are determined by principal investigators and laboratory supervisors.

1. Minimize all chemical exposures through appropriate engineering controls, safe laboratory procedures, and personal protective equipment.

2. When the specific hazard of a chemical is not known, assume the worst and act accordingly.

3. Substitute less toxic chemicals whenever possible.

4. Minimize chemical storage, promptly discard hazardous waste chemicals, and ensure that incompatible chemicals are stored in separate areas.

5. Combustible or flammable chemicals in excess of 10 gallons/42 liters must be stored in a solvent storage room; more than 7 gallons/29 liters in the lab shall be stored in a flammable storage cabinet.

6. Do not deface, cover, or remove labels from chemical containers unless empty.

7. Do not store chemicals in the fume hood or BioSafety cabinet.

8. In the event of a chemical spill, evacuate the lab, seek medical attention if necessary and call OLSC.

9. Wash hands prior to and after research activities. There should be no eating, drinking, smoking, tobacco/gum chewing, applying of cosmetics, or handling of contact lens in the lab.

10. At the end of each workday decontaminate work surfaces and equipment, and return sealed chemical containers to appropriate storage.

These practices and procedures are to be amended whenever there are significant changes in laboratory procedures, equipment, or hazardous materials.
## Chemical Hygiene Plan Training

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It is the policy of the George Washington University Medical Center that *Biosafety In Microbiological and Biomedical Laboratories*, CDC/NIH, 4th edition, April 1999 (BMBL) is the official reference for laboratory BioSafety practices and procedures. Each investigator is required to use the BMBL in the risk assessment of biological agents, the determination of appropriate BioSafety laboratory level, engineering controls, personal protective equipment, and medical surveillance.

The Office of Laboratory Safety and Compliance provides assistance in the use of the BMBL and the hazard management of biological agents. A copy of the BMBL is available in the OLSC office or through the CDC web site: [www.cdc.gov/od/ohs/pdfiles/4th%20BMBL.pdf](http://www.cdc.gov/od/ohs/pdfiles/4th%20BMBL.pdf)
5.0 Hazard Communication Program
Revised 6.28.01

Purpose
To establish procedures for the George Washington University Medical Center Hazard Communication Program in compliance with OSHA 29 CFR 1910.1200.

Scope
This policy applies to all employees, staff, and faculty of the George Washington University Medical Center—Ross Hall, Warwick, and Building K. The chemicals covered under this regulation are defined as being physical or health hazards by 29 CFR 1910.1200. Radiological hazardous materials and recombinant DNA are specifically excluded from this policy and are addressed by other GWUMC policies and procedures.

This program also applies to all contractors who perform services for GWUMC. The GWUMC project manager is responsible to inform each contractor of responsibilities under this regulation.

• Hazardous chemicals in the contractors work area.
• Safe work practices that the contractor must follow to minimize the risk of exposure.
• The location of Material Safety Data Sheet's (MSDS's) for chemicals in the contractors work area.
• Emergency procedures to follow in the event of an exposure to a hazardous chemical.

The training of laboratory staff is conducted under the Laboratory Standard (29 CFR 1910.1450) which is detailed in the Chemical Hygiene Plan (Section 3). Laboratory staff are exempt from the Hazard Communication Standard.

Definitions
For the purposes of this policy the following definitions are established.

• A chemical is considered a physical hazard if scientifically valid evidence indicates that the chemical is a combustible liquid, a compressed gas, an explosive, a flammable substance, an organic peroxide, an oxidizer, an unstable material or a water reactive material.

• A chemical is considered a health hazard if there is statistically significant evidence available based on at least one study conducted in accordance with established principles that acute or chronic health effects could occur in exposed persons. Chemicals falling into any of the following categories would qualify:
Carcinogens

Corrosives
Hepatoxins (liver)
Irritants
Mutagens
Nephrotoxins (kidneys)
Neurotoxins (nerve)
Reproductive toxins
Teratogens
Agents that produce adverse affects on the hematopoietic system
Agents that produce adverse affects on the lungs, skin, eyes, or mucous membranes

Chemicals are considered carcinogens for the purpose of this standard if listed in any of the following:

- National Toxicology Program (NTP), "Annual Report of Carcinogens" (latest edition)
- International Agency for Research on Cancer (IARC), "Monographs", (latest edition)
- The Registry of Toxic Effects of Chemical Substances, National Institute of Occupational Safety and Health (NIOSH), (latest edition)

A chemical is considered hazardous if it is listed in any of the following publications:

- 29 CFR 1910 Subpart Z, Occupational Safety and Health Administration (OSHA) Toxic and Hazardous Substances
- Threshold Limits Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH), (latest edition)
- The Registry of Toxic Effects of Chemical Substances, NIOSH

If there is some question as to whether or not a chemical is hazardous contact the Office of Laboratory Safety and Compliance (OLSC) at 4.2630, 4.2085.

Exemptions
The following items are considered exempt from the Hazard Communication Standard.

- Medical devices labeled in accordance with FDA regulations.
- Consumer products (e.g., cleaners, paint strippers, and adhesives) when labeled in accordance with regulations of the Consumer Product Safety Commission and used by workers in a way similar to that of ordinary consumers.
- Pesticides when labeled in accordance with Federal Insecticide, Fungicide, and
Rodenticide Act.
- Drugs sold or in final form for direct administration to patients.
- Wood and wood products (Exemption does not cover wood dust).
- Vehicles.
- Manufactured items, other than fluids or particles, that are formed by the manufacturer into specific shape or design for end use functions that do not result in the release of any hazardous chemical during normal use (e.g., batteries).

Implementation
Each department in the Medical Center is required to identify employees with potential exposure to chemical hazards and who are not trained under the Chemical Hygiene Plan (Section 3). These employees include administrators, receptionists, secretaries, and other personnel without formal training in science or laboratory procedures. The non-laboratory employees are required to attend yearly Hazard Communication training provided by OLSC.

In addition to providing training for non-laboratory employees, the department must maintain chemical hazard information as specified in the Chemical Hygiene Plan.

**Mandatory Training Elements**
1. Explanation of the Hazard Communication standard and its requirements. A copy of the standard and the Medical Center’s policy is provided when requested.
2. How to request information and technical assistance in understanding labels and Material Safety Data Sheets.
3. Explanation of the types of hazards presented by chemicals.
4. Measures employees can take to protect themselves from chemical hazards.
5. Explanation of engineering controls and personal protective equipment.
6. Methods and observations—visual appearance and smell—that employees can use to detect the presence of chemicals.

Training
Hazard Communication training is provided by the Office of Laboratory Safety and Compliance at new employee orientation and annually. For information call 4.2630, 4.5059.
6.0 Occupational Exposure to Bloodborne Pathogens
Revised 6.28.01

The Occupational Safety and Health Administration (OSHA) standard, *Occupational Exposure to Bloodborne Pathogens (OEBP)*, OSHA 29 CFR 1910.1030 became effective March 6, 1992. The purpose of the standard is to prevent or to reduce the risk of exposure to bloodborne pathogens (pathogenic organisms that cause disease in humans) in the workplace. The most common bloodborne diseases are hepatitis HBV, HCV, HDV, HIV, malaria, and syphilis. Although the standard only addresses human blood and some body fluids, this Exposure Control Plan applies to any human or animal blood, body fluid, cell line, or rDNA material.

The elements of the OEBP standard are:

1. Identify Employees with Potential Exposure
2. Develop an Exposure Control Plan
3. Communicate Hazards to Employees
4. Offer Hepatitis B Vaccine to Employees
5. Provide Personal Protective Equipment
6. Provide Employee Training

**Exposure Control Plan**

The standard requires that workplaces where there is a risk from bloodborne pathogens must establish an Exposure Control Plan (ECP). The ECP is the institution’s written plan to eliminate or minimize employee exposure by identification of employees at risk, implementing Universal Precautions, establishing engineering and work practice controls, requiring the use of personal protective equipment (PPE), sharps management, safe handling of laboratory specimens, decontamination of equipment, labeling and management of hazardous waste, labeling of biohazardous materials, availability of hepatitis B vaccine, protocol for known or suspected exposure, and employee training.

The ECP is in the Health and Safety Manual and copies are available from the Office of Laboratory Safety and Compliance, 4.2085, 4.2630.

**COMPLIANCE WITH UNIVERSAL PRECAUTIONS**

Universal Precautions (UP) is an approach to infection control whereby all human and animal blood, cell lines, and certain human body fluids are treated as contaminated with bloodborne pathogens. Engineering controls, personal protective equipment, and safe work practices are mandated to prevent exposure to bloodborne pathogens. The UP approach is made explicit in the elements of the Exposure Control Plan. Each element is designed to identify risk, communicate risk, control risk, and prescribe evaluation and treatment in the event of exposure.
Transmission of Bloodborne Pathogens

Bloodborne pathogens are transmitted by means of contaminated human or animal blood, body fluids or other biological materials crossing the natural barrier of the skin through a break in the skin or though mucous membranes. This transmission can occur through sexual contact, IV drug use, blood transfusions, organ transplants, or occupational exposure. The focus of UP in a clinical and research setting is with occupational exposure through needle sticks, aerosolization, splashing, or skin penetration through existing cuts or abrasions.

Preventing Exposure to Bloodborne Pathogens

Identification and Labeling

UP applies to human or animal blood, wound/lesion drainage, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, tissue (unfixed), and mucous membranes. Given the research activities of the Medical School, the list includes human or animal cell lines or tissues (unfixed), unless there is documentation that the cell lines or tissues are free from human bloodborne pathogens. Labeling means a prominently displayed biohazard sign/pictogram on any container, refrigerator, incubator, cold room or freezer containing such materials. Bodies used in gross anatomy are not considered a source of bloodborne pathogens, but can be a source of infection through needle or sharps cuts.

Laboratory Work Practices

Research laboratory work practices under UP are specified in the Health and Safety Bulletin, HIV: Clinical and Research Procedures, 10.23.95 and Biosafety in Microbiological and Biomedical Laboratories, CDC/NIH, 4th edition, 5.99 (located in section 4 of the Health and Safety Manual). The critical consideration in working with biohazardous materials is what manipulations are used to conduct the research. Manipulations that are the most hazardous are those that require pouring, stirring, mixing, sonicating, centrifuging or aerosolizing.

Engineering Controls

These controls represent the first and best line of protection from potential bloodborne pathogen exposure. These controls include containment devices/packages, sharps containers, absorbent pads, mechanical pipetting devices, and BioSafety cabinets.

Personal Protective Equipment (PPE)

PPE is specialized clothing or equipment worn for protection from potential exposure. PPE includes lab coats, gloves, aprons, fluid resistant gowns, respirators, goggles, and face shields. At a minimum, anyone working with biohazardous material must wear a lab coat, gloves, and face shield. Principal investigators, researchers, and lab supervisors who manage lab personnel should make it clear that the appropriate use of PPE is not only a federal regulation, but also a GWUMC policy and not a matter of individual preference. It is important that those using PPE realize the inherent limitations of such equipment and the consequent reliance on safe laboratory practices and engineering controls to provide reliable protection from exposure.

Personal Hygiene

Most infectious contamination comes from contaminated hands touching the mouth, eyes or nose. Those working in clinical or research labs should develop safe work practices:

- Check your hands and wrists for cuts and abrasions.
- Wash your hands before and after lab work.
• Gloved hands are never to touch the face.
• Pay attention to the use of pens, pencils, computer keyboards, telephones, and other devices that may be touched with gloved hands.
• No gloves in the elevators.

Hepatitis Vaccination
The hepatitis B vaccine is available through OLSC. The vaccine is administered intramuscularly in a series of three injections over six months. The vaccine is 97% effective in preventing HBV infection. It is strongly recommended that anyone in clinical or research work with potential exposure complete the HB vaccination series.

Protocol for Acute Exposure
*If there is exposure to known or potentially infectious material:*

1. Wash the affected area with soap and water; flush affected mucous membranes with water.
2. **Immediately** report to the Emergency Room——any delay may be significant in providing effective treatment.
3. File a Workers’ Compensation form (see your supervisor or call OLSC 4.2630).

Post Exposure Evaluation and Follow Up
ER conducts post exposure evaluation and follow up. A sample of the employee’s blood is taken; the employee’s physician is notified. If there is a source patient, EHS will test the exposed person for HB Ag and HIV (with consent).

1. Test the HBV unvaccinated employee for HB Ag and HB Ab.
2. Test the HBV vaccinated employee for HB Ab.

*If the source patient/sample is positive for HBV, then ER will:*

3. Offer the HBV nonimmune employee HBIG and HBV vaccination or booster. An employee who refuses hepatitis B vaccine is offered a second dose of HBIG one-month later.
4. Test the HBV nonimmune employee for HBV at two and six-months post-exposure.
5. Test the employee for his/her HIV status (with consent).
6. Offer the HIV negative employee counseling and post-exposure chemoprophylaxis in accordance with CDC recommendations.

*If the source patient/sample is HIV positive, the ER will:*

7. Test the HIV negative employee for seroconversion at three months, six months, and one year post-exposure.

The ER will also counsel or refer employees for counseling on precautions to prevent HIV or HBV transmission to others until infection can be ruled out, the use of post-exposure prophylaxis for HIV
exposure, and the signs and symptoms to be monitored for 12 weeks following exposure to HIV. Employees will be provided a copy of the medical opinion within 15 days of the completed evaluation. Employees with an HIV seroconversion will be referred to their personal physician or to Occupational and Environmental Medicine for further evaluation and follow up.

**Universal Precautions - Identification of Research and Clinical Procedures**

Universal Precautions is an approach to infection control whereby all human and animal blood, cell lines, and certain human body fluids are assumed to be contaminated with bloodborne pathogens. Clinical and diagnostic laboratory procedures are the primary areas of concern, however with the range of basic science and animal research at GWUMC, research activities follow the premise of UP with additional cautions for those procedures that involve significant quantities of research material or manipulations (i.e., aerosolization, centrifuging). Following is a list of body fluids and tissues to which these precautions need to be applied:

1. Blood
2. Wound/lesion drainage
3. Semen
4. Vaginal secretions
5. Cerebrospinal fluid
6. Synovial fluid
7. Pleural fluid
8. Peritoneal fluid
9. Pericardial fluid
10. Amniotic fluid
11. Tissue
12. Broken skin
13. Mucous membranes

These body fluids and tissues are either known to transmit bloodborne disease or there is still a question on the issue. However, there is sufficient epidemiological data to remove the following body fluids *(unless they contain visible blood)* from Universal Precautions:

1. Urine
2. Feces
3. Nasal secretions
4. Sputum
5. Saliva
6. Vomitus
7. Tears
8. Sweat

OLSC strongly recommends that given the likely confusion in identifying the safe from the unsafe biological materials / fluids-----the optimum safe work practice is to treat all such material as hazardous.

**Engineering Controls, Personal Protective Equipment, and Safe Work Practices**

The use of engineering controls, personal protective equipment, and safe work practices is not optional or a matter of personal preference. Clinicians and researchers are personally accountable for staff compliance to the appropriate use of hazard management procedures, controls, and equipment described in this ECP and referenced in the Health and Safety Manual.

Hand washing is a basic personal hygiene requirement in this Exposure Control Plan. Research studies demonstrate the effectiveness of routine hand washing in controlling the spread of infectious disease for oneself, patients, coworkers, and the research environment. Staff and faculty should wash their hands before starting work, between patients, after any use of the bathroom, before eating, at the end of any laboratory work period, and at the end of the workday.

**Compliance**

OSHA regulations and GWUMC policy require each department to furnish employees with the required PPE for each clinical or research procedure. If the employee fails to wear the appropriate PPE, OSHA can hold the institution responsible for not enforcing the use of PPE. Departments are
responsible for routine cleaning of lab coats-----employees must never take lab coats home for cleaning. The department responsible will pay any fines from an OSHA citation.

Should there be any questions about the use of PPE or problems with fit or appropriateness call the Office of Laboratory Safety and Compliance at 4.2085, 4.2630.

**Basic Science Procedures** include manipulation of infectious agents, gel preparation, rDNA research, and any new procedure where there is an incomplete risk assessment. The nature of the manipulation and the hazard of the agent determine the level of engineering controls and PPE. Biological agents can only be used in the appropriate BioSafety level laboratory (see BMBL, section 3) with designated engineering controls (BioSafety cabinet, chemical fume hood, centrifuge, etc.) and safe microbiological techniques. The minimum PPE are gloves and gown / lab coat. A facemask, respirator, safety glasses, or face shield must also be used if there is a potential for fluid or tissue to erupt, spill, or eject.

**Vascular Procedures** include catheterization, phlebotomy, autopsy, embalming, suturing, biopsies, lumbar punctures, spinal / epidural anesthesia, injections, and invasive tissue sampling. The minimum PPE are gloves and gown / lab coat. A facemask, respirator, safety glasses, or face shield must also be used if there is a potential for fluid or tissue to erupt, spill, or eject.

**Compromised Tissue Procedures** include changing wound dressing, applying pressure dressings, application of medications to burns / wounds, irrigating wounds, and treating ulcers. The minimum PPE are gloves and gown / lab coat. A facemask, respirator, safety glasses, or face shield must also be used if there is a potential for fluid or tissue to erupt, spill, or eject.

**Clinical Laboratory Procedures** include histologic slide preparation, processing of blood / tissue / body fluids, and examination of tissues / organs. The minimum PPE are gloves and gown / lab coat. A facemask, respirator, safety glasses, or face shield must also be used if there is a potential for fluid or tissue to erupt, spill, or eject.

**Miscellaneous Procedures** include handling contaminated equipment, decontamination of laboratory surfaces and equipment, and cleaning / sanitizing animal cages. The minimum PPE are gloves and gown / lab coat. A facemask, respirator, safety glasses, or face shield must also be used if there is a potential for fluid or tissue to erupt, spill, or eject. Non-skid, waterproof boots must be used when decontamination includes wet equipment and / or floors.

**Housekeeping Procedures** include emptying trash receptacles, handling infectious waste boxes, handling sharps containers, cleaning sinks / toilets, mopping floors, and miscellaneous cleaning tasks in a laboratory building. Housekeepers must wear the uniform and personal protective equipment assigned by their department and follow cleaning procedures detailed in training conducted for those working in a laboratory building.

**Maintenance Procedures** include any work in a laboratory building; especially work in a laboratory or any plumbing work. Maintenance and skilled trades employee must wear the uniform and personal protective equipment assigned by their department and follow work procedures detailed in training conducted for those working in a laboratory building.

**Personal Protective Equipment (PPE)**

PPE is to be removed immediately following completion of a procedure. Disposable PPE must be
disposed in an infectious waste box. Disposable gloves must not be washed or disinfected and then reused because these processes impair the integrity of the gloves as barriers. Utility gloves may be washed/disinfected for reuse if they are intact. The department must regularly clean lab coats----employees are not to take lab coats home for cleaning. Disposable respirators may be used through the course of a day. Non-disposable respirators must be cleaned and stored in accordance with manufacturer’s instructions and OSHA regulations. Safety glasses and face shields must be cleaned and disinfected after each use.

**Universal Precautions - Environmental Guide**

Universal Precautions are practiced whenever clinical or research work involves potential exposure to blood (human or animal), body fluid, tissues or cell lines **unless** there is documentation that the materials are not contaminated with bloodborne pathogens. These precautions extend to activities with research equipment, lab benches, countertops, BioSafety cabinets, sharps, and all surfaces that can be contaminated. This guide also addresses the management and disposal of hazardous biological materials.

Procedures specified by Universal Precautions are additions to, not substitutes for, current departmental procedures for cleaning, disinfecting, and sterilization. The procedures refer to operations in research (basic science and animal), medical school, and outpatient treatment. If there is any question, comment, or recommendation about these procedures call OLSC at 4.2085, 4.2630.

**Biohazard Labeling**

Biohazard labels shall be a part of or affixed to containers of biohazardous materials, regulated waste, refrigerators, and freezers. Biohazard labels are available from OLSC at 4.2085, 4.2630.

**Handling Laboratory Specimens**

All laboratory specimens are considered biohazardous materials and do not need biohazard labels attached as long as they are recognizable as specimens and are handled by trained staff. If in doubt, label. The outside of specimen containers are assumed to be free from contamination, if there is a question or concern disinfect containers with a 1:10 dilution of 5.25% of bleach or alcohol.

**Managing Disposable Needles/Syringes/Scalpels, and Other Sharps**

All used sharps are considered biohazardous materials. Do not bend, break or cut needles. Do not remove or recap needles unless it is absolutely necessary, such as incremented doses of medication, an IV push, in blood gas analysis, during EMG studies in repeated administration of a local subcutaneous anesthetic during minor diagnostic and surgical procedures, and when a used needle must remain in a sterile field during a procedure. When recapping is necessary, it shall be done using a mechanical device such as a hemostat or by using a one-handed technique. Whenever possible, use the latest safe needle technology approved for institutional use.

Plastic ware must be substituted for glassware whenever possible in order to minimize the hazards of sharps cuts from broken glass. No glassware is allowed in the 704 BSL-3 facility.

Deposit needles/syringes and sharps in the sharps containers----deposit sharps containers in the infectious waste boxes.

**Managing Reusable Instruments/Procedure Trays/Needles/Syringes**

All reusable instruments, procedure trays, needles/syringes are treated as biohazardous materials
and do not require biohazard labels. Procedures should be established to identify when these materials are contaminated and decontaminated. Decontamination / sterilization must be done using a cold sterilant (Cidex) or preferably autoclaving.

Managing Equipment
Equipment in contact with known or suspected infectious material, a patient's or animal’s broken skin, mucous membranes, or is visibly soiled with blood or body fluids shall be cleaned and disinfected or cleaned and sterilized.

Laboratory bench tops, BioSafety cabinets, chemical fume hoods, centrifuges, and all other surfaces or equipment used in the manipulation of biohazardous material must be decontaminated at the end of any work period. The operating assumption in the GWUMC is that laboratory surfaces and equipment are free from contamination when the laboratory is not in active use.

Managing Regulated Waste (Infectious Waste)
Regulated waste means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials. These materials include blood, fluids, organs, tissues, bodies, and associated contaminated materials produced in the Animal Research Facility.

Regulated waste specifically includes the following: needles and other sharps, blood, body fluids, serum/plasma, tissues, organs, body parts, byproducts of surgery, autopsy or birth, specimens from medical and pathology laboratories, cultures and stocks of infectious agents, wastes from the production of biologicals, discarded live and attenuated vaccines and wastes contaminated with "free flowing blood" (saturated) such as: dressings, gauze, sponges, and pleuravacs.

Microbiology Laboratory
Place cultures, stocks and materials contaminated by cultures and stocks in autoclavable orange bags. Place other clinical laboratory waste such as contaminated slides, glass materials and needles directly into puncture resistant red plastic sharps containers, marked with a biohazard label. Seal these containers when full and place in cartons labeled infectious waste, lined with a red plastic bag labeled infectious waste---seal the bag and call Housekeeping for a pickup---follow the rules for the use of infectious waste containers, if there is a question call OLSC. Any laboratory waste that might be considered provocative must be disposed in the infectious waste container. Place general laboratory waste, such as uncontaminated paper products, in clear plastic bags. Take care not to dispose of needles, syringes or broken glassware in the general waste.

Wear gloves (and plastic aprons/fluid resistant gowns if it is anticipated that clothes may become contaminated) during the handling of infectious waste bags and/or trash bags.

Management of Bagged/Boxed Regulated Waste
The large cardboard boxes with the red plastic liners are infectious waste containers---the contents are incinerated. These boxes are delivered and picked up by Housekeeping (4.6706). The rules are:

- The box and contents must not exceed 40 lbs.
- The box must not leak or contain free flowing liquids.
- The box must not contain sharps or broken glass that can puncture the plastic bag and cardboard.
• The user seals the interior red bag.
• Housekeeping seals the cardboard top.
• The box must be labeled with the room # and date.

Managing Spills of Blood/Body Fluids/Biohazardous Material
Wear gloves (and plastic aprons/fluid resistant gowns if it is anticipated that clothes may become contaminated) during the clean up. Do not attempt to picked up sharps or broken glass from the spill.
Use disposable towels and disinfect the surface(s) with a 1:10 dilution of 5.25% household bleach, 70% alcohol solution or other labeled antibacterial disinfectant. All materials and PPE are disposed in an infectious waste container.

Hand washing is a basic personal hygiene requirement in this Exposure Control Plan. Research studies demonstrate the effectiveness of routine hand washing in controlling the spread of infectious disease for oneself, patients, coworkers, and the research environment. Staff and faculty should wash their hands before starting work, between patients, after any use of the bathroom, before eating, at the end of any laboratory work period, and at the end of the workday.

Please refer any questions, comments, or recommendations about the Exposure Control Plan to the Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.2085, 4.2630.
7.0 Respiratory Protection Program
Revised June, 2001

This Respiratory Protection Program establishes standards and procedures for the safe and appropriate use of respirators at The George Washington University Medical Center, in compliance with OSHA, Respiratory Protection; Final Rule, CFR 29, 1910.134, 1.8.98.

Current Status and Practices
Safe work practices in the Medical Center emphasize reliance on engineering controls for employee protection against chemical, biological, or radioactive exposures. These engineering controls include non-recirculation of exhaust air from laboratories (in Ross Hall), BioSafety cabinets, chemical fume hoods, and HEPA filtered centrifuges. Those activities that are not amenable to engineering controls or where there is a question as to the effectiveness of engineering controls require annual chemical badge testing of employees with potential exposures. Employees with exposure results in excess of the Permissible Exposure Limit (PEL) or the Short Term Exposure Limit (STEL) are required to participate in the respirator protection program and wear a designated respirator.

Medical Center employees in the Department of Pathology (formalin exposure) and in the Department of Dermatology (xylene) are badged annually, or in the event procedures are changed, to determine chemical exposure. To date, chemical badging of these employees does not evidence workplace exposures at or exceeding the PEL or STEL for the chemicals in question.

On occasion, the Department of Pathology may request a ½ face air-purifying respirator (negative) for an employee working around formalin for odor control. Employees or medical school students using respirators when not required under the standard are provided, at a minimum, with the information in Appendix D of 1910.134 and assistance in respirator selection, qualitative fit testing, and training in the use and cleaning of the respirator.

Respirator Program Elements

Program Administration
The Respirator Program is administered by the Office of Laboratory Safety and Compliance (OLSC), Ross Hall B-32; 4.2630.

Assessment of Need
The OLSC annually surveys research, clinical, and teaching laboratory practices for potential exposures to chemical, biological, or radioactive agents. Procedures that generate aerosols or agents that readily diffuse in the air, or are significantly hazardous, require appropriate engineering controls. Even if these controls are in place, OLSC staff may judge that the potential risk of exposure requires chemical badging. Biological and radioactive agents are of a type and quantity that are well contained by the use of BioSafety cabinets, chemical fume hoods, and centrifuges.
Selection of Respirator
OLSC selects an appropriate respirator and directs the department to purchase the respirator. The employee will assist in the respirator selection and be given options that do not affect the respirator performance. Employees with facial hair that breaks the seal between the respirator and the skin can shave, request administrative reassignment, or the department can provide the employee with a positive-pressure hood respirator. Employees may wear glasses or contact lenses with half-faced respirators. If a full-faced respirator is required, then the employee must purchase spectacle kits from the manufacturer.

Medical Evaluations
Employees required to wear a respirator must receive a medical evaluation by a physician or other licensed health care provider (LHCP). This evaluation shall include a completed, confidential OSHA Respirator Medical Evaluation Questionnaire (available from OLSC). The physician or LHCP shall ensure a follow up medical examination for any positive response to questions 1 through 8 in Section 2. The follow-up medical evaluation shall include any medical tests, consultations, or diagnostic procedures determined by the physician or LHCP. The medical determination of an employee’s physiological ability to use a respirator will be documented to the employer. Employees are required to have another medical evaluation if there is a change in the employee’s health, the employee reports signs or symptoms of difficulty in using the respirator, a request by the employer, and a significant change in work activity, or increased physiological burden in the performance of the work activity. The Medical Evaluation Questionnaire is a confidential document that is reviewed only by a physician or LHCP.

Respirator Fit Testing
Employees must pass a qualitative respirator fit test before using a negative or positive pressure respirator. The fit test must be performed initially and repeated only if there is a change in the type of respirator, size, or use – annual test is not required. The fit is conducted by OSRP using stannic chloride irritant smoke. A Material Safety Data Sheet (MSDS) will be offered to employees who are to be fit tested. Each fit test will be documented as to name, SSN, date, respirator type, department, and test media.

Employees will be trained in the use of the respirator, including: 1. How the respirator works 2. When and how to clean the respirator 3. How to conduct positive and negative user seal checks 4. How the respirator restricts the field of vision 5. How often to change the cartridges 6. What action to take in the event of a panic attack. OLSC is to be notified by the employee or the supervisor if the type, size or, use of the respirator changes.

Record keeping
Medical evaluations, badge test results, fit test records, respirator use training documentation, identification of assigned respirators will be maintained or accessible by OLSC. Retention, confidentiality, and access to employee exposure and medical records are addressed in OSHA 29 CFR 1910.1020, Access to Employee Exposure and Medical Records.
8.0 Compliance Training: Health and Safety
December 2000

Health and safety training is required for all those who work in the George Washington University Medical Center (GWUMC) Training of research staff assures compliance with institutional, local, and federal regulations regarding worker safety and environmental protection. Training of administrators and support staff assures compliance with safe work practices that are essential in a laboratory building. Managers, supervisors, and principal investigators are directly responsible for the documented training of their staff.

GWUMC TRAINING MATRIX - 12.00

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1. Fire Safety is *mandatory* for all who routinely spend time in Ross Hall. This training is usually conducted in department or staff meetings by reviewing the Emergency Response Procedures, Section 9.

2. Hazard Communication training is *mandatory* anyone not working in a laboratory.

3. Bloodborne Pathogens training is *mandatory* for support and service personnel identified as having a risk of exposure to blood, body fluids, body tissues or potentially infected materials. Reference Exposure Control Plan, Section 6.

4. Chemical Hygiene training is *mandatory* for anyone working in a laboratory. Reference Section 3.

**Training must be documented.**

Training or training assistance is provided by OLSC, Ross B-32, 4.5059.
9.0 Emergency Procedures

9.1 – Fire Emergency Instructions
9.2 – Bomb Threat Procedures
9.3 – Building Evacuation
9.4 – Hazardous Waste Contingency Plan
The George Washington University Medical Center
9.1 Fire Emergency Instructions
For Faculty, Staff, Students, Contractors & Visitors:

Upon discovery of smoke or flames:

- Remove or notify people in life threatening danger
- Activate the fire alarm
- Use the elevator lobby RED phone to contact the security desk, or call 4-6111, and provide the following information:
  - Your name
  - Exact location of the emergency (i.e. Ross Hall, Room 510)
  - Size and type of fire (i.e. small garbage can fire)
- If you have been trained, feel capable of doing so, and with another individual use a fire extinguisher to extinguish the fire
- Evacuate the building using the nearest safe stairwell.

Upon activation of the alarm, everyone is expected to:

- Stop work
- Secure research materials
- Secure or take all personal belongings
- Close (DO NOT LOCK) all doors
- Proceed in a calm, orderly manner to the nearest stairwell exit
  DO NOT ATTEMPT TO USE ELEVATORS
- Enter the stairwell, move to the right on the stairs, proceed, down/up the stairs and exit the building at the GROUND LEVEL
- Congregate on the double walkways at the end of the courtyard, at a distance of at least 100 feet from the building, and report to your supervisor
- Return to workplace or comply with other instructions given by the proper authority
- Re-Enter the building only when directed.
9.2 BOMB THREAT
Revised June, 2001

• If you receive a call, follow and document the call as outlined in the Bomb Threat Checklist for Phoned Threats later in this procedure.

• Record the time and the exact words of the message with particular emphasis on the description and the possible location of the device.

• Be familiar with Letter and Parcel Recognition Points, given later in this procedure.

Reporting a Threat

• Immediately call your supervisor, OLSC at 4.2085, 4.2630, or page Safety Specialist at 715.4141, and the University Police Department 4.6111.

Deciding to Evacuate

• After a threat evaluation the Medical Center administration and the University Police Department whether or not to evacuate.

• If evacuation is ordered—probably by the fire alarm sounding—proceed as directed in Tab 4.

Evaluating and Documenting the Threat

• The majority of the telephone bomb threats received are crank calls.
• There is frequently a clue to the validity of the threat in the message itself or in the attitude and manner of the caller.
• That is why it is important to record the caller’s message exactly as it was given.
• If you receive a threatening call, be sure to complete the Bomb Threat Checklist immediately.

DECIDING IF THE THREAT IS REAL

• The bomber, in placing the call, tends to prolong the call and be willing to furnish some detail as to the location of the device, reasons for planting it, etc.
• The call is frequently repeated.

Handling a Crank Caller

• The message tends to be abrupt and hurried. Seldom are details provided regarding the type of device, the location, reasons, etc.
• The crank caller repeats the call less frequently because of the fear of the call being traced, etc.
**WHAT TO DO WHILE SPEAKING TO CALLER**

- Basic instructions are to be calm, be courteous. Listen...do not interrupt the caller.
- Pretend difficulty with hearing the caller's conversation. Keep the caller talking.
- If the caller seems agreeable to further conversation, ask questions like these and jot down his or her responses.

  *What kind of bomb or device is it?*

  *How many did you place?*

  *When will it/they go off? At a certain hour?*

  *How much time remains until it/they go off?*

  *Where is it or they located? Building? Area?*

- If the building is occupied, inform the caller that if the device detonates (goes off) it could cause injury or death.
- Did the caller appear familiar with the facility or building when he or she described the location of the bomb(s) or device(s)?

**Bomb Threat Checklist for Phone Threats**

Exact wording of the Threat__________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

______________________________

**Caller’s Identity:** ____Male ____Female ____Adult ____Teenager

_____Approx Age

**Origin of Call** (if you can tell or ask): ____Local ____Long Distance ____Internal
### Vocal Characteristics

- Loud
- Soft
- High Pitch
- Deep
- Raspy
- Pleasant
- Intoxicated
- Other

### Speech

- Fast
- Distinct
- Nasal
- Distorted
- Stutter
- Other
- Slow

### Language

- Excellent
- Good
- Local
- Foreign

### Accent

- Fair
- Poor
- Foreign
- Not local

### Manner

- Calm
- Angry
- Rational
- Irrational
- Coherent
- Incoherent
- Emotional
- Office Machine
- Righteous
- Laughing

### Background noises

- Machinery
- Bedlam
- Music
- Voices
- Party Atmosp.
- Trains
- Animals
- Quiet
- Street
- Other

### Questions To Ask

1. When is the bomb going to explode?
2. Where is the bomb right now?
3. What does the bomb look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

### Action to Take Immediately After Bomb Threat Call

**Notify the:** University Police Department 4.6111 and Administration???
LETTER AND PARCEL BOMB RECOGNITION POINTS

If the letter or parcel you are handling or receive has any of these characteristics:

- Foreign mail, air mail and/or special delivery
- Restrictive markings, such as “confidential”, “personal,” etc.
- Excessive postage
- Hand written or poorly typed addresses
- Incorrect titles
- Titles but no names
- Misspellings of common words
- Oily stains or discolorations
- No return address
- Excessive weight
- Rigid envelope
- Lopsided or uneven envelope
- Protruding wires or tinfoil
- Excessive securing material, such as masking tape, string, etc.
- Visual distractions

ACTION TO TAKE AFTER RECEIVING SUSPICIOUS PACKAGE

- Do not handle package.
- Evacuate area package is in.

Notify: University Police Department 4.6111
9.3 Building Evacuation

Revised June, 2001

Any Medical Center building may be evacuated for fire, gas fumes, bomb threat, suspected terrorist activity, hazardous materials spill or release, or other incidents that compromise the health and safety of building occupants.

Building evacuation is best accomplished through the use of the fire alarm system. In the event of any fire alarm the building occupants are trained and directed to secure research activities, close doors, exit using the stairwells and congregate in locations well away from the building.

Individuals who refuse to leave must be reported to the Office of Laboratory Safety and Compliance and the University Police Department. Do not attempt to force someone to leave—you may place yourself and others in danger—report the individual(s) to whoever is conducting the evacuation.

Evacuees from Ross are to congregate on the far walkway at the end of the courtyard, between 23rd and 24th streets. The walkway / driveway from 23rd street to the courtyard must remain clear for emergency personnel.

Evacuees from Warwick are to congregate in the parking lot behind the building.

Evacuees from Building K are to congregate across the street next to Ross Hall.

Do not re-enter the building without specific directions from the authority in charge of the evacuation.

For information or assistance contact OLSC, Ross B-32, 4.2630, 4.2085
The Hazardous Waste Contingency Plan and Emergency Procedures was developed for the health and safety of the George Washington University Medical Center faculty, staff, students, visitors, contractors, and neighborhood. The purpose of this plan and procedures is to comply with 40 CFR 264.51 – 264.56 for the management of hazardous waste and the management of stored or in-use hazardous materials and thereby prevent or minimize injury and reduce hazards to the environment. This plan provides an action plan for a timely and effective response to an emergency through a specific delegation of authority and a clear definition of roles and tasks. Faculty, staff and employees must use the information and procedures of this manual to execute the Hazardous Waste Contingency Plan and Emergency Procedures.

1.0 Introduction
   1.1 Background
   1.2 Description of Hazardous Materials and Hazardous Waste Storage Areas

2.0 Purpose and Implementation of Plan

3.0 Placements
   3.1 Arrangements with Local Authorities
   3.2 Emergency Contact List
   3.3 Emergency Equipment
   3.4 Evacuation Plan

4.0 Locations of Contingency Plan

5.0 Revisions of Plan

6.0 Emergency Coordinator

7.0 Medical Center Emergency Procedures
   7.1 University Police Department: Responsibilities
   7.2 Emergency Coordinator: Responsibilities
   7.3 Office of Laboratory Safety and Compliance: Responsibilities
1.0 Introduction

1.1 Background
The George Washington University Medical Center is comprised of three buildings: Ross Hall, Warwick, and Building K. Of these three buildings, only Ross Hall generates and stores significant quantities of hazardous materials and hazardous waste materials. Warwick and Building K maintain small stores of hazardous materials and generate an occasional infectious waste box containing used needles and bandages from health education activities. There is no central storage area for hazardous materials — chemical and biological agents — these materials are shipped directly to laboratories or classrooms.

There are central storage areas of hazardous waste materials. In Ross Hall the hazardous waste storage areas are:

- B-42 – Infectious Waste Box storage room.
- B-35 - Infectious Waste (frozen) storage room.
- 515 - Hazardous Chemical Waste primary storage room.
- 645 - Hazardous Chemical Waste secondary storage room.

Each of these storage areas have specific risks relative to the types of hazardous materials and the structure of the storage facility. This Contingency Plan is intended to provide critical information for the effective emergency management of a hazardous waste materials incident. This plan is designed in accordance with all federal and district laws with respect to emergency preparedness and prevention of emergency events, including (RCRA) 40 CFR 264 subpart D, 40 CFR 265 subpart D, and 20A DCMR Chapter 40 through 54.

1.2 Description of Hazardous Materials and Hazardous Waste Storage Areas

<table>
<thead>
<tr>
<th>Facility name:</th>
<th>Ross Hall</th>
</tr>
</thead>
</table>
| Address:      | 2300 Eye St. NW  
                Washington, DC  20037 |

Telephone Contact #’s:

Office of Laboratory Safety and Compliance (OLSC)  
Ross Hall B-32  
202.994.2630, 994.2085  
Page on Campus: 54.4141  
Page off Campus: 994.1800; #2383

University Police Dept. (UPD)  
Ross Hall Lobby Security Desk  
202.994.7113  
Dispatch: 994.6111
Energy Management Services (TopWatch)
7x24 Engineer Station
Ross Hall B-2 Mechanical Room
202.994.7007

Hazardous Materials Storage Areas
Hazardous materials---chemical and biological agents----are stored and used in laboratories and classrooms in Ross Hall, Warwick, and Building K. Chemical agents are stored in accordance with the written Chemical Hygiene Plan (29 CFR 1910.1450) located in section 3 of the Health and Safety Manual and there are additional procedures in Health and Safety Bulletins on Chemical Storage (R011) and Chemical Disposal (R077). Biological agents are stored in refrigerators, incubators, cold rooms, warm rooms, and containers-----all with a biohazard label. Procedures for the hazard management of biological agents are detailed in the Health and Safety Manual in accordance with institutional policies and 29 CFR 1910.1030.

Ross Hall B-42 Infectious Waste Box Storage Area
This is an unsecured room accessed by a double door entrance in the southeast corridor of the B-1 level. There are exterior double doors opening to trash compactors and the loading dock area. In addition to the infectious waste boxes, cleaning equipment and trash for the compactors are stored in this room.

The infectious waste boxes (w/red plastic liners) are collected primarily from Ross Hall and infrequently from Warwick and Building K. The containers are DOT approved and used in accordance with strict rules for the contents and pick up procedures. The infectious waste boxes are stored in B-42 and collected by the contractor once a week.

Any spill or release of material from infectious waste containers is cleaned up by either a Safety Specialist or Housekeeping staff. This type and quantity of hazardous waste material would not require an emergency response.

Ross Hall B-35 Animal Research Facility – Infectious Waste Frozen Storage
This is part of the restricted access Animal Research facility. This infectious waste storage area contains several freezers for animal cadavers, animal tissues, organs, and waste generated in animal research activities. This waste is collected by a contractor for off-site incineration on a routine basis.

The infectious waste materials are collected in infectious waste boxes (w/red plastic liners) from animal research labs throughout the Ross Hall. The materials are brought down to B-35 and placed in freezers until pick up by the contractor. The contractor is Stericycle Inc., Baltimore, MD., 410.354.3688.
Ross Hall 515 Hazardous Chemical Waste Room
This is the primary hazardous waste storage room in Ross Hall. All hazardous waste is labeled as to contents and as Hazardous Waste with the date it was picked up or the accumulation start date. No hazardous waste materials are stored in excess of 90 days. The room is half waste storage (left side) and half storage of unused chemical solvents (right side).

The room is accessed through a single door with a keypad lock (2-13-45). The door is curbed to the hallway and the room is fire alarmed with a halon fire suppression system and exterior blow-out walls. There is a room dedicated fire alarm system activated by heat detectors in the room that sounds an alarm bell immediately outside the door. There is a dedicated air exhaust system in the room to prevent a buildup of off gassing and odors. Hazardous waste materials are located on the floor and three shelves inside of containment trays. A spill kit is located on the top shelf to the left of the door and contains: acid and base neutralizers, 5 socks, two absorbent wipes, 2 disposal bags, and 2 cartons of sorbing.

An additional lab pack 55-gallon steel drum on wheels is located in the B-03 storage room. The lab pack drum contains 25 ft of socks, 2 boxes of sorbent pads, signage, chemical resistant boots and gloves, large disposal bags, and a full-face negative air respirator with chemical cartridges.

Hazardous waste characterization: Used and unused chemicals, liquids and solids, that present degrees of health (acute, chronic, and latent) and physical hazards (flammable, reactive, corrosive, and shock sensitive). The hazardous waste is collected by a Safety Specialist, using a cart, from labs throughout the building. Chemicals are segregated by liquid and solid, acid, base, and reactive and placed in rigid polypropylene trays for storage on shelves.

The hazardous chemical waste contractor is ENSCO, Inc., El Dorado, AR, 800.864.7173.

Ross Hall 645 Hazardous Chemical Waste Room
This is the secondary hazardous waste storage room in Ross Hall. All hazardous waste is labeled as to contents and as Hazardous Waste with the date it was picked up or the accumulation start date. No hazardous waste materials are stored in excess of 90 days. The room is half waste storage (left side) and half storage of unused chemical solvents (right side).

The room is accessed through a single door with a keypad lock (2-13-45). The door is curbed to the hallway and the room is fire alarmed with a halon fire suppression system and exterior blow-out walls. There is a room dedicated fire alarm system activated by heat detectors in the room that sounds an alarm bell immediately outside the door. There is a dedicated air exhaust system in the room to prevent a buildup of off gassing and odors. Hazardous waste materials are located on the
floor and three shelves inside of containment trays. A spill kit is located on the top shelf to the left of the door and contains: acid and base neutralizers, 5 socks, two absorbent wipes, 2 disposal bags, and 2 cartons of sorbing.

An additional lab pack 55-gallon steel drum on wheels is located in B-03 storage room. The lab pack drum contains 25 ft of socks, 2 boxes of sorbent pads, signage, chemical resistant boots and gloves, large disposal bags, and a full-face negative air respirator with chemical cartridges.

Hazardous waste characterization: Used and unused chemicals, liquids and solids, that present degrees of health (acute, chronic, and latent) and physical hazards (flammable, reactive, corrosive, and shock sensitive). The hazardous waste is collected by a Safety Specialist, using a cart, from labs throughout the building. Chemical are segregated by liquid and solid, acid, base, and reactive and placed in rigid polypropylene trays for storage on shelves.

2.0 Purpose and Implementation of the Plan
This plan is intended to minimize hazards to George Washington University Medical Center students, faculty, staff, the general public, the neighborhood and the surrounding environment from any spill, release, fire, or explosion, of any hazardous materials or hazardous waste materials into the air, soil, or surface water. The plan characterizes the hazardous materials and hazardous waste materials, describes storage locations, engineering controls, containment, and routine procedures for the safe management of these materials.

This plan must and used as a reference by all GW Medical Center staff, faculty, and contractors involved in the transportation, handling, storage, and disposal of hazardous materials. This plan is the primary reference source to be used by Emergency Coordinators in the event of a known or suspected spill or release of these materials. In the event of an emergency, this plan is provided to fire and police departments and other agencies assisting in the incident.

This plan will be implemented by the Emergency Coordinator----in cooperation with responding fire or police departments or other agencies or contractors----in the event of a known or suspected spill or release of hazardous materials or hazardous waste materials.

The objectives of the hazardous materials contingency plan is to:

- Present critical information on the types and locations or hazardous materials in the Medical Center.
• Notify emergency responders and local emergency response agencies of the incident and provide an accurate characterization of the hazardous material involved.

• Take immediate action to protect human life, property, and the environment from hazardous material spills or releases.

3.0 Elements of Plan

3.1 Arrangement with Local Authorities
The Director of Laboratory Safety and Compliance in cooperation with the Safety Manager of the Office of Risk Management shall meet on a yearly basis with the representatives of the District of Columbia Fire Department's Hazardous Materials Team to familiarize them with the following:

• The location of Ross Hall and the building layout.
• The location of the hazardous materials and hazardous waste materials storage areas.
• Characterization of the hazardous materials and hazardous waste materials generated in the Medical Center.
• Description of the faculty, staff and students using Medical Center buildings.
  • Description of the entrances, exits, and adjacent streets to the Medical Center buildings.
  • Possible evacuation routes.
  • Updated Emergency Coordinator contact lists.

Where more than one police and fire department might respond to an emergency, agreements have been made to designate the primary emergency authority to the DC Fire Department and the DC Police Department, and agreements with any others to provide support to the primary emergency authority. The DC Police Department is responsible for securing the area and protecting the safety and health of GWU Medical Center staff, faculty, students, or visitors. The DC Fire Department is designated as the primary emergency authority. In the event that an emergency situation should occur, the DC Fire Department will be responsible for securing the affected area and shall begin to contain the fire, spill, or release. Copies of the aid agreements with the local authorities and the Hospital are on file with the Office of Risk Management.

Arrangements have been made with the George Washington University Hospital to familiarize the staff of the properties of hazardous materials and hazardous waste handled on campus and the types of injuries or illnesses which could result from fires, explosions, or releases. Also, agreements with emergency response contractors have been established. Where local authorities decline to enter such arrangements, GW shall document the refusal.

In addition, the Medical Center will coordinate with the Risk Management Safety Manager
the treatment, storage, and disposal of recovered waste, contaminated soil or surface water, or any other material resulting from a spill with an outside hazardous waste disposal contractor (Primary: A&A Env. Svcs 1.800.404.8037, Backup: Tri-County Industries, 1.800.336.8611), an EPA authorized contractor, or the District of Columbia Hazardous Materials Team immediately following the emergency.

3.2 Emergency Contact List

INITIAL CONTACT
University Police Department
202-994-6111

PRIMARY EMERGENCY COORDINATOR
Mark S. Ennen, Dir. Lab Safety and Compliance
Extension: 202-994-2085
Page Operator: 54.4141
Page: #2383
Main Line: 202-994-2630
Home: 202-543-1218
Cell Phone Number: none
E-mail Address: resmse@gwumc.edu
or
Jeffery M. Good, Senior Env. Health and Safety Specialist
Extension: 202.994.5059
Page Operator: 54.4141
Page: #2561
Main Line: 202.994.2630
Home: 410.695.2185
Cell Phone: 410.507.8246
E-mail Address: rsojmg@gwumc.edu

MAIN LINE
Office of Lab Safety and Compliance (OLSC)
202-994-2630
2206 Eye Street, N.W.
Ross Hall, Room B-32 Washington, DC 20037

The following personnel/departments may be notified by the UPD:

- **District of Columbia Emergency Management Agency** 202-727-6161
- **DC Fire Department Hazard Material Unit** 9-911
- **District of Columbia Metropolitan Police Department** 9-911
- **District of Columbia Fire Department** 9-911
If the DC Fire Department Hazard Material Unit responds, their function will be to isolate the incident in keeping with the DC local emergency response plan until contracted emergency response personnel arrive to clean up.

Additional Emergency Phone Numbers:

- Poison Control Center  202-625-3333
- D.C. Hazardous Waste Division 202-535-2290
- Federal Agencies/EPA Region III Office 215-814-2900
  - National Response Center  800-424-8802

The following information is required when calling these numbers:

- Name and phone number
- Name and address of facility
- Type and time of incident
- Name, quantity and condition of material involved
- Extent of injuries
- Possible hazards to humans and environment

Local Hospitals
All persons potentially overexposed during a chemical emergency will be advised to go to the George Washington University Hospital Emergency Room immediately for examination and evaluation.

3.3 Emergency Equipment
The location of spill control equipment in Ross Hall is detailed in section 1.2. It is important to note that an emergency (use only) telephone is located in the elevator lobby of each floor in Ross Hall; this telephone is a direct line to the Ross Hall lobby Security desk that is active 7x24. The spill control and personal protective equipment are to be used by designated staff of the Office of Laboratory Safety and Compliance in the event there is a preliminary assessment of a fire or release or to assist the emergency responders. In the event of a fire or release outside emergency responders with appropriate protective equipment will be called to the scene by the emergency coordinator.

3.4 Evacuation Plan
If for any reason an evacuation of Ross Hall, Warwick, or Building K is necessary, the fire alarm pull station is used. The fire alarm is a combination of siren, strobe lights, and recorded announcement to evacuate the building. Ross Hall evacuation is to the double side walks at the far end of the courtyard. Other buildings evacuate to adjacent sidewalks. Evacuation instructions include re-entry with all clear by the DC Fire Department and UPD.
4.0 **Locations of Contingency Plan**
Copies of this plan are located at:

- Office of Health Research, Compliance, and Technology Transfer Ross Hall 712
- Office of Laboratory Safety and Compliance, Ross Hall B-32
- Health and Safety Manual (assigned to each investigator in Ross Hall)
- UPD Ross Hall Lobby Security Desk
- Energy Management Operations (Top Watch), Ross Hall B-2, Boiler Room
- Office of Risk Management, Support Building 102
- George Washington University Hospital, Risk Management Office
- Facilities Management Office, Ross Hall, B-07
- University Police Department, Woodhull House

5.0 **Revisions of Plan**
The Hazardous Waste Contingency Plan and Emergency Procedures is revised whenever changes in information, staff, procedures, or physical facilities significantly effect the accuracy of the plan. On an annual basis the plan is reviewed for possible revisions by the Office of Laboratory Safety and Compliance.

6.0 **Emergency Coordinator**
For the purposes of this plan the Medical Center Emergency Coordinator is the Director of Laboratory Safety and Compliance, the on-call Safety Specialist, or a designee from the Office of Risk Management. Except in the case of minor chemical or biological releases, emergency coordination is taken by the University Police for the purpose of calling the D.C. Fire Department or other resources.

Staff from the OLSC or Risk Management are available for assistance and consultation at the discretion of the University Police Department or the D.C. Fire Department. The Emergency Coordinator is familiar with this plan, the facilities, the location of hazardous material storage, and the first steps to be taken in the event of a fire or release of hazardous waste materials.

The District of Columbia Fire Department’s Commanding Officer (on-shift) will be the primary Emergency Coordinator and will be responsible for coordinating all emergency response measures. If the Commanding Officer is unavailable, the D.C. Fire Department will designate an alternate.

7.0 **Medical Center Emergency Procedures**
All spills or releases of hazardous materials or hazardous waste materials must be managed as if the hazard is dangerous to individuals and the adjacent community. University personnel should not attempt to handle any chemical spill unless they are properly trained in handling chemical spills (e.g. laboratory personnel, safety personnel). If a chemical spill occurs in your immediate area, the following steps should be taken:
Evacuate the room, laboratory, or area and close the door.
If a chemical or waste material is spilled or splashed on the body remove contaminated clothing and flush the affected areas with large amounts of water.
During normal business hours contact OLSC at 4.2630 and the University Police at 4.6111. Outside of normal business hours page the Safety Specialist on-call at 54.4141 and call University Police at 4.6111.
Provide the following information:

> Location of incident
> Type of incident (e.g., fire, explosion)
> Name and quantity of material(s), if known
> Extent of injuries, if any
> Your name and telephone number

If there are fumes or potential for fire or explosion evacuate the building, otherwise stay in the area and provide information to emergency responders.

7.1 University Police Department: Responsibilities
When UPD is notified of a hazardous materials release, the dispatcher will obtain the following information:

- Name and phone number of reporting person
- Name and address of accident location
- Time and type of incident (e.g., fire, explosion)
- Name and quantity of material(s) involved, if known
- Extent of injuries, if any
- Possible hazards to human health (e.g., toxic vapors)
- Damage to property or environment

The UPD supervisor on duty will verify if it is a hazardous materials incident. The supervisor will call the D.C. Fire Department. UPD personnel will secure the spill area but **not** approach the immediate area.

UPD will contact the Office of Laboratory Safety and Compliance during normal business hours at 4.2630. Other than normal business hours page the on-call Safety Specialist at 54.4241. If there is no response from OLSC then contact the Office of Risk Management.
## RISK MANAGEMENT PHONE LIST

<table>
<thead>
<tr>
<th>Call Order</th>
<th>Name</th>
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<th>Home #</th>
<th>Pager</th>
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<tr>
<td>1</td>
<td>Sean Yarup</td>
<td>994-6944</td>
<td>301-330-1332</td>
<td>202-345-2209</td>
</tr>
<tr>
<td>2</td>
<td>Anissa Drabish</td>
<td>994-9411</td>
<td>703-968-6089</td>
<td>301-513-8793</td>
</tr>
<tr>
<td>3</td>
<td>Peter Muldoon</td>
<td>994-0145</td>
<td>703-433-1691</td>
<td>301-513-8784</td>
</tr>
<tr>
<td>4</td>
<td>Joseph Yohe</td>
<td>994-6947</td>
<td>703-533-8124</td>
<td>N/A</td>
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<tr>
<td>5</td>
<td>Barry Dempsey</td>
<td>994-5537</td>
<td>410-263-7433</td>
<td>N/A</td>
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<tr>
<td>*</td>
<td>Risk Management</td>
<td></td>
<td></td>
<td>202-345-2209</td>
</tr>
</tbody>
</table>

The Safety Staff from either office will assist and support the UPD and the D.C. Fire Department in a hazard assessment of the situation. If the UPD supervisor judges that there is an imminent threat to the building occupants, the supervisor will direct the evacuation of the building via the fire alarm.

Once the fire department arrives on the scene, the ranking D.C. Fire Department officer will assume the role of the emergency coordinator. UPD will provide information and support to D.C. Fire Department as necessary. Specific information about certain chemical / products are available in the MSDS binders in Support 101C or through the Risk Management web site. ([www.gwu.edu/~riskmgnt/MSDSLinks.htm](http://www.gwu.edu/~riskmgnt/MSDSLinks.htm))

If there is a legitimate chemical release, D.C. Fire Department will contain the material but will not clean it up. The Office of Risk Management maintains emergency spill response contracts with two firms. In the absence of Safety personnel, UPD should call the response contractors directly.

### Primary Contact

| A & A Environmental Services | 24-hour # | 1-800-404-8037 |

### Backup Contact

| Tri-County Industries | 24-hour # | 1-800-336-8611 |

*Risk Management Safety Manager and Safety Specialists can clean up very small spills (less than 5 gallons).*
If certain quantities are released into the environment, the University must report the release to the federal Environmental Protection Agency. This reporting will be the responsibility of either the Office of Risk Management or the Office of Laboratory Safety and Compliance. Refer to attachment for Hazardous Substances and Reportable Quantities.

7.2 **Emergency Coordinator: Responsibilities**

Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately do the following:

- Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel and if:
  - **Small Spill** *(5 gallons or less)* – the emergency coordinator shall ensure those persons in the immediate vicinity of a chemical spill are evacuated from the immediate work area.
  - **Large Spill** *(greater than 5 gallons)* – if there is a substantial hazardous chemical release into the air, consideration should be given to evacuating the entire building by activating the internal fire alarm. Restrict access to the spill or release area and do not permit re-entry until the all clear is given by UPD or the D.C. Fire Department.

- Notify appropriate State or local agencies with designated response roles if their help is needed.

The Emergency Coordinator shall contact the District of Columbia Fire Department’s Hazardous Materials Team in the event of a chemical spill, unless a properly trained experienced person (e.g. safety personnel, contracted hazardous waste response team) can safely handle the spill.

- The Emergency Coordinator will provide whatever assistance is requested by emergency response agencies in the immediate management of the incident, clean up, and assessment.

7.3 **Office of Laboratory Safety and Compliance: Responsibilities**

After a hazardous waste materials incident, the OLSC through the Office of Risk Management shall notify the EPA Regional Administrator, and appropriate State and local authorities, that the facility is in compliance before operations are resumed in the affected area(s) of the facility.
OLSC shall write a report documenting the time, date, and details of any incident that requires implementing this Contingency Plan.

Within 15 days of an incident, OLSC shall submit a written report on the incident to the EPA Regional Administrator. A copy of the written report must be submitted to the Department of Consumer and Regulatory Affairs, Environmental Control Division, 614 H Street, NW #505, Washington, D.C. 20001. The report must include the following:

- Operator and Location of Facility
- Date, time, and type of incident (e.g., fire, explosion);
- Name and quantity of material(s) involved;
- The extent of injuries, if any;
- An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

Section 313 of SARA Title III requires the immediate notification of a reportable quantity (RQ) to federal, state, and local emergency response agencies. Refer to Form R (attached).

RQ is a quantity assigned to hazardous substances, the release of which triggers reporting requirements. RQ’s are applicable to all hazardous substances released into the land, air, ground water, and surface water. A list of hazardous substances and their RQ’s is attached.

In the event that there is a release of any of the listed hazardous materials in RQs greater than listed quantities, OLSC must notify the following agencies:

- National Response Center 800-424-8802
- DC Hazardous Waste Division 202-535-2290
- DC Emergency Management Agency 202-727-6161
10.0 Health and Safety Bulletins

- Chemical Fume Hoods
- BioSafety Cabinets
- Laboratory Close Out
- Hazardous Waste Disposal
- Laboratory Hazard Information Signs
- Storage of Laboratory Chemicals
- Electrical Equipment
- Smoking Policy
- Research Material in Elevators
- Building Safety for Students
- BioSafety Level-3 Laboratory Facility
- Ross Hall Safety Committee
- rDNA Research
- TB Respiratory Protection
Health and Safety Bulletin

Compliance Training: Health and Safety
Revised 6.28.01

Health and safety training is required for all those who work in the George Washington University Medical Center (GWUMC) Training of research staff assures compliance with institutional, local, and federal regulations regarding worker safety and environmental protection. Training of administrators and support staff assures compliance with safe work practices that are essential in a laboratory building. Managers, supervisors, and principal investigators are directly responsible for the documented training of their staff.

GWUMC TRAINING MATRIX - 12.00

<table>
<thead>
<tr>
<th></th>
<th>Support / Service Staff</th>
<th>Administrators &amp; Staff</th>
<th>Researchers &amp; Students</th>
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<tr>
<td><strong>Fire Safety</strong></td>
<td>Annual</td>
<td>Annual</td>
<td>Annual</td>
</tr>
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<td><strong>Hazard Comm 1910.1200</strong></td>
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<td>Annual (see note 2)</td>
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<td><strong>Bloodborne Pathogens 1910.1300</strong></td>
<td>Annual (see note 3)</td>
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<td>Annual (see note 4)</td>
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<tr>
<td><strong>Chemical Hygiene 1910.1450</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Annual</td>
</tr>
</tbody>
</table>

1. Fire Safety is *mandatory* for all who routinely spend time in Ross Hall. This training is usually conducted in department or staff meetings by reviewing the Fire Emergency Response Procedures. (Section 9.1)

2. Hazard Communication training is *mandatory* anyone not working in a laboratory.

3. Bloodborne Pathogens training is *mandatory* for support and service personnel identified as having a risk of exposure to blood, body fluids, body tissues or potentially infected materials. (Section 6.0)

4. Chemical Hygiene training is *mandatory* for anyone working in a laboratory. (Section 3.0)

>>Document Training<<

Training or training assistance is provided by OLSC, Ross B-32, 4.2085, 4.2630.
Health and Safety Bulletin

Storage of Laboratory Chemicals
Revised 6.28.01

In many laboratories the largest quantity of solvents, acids, bases, and reactives are usually stored together under the sink where a plumbing problem will insure a chemical hazard problem. We can also expect to find at least one can of ethyl ether, pitted with rust and at least a year old---a shock sensitive explosive.

This bulletin provides guidelines for the storage of chemicals commonly found in the Medical Center. The emphasis is on chemicals that are either stored in quantity (one gallon / four liters+) or are uniquely hazardous (reactives or high toxicity). For specific chemical storage information consult the label, a Material Safety Data Sheet (MSDS) or call OLSC.

- Limiting the quantity of chemicals stored will require more frequent ordering, but it will minimize storage space, improve inventory control, and control the fire load in the lab.
- Substitute, minimize, replace more hazardous chemicals with less hazardous whenever possible ---- stay current with new products and procedures.
- The best source of chemical hazard information is a MSDS, available from OLSC, the manufacturer, and net sites. A hard copy MSDS should be in the lab for those chemicals most frequently used, most hazardous, or stored in quantity. Lab staff must read the MSDS and know how the chemical is handled and what to do in case of a spill or release.
- Toxic, reactive, or flammable / combustible chemicals must not be stored above eye level. The larger the container the closer to the floor.
- Store Separately: Organics and Inorganics, Acids and Solvents, Acids and Bases, Nitric Acid by itself.
- Flammable / combustible chemicals of 5 gallons / 20 liters or more must be stored in a flammable storage cabinet.
- Do not store chemicals in chemical fume hoods or BioSafety cabinets.
- Train staff on how to dispense chemicals without creating a hazard (usually aerosols).
- Chemical Spill: 1---vacate the lab, close the door, and allow the air to clear. 2----if someone is splashed irrigate w/water and call 9-911. 3----call OLSC at 4.5059. 4----secure the leak if possible.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
Health and Safety Bulletin

Ross Hall Safety Committee

Revised 6.28.01

The Ross Hall Safety Committee is charged by the Associate Vice President for Research with the following responsibilities:

1. To advise the Associate VP for Research, through the Office of Health Research, Compliance, and Technology Development, on matters pertaining to safe laboratory practices in the performance of laboratory research in the Medical Center. In particular, to recommend procedures addressing the safe handling and disposal of hazardous chemical and biological agents.

2. To review and recommend research protocols for the 704 Biosafety Level 3 laboratory facility and to provide oversight for the safe operation of this facility.

3. To review institutional policies regarding safe laboratory practices and advise the Office Health Research as to their implications.

4. To make recommendations on other matters that may be referred to the Committee by the Associate VP for Research.

The Ross Hall Safety Committee meets on the last Monday of every other month. Issues of concern to the Committee may be submitted directly to the Chair of the Committee or through a Committee member. The RHSC is managed by the Office of Laboratory Safety and Compliance.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
Health and Safety Bulletin

**BioSafety Cabinets**

Revised 6.28.01

A fire in a Ross Hall BioSafety cabinet (BSC) was the result of using a quantity of alcohol with a flame to ensure sterility. When alcohol and a flame is used for sterilization, it is critical to minimize the amount of alcohol and never flame when the alcohol is pooled or spilled on instruments or containers.

Sterilization procedures using alcohol and a flame are a potential hazard because 70% of the air in the cabinet is recirculated (exhaust 30%) and the HEPA filters in the cabinet are highly combustible (paper and fiber). The BSCs in Ross Hall are not certified for use with quantities of flammable chemicals, highly toxic chemicals, potent carcinogens, or radionuclides. Only touch-o-matic Bunsen burners should be used in BSCs.

Other rules for use of BSCs include:

- Request training if you are uncertain about proper BSC techniques.
- Minimum personal protection is a lab coat and gloves. The object is to avoid hazardous exposure and not to contaminate research materials. Wash hands before and after working in the BSC.
- Materials in the cabinet should be placed to segregate contaminated and non-contaminated materials; remember airflow direction is downward. Do not place materials within eight inches of the front of the cabinet.
- BSCs are not for storage of research materials, chemicals, or animals. Contact the Radiation Safety Office before using radioactive materials. The more material in the cabinet the more inefficient is the cabinet operation.
- When work in the BSC is interrupted or completed, research materials should be secured and the work area decontaminated (10% bleach or 70% alcohol).
- BSCs in the Medical Center are certified once a year and whenever moved or decontaminated / repaired.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
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704 BioSafety Level 3 Laboratory Facility
Revised 6.28.01

The 704 BSL-3 Laboratory Facility is designed and operated for the safe conduct of microbiological research with pathogenic or toxic agents which have potential for respiratory transmission and may cause adverse health effects.

The primary reference for the design of the facility and agent hazard assessment is *Biosafety in Microbiological and Biomedical Laboratories*, 3rd edition, CDC / NIH, May 1993. This facility meets or exceeds all design parameters for a BSL-3 laboratory.

The hazards of BSL-3 research are managed through a combination of good microbiological techniques and primary barriers: biosafety cabinets, a chemical fume hood, centrifuges, personal protective equipment, and secondary barriers: directional air flow, restricted access, pass through autoclave, deluge shower, and hand washing facilities.

There are six laboratories inside the facility and a Commons area that includes instrument rooms, the cold and warm rooms, the chemical fume hood, a high-speed centrifuge, an ultra speed centrifuge, and the pass through autoclave. There are separate entrance and exits airlocks monitored by video cameras. Access is restricted to authorized faculty and staff with assigned access codes.

Research protocols for the BSL-3 facility are reviewed and approved by the Ross Hall Safety Committee. The facility is operated by the authority of the Office of Health Research, Compliance, and Technology Development and managed by the Biological Safety Officer through the Office of Laboratory Safety and Compliance.

The Manual of Operating Procedures---available from OLSC---describes the engineering controls and behavioral rules for the use of the facility. Authorized users are tested on their knowledge of the manual. Failure to follow facility rules results in a formal safety violation and possible further disciplinary action by the Ross Hall Safety Committee.

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Health and Safety Bulletin

Chemical Fume Hoods

Revised 6.28.01

There are approximately 80 chemical fume hoods (CFH) in Ross Hall. In a recent survey CFH were in active use without being turned on, hoods were being used for long term storage of chemicals and research equipment, perchloric hoods used for radioactive procedures, and animals storage. CFH are not the same as biosafety cabinets (BSC). BSC uses a laminar airflow for personal and material protection and the exhaust air is filtered. Except for the radiochemical hoods CFH exhaust directly to the outside of the building. The following guidelines must be followed for the safe and effective use of chemical fume hoods.

1. The three types of CFH are chemical, radiochemical, and perchloric acid. Chemical hoods are used for work with toxic and volatile chemicals. Radiochemical hoods are used for radioactive materials and hoods with a water wash-down system are specific for perchloric acid. To use the hood for other than its design specifications is to increase the hazard and provide a false sense of security in lab procedures.

2. Safe and efficient CFH operation depends on the proper placement of materials inside the hood, correct hood location, and adequate airflow capacity. Each container or piece of equipment in the hood can disrupt the effective exhaust of contaminated air—which minimizes materials in the CFH.

3. Airflow volumes are measured yearly for CFH certification, but the routine effectiveness of the hood operation depends on the placement of materials in the hood and sash height that does not exceed the arrowed markings.

4. Chemical storage in the CFH reduces the efficiency of the airflow, limits the useful work area, and often serves as the final storage site for chemicals that should be discarded.

5. When the hood is not being used close down the sash to limit accidental access to the hood.

6. The principle investigator, researcher, or lab supervisor is responsible for the safe operation of the CFH and the training staff in the safe use of this equipment.

If the CFH is not working then the hood must be posted and an emergency work request called into 4.6706.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
A lab fire in Ross Hall highlights the issue of the risk of fire due to faulty electrical equipment. The fire started in a table top oven used to dry glassware. The oven is a number of years old and recently the temperature control switch developed a fault that required the switch to be set at a lower temperature level so the unit would not overheat; there was a sign to this effect on the machine. Even with this precaution the oven overheated and started a fire inside the chamber. The fire was immediately discovered and put out with a fire extinguisher without injury to the staff or damage to the lab.

Electrical equipment in the laboratories of Ross Hall is a common source for the ignition of fires. This equipment ranges from coffee makers and microwave units through the full range of laboratory equipment from freezers to incubators. Over time the fire risks of electrical equipment increases with repeated use, misuse, and normal wear and tear. This risk, in combination with the extraordinary chemical and material fire load in the building requires an active program of managing the use of this equipment and routine inspection for defects.

OLSC requires the following practices to control the risk of fire from defective electrical equipment:

- Establish a routine procedure (once a month or a quarter) to inspect all the electrical equipment in your lab or office. Check for frayed power cords, defective switches, lights, thermostats and, indicators.

- Insure that everyone in the lab or office knows how to operate the electrical equipment ----- do not assume they know.

- All appliances or equipment must have UL or other certifying laboratory approval. Home appliances should not be used in laboratories.

- Unplug coffee makers and other appliances when not in use, especially before weekends, holidays, and vacations.

- Strictly follow the manufacturer's operation and maintenance procedures for laboratory equipment. Failure to follow these required procedures may invalidate warranties, increase the fire risk, and compromise research.

- Do not continue to use defective electrical equipment. If the equipment is not operating as designed then discontinue its use and label, "Broken - Do Not Use," cut the power cord and then either discard the unit or have it repaired. For equipment repair call Facilities Work Control 4.6706 or the service provider

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Health and Safety Bulletin

Hazardous Waste Procedures
Revised 6.28.01

Infectious Waste Boxes
The cardboard boxes with the red plastic liners are for the disposal of research materials that are contaminated with hazardous biological agents or chemicals to include: tissue samples, animal cadavers, animal organs, slides, sharps, broken lab glassware, absorbent pads, pharmaceuticals, and small quantities of chemicals. Plastic sharps collection boxes are placed inside the infectious waste box.

- The boxes are delivered constructed.
- All sharps must be placed in an infectious waste box.
- Do not pour liquids in the boxes or over pack—weight limit is 40 lbs.
- Use only the boxes provided.
- Do not deliver the boxes to the loading dock.
- Do not use for disposal of non-hazardous material; the boxes are incinerated at $0.27/lb.

When the infectious waste box is ready for disposal:

- Label the box with the lab room#.
- Seal the plastic liner, not the cardboard top.
- Call 4.6706, request a pickup and replacement.

Hazardous Chemical Waste
This includes old, unused chemicals, waste, liquid, solids, and mystery chemicals. Labs are encouraged not to order what cannot reasonably be expected to use.

- Accumulated waste chemicals (mixed liquid) must be labeled with a hazardous waste sticker (from OLSC), the date the accumulation started, and the container must list the chemical mix.
- Chemical waste must be stored in designated area of lab, in secondary containment, and with signage.
- Call for a pick-up 60 days from the initial accumulation date.

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Sink Disposal

Approved for:

- Dilute acids or bases. These must be flushed with large amounts of water. These wastes are pH adjusted in neutralization tanks prior to release into the DC sewer system.
- Solutions of non-toxic chemicals that are miscible in water; flush with water.

Prohibited for:

- Flammable or Reactive chemicals.
- Concentrated Acids or Bases.
- Toxic, Carcinogenic, Mutagenic or Teratogenic chemicals---those that have not been neutralized or deactivated.
- Unknown or Unidentified chemicals.
- Solids, Non-water soluble solvents, and Viscous substances (Oils and Greases).

It is the responsibility of the principal investigator or laboratory supervisor to train staff in these procedures. The cost of regulatory citations for violating these procedures will be paid by the responsible department. If there is a question about the disposal of any material in the Medical Center---call OLSC at 4.2085 or 4.5059.
Health and Safety Bulletin

Llaboratory Close-Out

Revised 6.28.01

Whenever a research project is ended, a researcher moves to another institution or a lab is being moved to another location the Office of Laboratory Safety and Compliance (OLSC) conducts a laboratory close-out. The principal investigator, senior researcher or a designate by the department chair is responsible for the laboratory close-out.

Every effort should be made to give away unused / useable chemicals. The expense of using an outside contractor to dispose of serviceable chemical supplies is becoming prohibitive and could be charged back to the researcher or department. OLSC will provide technical assistance as required.

Biological and Chemical Materials

Biological materials should be destroyed by the researchers through chemical inactivation, autoclaving, or disposal in an infectious waste container. Chemicals, that are not claimed by other researchers, must be clearly labeled for contents and laboratory room number; call OLSC for a pick up——4.5059.

Radioactive Laboratory Decommissioning Procedures

Contact with the Radiation Safety Office

The Authorized User of any radioactive material must contact the RSO at extension 4-2630, well in advance of his/her departure, termination of a research project, move to another laboratory(ies) or plans to be inactive for more than one year, for decommissioning of the laboratory(ies).

Inventory of Radioactive Material

The Authorized User must prepare a list of radioactive materials in his/her possession including sealed and unsealed sources, and any radiation producing equipment, generator and imaging devices. These sources must be labeled with the name of the radionuclides(s), activity, chemical and physical form, date and initial of the investigator.

Transfer of Radioactive Material

If the Authorized User wants to transfer radioactive material to another Authorized User in this University or elsewhere, the RSO must first be informed. The RSO will then arrange to transfer the radioactive material as per license commitments and Department of Transportation (DOT) regulations.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
Storage of Radioactive Material
Consolidate all radioactive materials in a container (vials, bottles, sealed sources, etc.) and store them in the appropriate refrigerator, freezer, etc., and keep the radioactive materials under locked security.

Transfer of Records
The Authorized User must transfer all records pertaining to radioactive material use to the RSO.

RSO Response
The Radiation Safety Technologist(s) will survey the laboratory to locate contaminated spots, such that all discrete sources of radiation or radioactive material are properly identified and inventoried. Decontamination procedures will continue until swipes from the contaminated areas and adjacent unrestricted areas, demonstrate that the removable contamination levels are within the room release limit stated in the license. The RSO must also collect radioactive material utilization logs and other records required by the NRC, collect personnel dosimetry and remove radioactive material caution signs from the room, doors, refrigerators, etc. All radioactive waste will be collected, appropriately disposed, stored or shipped. Based on overall inspection and the swipe results, the laboratory will be decommissioned.

Laboratory Equipment
All equipment in the laboratory should be cleaned out and decontaminated. This includes icebound materials in freezers, glassware, instruments and equipment in fume hoods, biological safety cabinets, centrifuges, nitrogen storage containers, refrigerators, and incubators. If required OLSC will decontaminate biological safety cabinets.
Health and Safety Bulletin

*Laboratory Hazard Information Signs*
Revised 6.28.01

The Laboratory Hazard Information sign is intended to provide lab access information, lab hazard characterization, and emergency response information. The information on the sign is primarily directed to Housekeeping, Security, Skilled Trades, visitors, fire fighters, and other emergency personnel. The information on this sign must be current with existing lab activities and assigned staff.

A Laboratory Hazard Information sign holder (Plexiglas) is attached to the wall next to the primary entrance to each laboratory identified by the Office of Laboratory Safety and Compliance (OLSC). Please notify OLSC, 4.5059 if you need a sign holder or a sign holder removed.

The information on the Laboratory Hazard Information sign is to be completed and posted by the principal investigator, researcher or laboratory supervisor in charge of the lab. *Instructions for completing the form are on the reverse of the form.*

The Laboratory Hazard Information sign replaces all hazard and emergency information at the entrance to each lab, with the exception of biohazard and radiation hazard pictograms as required. This sign holder is not to be used for posting other notices, nor is the format to be amended. This form is revised each year and a new form must be posted. Recommendation for changes to the sign should be sent to OLSC.

The information on the Laboratory Hazard Information sign will be checked as part of laboratory safety certification audits.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
Health and Safety Manual

Guidelines for rDNA Research
Revised 6.28.01

1. rDNA research must be approved by the Institutional Recombinant DNA Advisory Committee (IRAC).


3. The Containment Procedures document must be posted in the laboratory.

4. Immediately report problems — accidents, illnesses— associated with rDNA research to OLSC (4.2085) and the Chair of the IRAC.

5. Laboratory staff must be specifically trained in the laboratory practices required for the safe management of rDNA research.

6. Develop an explicit plan for accidental spills, releases, and personal contamination.

7. Laboratory staff must be trained under the approved rDNA protocols and follow all procedures for the safe handling and disposal of research material.

8. Laboratories must be inspected annually by the IRAC for compliance with containment and disposal procedures.

9. Principle investigators have primary responsibility for the risk assessment and hazard management of the research materials and manipulations of the research materials.

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Health and Safety Bulletin

Research Material In Elevators
Revised 6.28.01

The four passenger elevators in Ross Hall are used by a variety of GWUMC staff, students, outside contractors, and the general public. Researchers use the elevators to move research material, including animals, throughout the building. There is a reasonable concern over the risk of having research materials in the confined space of a passenger elevator, even if the elevator is in a medical research and teaching building. In order to manage the risk and avoid the imposition of inconvenient rules, the following guidelines are established in regard to transporting research materials in the elevators.

- **Gloves, face shields or respirators are not to be worn when transporting research material in the elevator.** Research material should be completely contained in spill proof, no leak, unbreakable containers and there should be no contamination on the exterior of the containers.

- **Hazardous chemicals or biologicals are to be transported in a double container ---one container inside of another.** The container should not open on impact.

- **Whenever possible, transport research materials early or late in the day in order to avoid the high use hours.**

- **If the material is of quantity, cumbersome, or particularly hazardous then use a cart for transport.**

- **Animal cages are to be covered at all times.**

- **In the event of a Spill/Release:** **1st** - Evacuate the area, **2nd** - Call University Police 4.6111 and OSRP 4.2630 or Page Operator 4.3321, **3rd** - Wait for Police and OSRP.

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Health and Safety Bulletin

**Smoking Policy in Ross Hall**
Revised 6.28.01

Ross Hall was designated a no smoking building in May 1990. This policy was enacted because of concerns with employee exposure to environmental tobacco smoke (ETS) and the building fire load as a research center and library.

Since the institution of the no smoking policy there have been two fires on the loading dock due to careless smoking. There continues to be a problem with smoking in some laboratories. Smoking in a research building loaded with flammable chemicals is aggressively stupid. Those who persist in violating this policy must be reported to OLSC at 4.5059.

The no smoking policy includes all interior space of the building and within 50 feet of any entrance. The loading dock of Ross Hall is of particular concern because it is a receiving area for medical center supplies which include ordinary combustible material, flammable chemicals, and compressed gas cylinders.

ETS is a strong public health issue, backed by research in support of the contention that at a minimum it is a nuisance and likely a significant health hazard. The Occupational Safety and Health Administration (OSHA) is proposing regulations on ETS in the work place and there is wide spread voluntary action by employers to prohibit smoking in the work environment.

The Medical Center expects each investigator, manager, and supervisor to inform their employees of the no smoking policy and to enforce the policy through procedures specified in the employee handbook.

Office of Laboratory Safety and Compliance, Ross Hall B-32, 4.5059, resmse@gwumc.edu
Health and Safety Bulletin

Building Safety for Students of the SMHS and SPHHS
Revised 6.28.01

In addition to classrooms, there are approximately 152 research and clinical laboratories in Ross Hall. These laboratories contain a range of hazards: chemical, radiation, and biological. The combination of these potential hazards and laboratory operations make Ross Hall a building with significant health and safety risks. Everyone working in, attending school or visiting Ross Hall, is required to follow policies designed to manage these health and safety risks.

Students’ lockers and classrooms are adjacent to Ross Hall laboratories. This proximity causes problems when students enter labs to use the phone, ask a question or just out of curiosity. Laboratory researchers also experience problems with moving research materials through crowded hallways.

Laboratory Access

- All laboratories are restricted to research staff assigned to the lab. This is a legal requirement for the licensed use of radioactive materials and a policy of the Medical School.
- Laboratory telephones are only to be used by laboratory staff.
- Visits to labs may be arranged by contacting the lab supervisor or investigator listed on the Lab Hazard Information sign at the entrance to each lab.
- Do not obstruct the corridors.

Life Safety

- When the Fire Alarm sounds, evacuate the building using the stairwells not the elevator.
- Evacuate the building through any fire door exit and congregate on the sidewalks in front of Ross Hall --- not in the courtyard or in the walkway / driveway between 23rd St. and the courtyard.
- If you discover a fire: 1) Remove anyone in danger; 2) Activate the fire alarm pull station; 3) Call University Police at 4.7113 and provide your name, the location, and the size and type of fire; 4) Evacuate the building.

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**TB Respiratory Protection Program**
Revised 6.28.01

The Respiratory Protection Program
The TB respiratory protection program is part of the GWUMC Respiratory Protection Program which establishes standards and procedures for the safe use of respirators at GWUMC, in compliance with OSHA, *Respiratory Protection Rule; Final Rule, CFR 29, 1910.134, 1.8.98*. Copies of this program are available at OSRP.

Anyone fit tested under this program must first complete a mandatory OSHA Respirator Medical Evaluation Questionnaire and may be subject to a follow-up medical examination.

Wearing a HEPA respirator or a PFR N95 in the defined circumstances is not optional. Employees of GWUMC, UHS, attending physicians, residents, medical school students, and agency nurses are subject to disciplinary action for failure to follow this Respiratory Protection Program. This institution is subject to citation and fines from the Occupational Safety and Health Administration (OSHA), if it fails to enforce this program.

Respirators: Types and Use
The George Washington University Medical Center (GWUMC) and Universal Health Services (UHS) employees with exposure to TB patients are required by institutional policy and federal regulations to use respiratory protection as specified in this bulletin. The 3M 9970 High Efficiency Particulate Respirator (HEPA) is used in Sputum Induction, Pentamidine Administration, and Autopsy. The Particulate Filter Respirator (PFR) N95 is used in respiratory isolation rooms and all other circumstances where there is potential exposure to known or suspected TB patients.

Patients with known or suspected TB, or other diseases where the patient’s exhalation is known or suspected to be infective, are required to wear a PFR N95 when they leave the respiratory isolation room. Patients are prohibited from use of the HEPA respirator, since exhalation is unfiltered. Visitors to respiratory isolation rooms are required to wear a PFR N95.

Respirator Fit Testing
Health care workers, who wear the 3M HEPA or the PFR N95, are required to complete TB prevention training and respirator fit testing as described in the TB Control Plan. Those working at the Veterans Administration Hospital must be fit tested by the Office of Laboratory Safety and Compliance (OLSC, 4.2630, 4.5059) and complete a VA form certifying respirator fit testing results. Nursing staff will briefly instruct visitors in the proper use of the PFR N95, but fit testing is not required.

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Although beards prevent a good seal between the respirator and the face, individuals with a beard will be fit tested. Individuals that fail the test due to facial hair must take one of the following options: 1) shave off the beard/hair; 2) obtain a Purified Air Powered Respirator (PAPR); 3) transfer to a position that does not require respiratory protection.

The fit test must be performed before the first use and repeated only if there is a change in the type or respirator, size, or use. An annual test is not required.

**Respirator Use**
The HEPA respirators are available in the treatment units designated as high risk: Sputum Induction, Pentamidine Administration, and Autopsy. These respirators are disposable, but should be reused until soiled, contaminated, damaged, or are no longer a secure fit; these respirators may be used up to one month. When the 3M HEPA is going to be reused, it should be labeled with your name and stored in a manner that will protect the respirator from damage and contamination. These respirators are expensive.

The PFR N95 is a disposable respirator that may be used for an entire shift, provided that it is not contaminated or damaged.

**Record keeping**
Medical evaluations, medical exam results, and fit test documentation are maintained or accessible by OLSC (4.5059). Confidential medical records are located at Employee Health Services.

*Questions about the TB Respiratory Protection Program should be referred to the Office of Laboratory Safety and Compliance (OLSC) at 4.2630, 4.5059. Questions about other aspects of the TB Control Plan should be referred to Hospital Infection Control at 54.4415.*