



RESEARCH LABORATORY SAFETY MANUAL AND CHEMICAL HYGIENE PLAN

REFERENCES:

OSHA Safety & Health Standards (29CFR1910)
JCAHA Plant Technology & Safety Standards
VHA Handbook 1200.7
Medical Center Numbered Memoranda
Medical Center Emergency Preparedness Manual

EXPIRATION DATE:

January 8, 2011 (to be reviewed annually)

Richard E. Miller, M.D.
ACOS/R&D

Distribution: All Research Employees (11R)

CHEMICAL HYGIENE OFFICER FOR RESEARCH SERVICE

Timothy Hadden, Ph.D.
Scientific/Technical Consultant
B4321 – Extension 64468

Dr. Hadden, because of his training and experience, has been designated as the Chemical Hygiene Officer for Research Service. He will also act as Research Safety Officer for purposes of VAMC policy. His role is to provide technical guidance in the development and implementation of the chemical hygiene plan and the hazardous communication program. He will be happy to assist you with questions you might have about safety issues and/or concerns.

The Chemical Hygiene Plan was reviewed and approved by the Subcommittee of Research Safety (SRS) at its meeting of December 13, 2007 and approved by the R&D Committee at its meeting of January 8, 2008.

Annual Reviews: _____

2008
EMERGENCY FAN OUT SHEET
RESEARCH SERVICE (11R)

VA ANIMAL RESEARCH AREA (LOWER LEVEL)

In the event of any emergency involving the rooms in the VA animal research area (especially temperatures less than 65°F or greater than 85°F in animal holding rooms: LL342, 343, 344, 346, 347, 348, 349, 350, 351, 352, 353) please do the following:

1. Inspect the animal area, including individual rooms, to determine if it is an emergency
2. Call the appropriate engineering personnel (576-1000, x63850)
3. Contact one of the individuals in the order listed below:

<u>NAME</u>	<u>TITLE</u>	<u>OFFICE PHONE</u>	<u>HOME PHONE</u>	<u>PAGER/CELL</u>
Cathy Kendra	Supervisor	313-577-1452	313-274-9403	313-940-5751
Deb Ashcraft	Supervisor	313-577-5824	734-981-2916	313-275-1860
Paul Schwikert	Assoc. Director	313-577-1418	313-886-7459	313-940-5239
Merlin Ekstrom	Director	313-577-1046	248-553-0053	248-798-5892
Timothy Hadden	Tech Advisor	313-576-4468	313-640-7870	1135-9690(short range)
Richard E. Miller	ACOS/R+D	313-576-1046	248-737-5583	248-915-5915

AT NO TIME SHOULD ANY ANIMAL BE REMOVED FROM A BUILDING EXCEPT AS DIRECTED BY AN INDIVIDUAL LISTED ABOVE.

RESEARCH LABORATORIES B4 AND LL308-333

In the event of any emergency involving any room in B4 or LL research area, the following individuals are authorized to be contacted:

<u>NAME</u>	<u>TITLE</u>	<u>OFFICE PHONE</u>	<u>HOME PHONE</u>	<u>PAGER/CELL</u>
VA Medical Center		313-576-1000		
Timothy Hadden	Tech. Advisor	x64468	313-640-7870	1135-9690(short range)
Richard E. Miller	ACOS/R+D	x61046	248-737-5583	248-915-5915
Mary Jo Brady	AO	x63106	313-295-2311	313-575-8469

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SAFETY PROGRAM

1. **INTRODUCTION**

- a. All employees of Research Service are required to be knowledgeable of the VA safety program.
- b. This program requires that employees be aware of the guidelines stated in the (1) Chemical Hazard Communications Program, (2) Formaldehyde Management Program, (3) Safety, Occupational and Fire Protection Program, (4) Infection Control/Blood Borne Pathogens Program (5) the Radiation Safety Program and (6) the Medical Center Disaster Plan.

2. **NEW EMPLOYEE ORIENTATION**

All new employees will be trained by their Principal Investigator (or designee) who will certify to this on the WOC application form or New Employee Orientation form.

3. **ONGOING EDUCATION AND COUNSELING**

- a. All new or revised information concerning the safety program will routinely be given to employees at a safety meeting or on an individual basis by a member of the Safety Committee.
- b. If there are any safety violations or problems, a member of the Safety Committee will meet with the individuals to correct the situation.
- c. An employee may request a meeting with the Safety Committee or one of its members at any time.

4. **EMPLOYEE HEALTH**

- a. Physicals and Exams
 - (1) All employees are required to have an annual TB skin test.
 - (2) Any required physicals and exams will be performed by the Employee Health Physician.
- b. Protective Clothing and Device Requirements
 - (1) All persons working in research labs **MUST** wear appropriate clothing and footwear.
 - (2) All persons working in research labs **MUST** wear lab coats and gloves when necessary.
 - (3) All persons working with formaldehyde **MUST** wear lab coats, gloves and a respirator or mask.

5. **HANDLING, STORAGE AND DISPOSAL OF ANIMAL AND LAB WASTE**

a. Lab Glassware

- (1) Must be stored in appropriate glassware cabinets.
- (2) All broken glassware must be placed in the appropriate containers located in each laboratory.

b. Radioisotopes

- (1) All radioisotopes must be handled in accordance with the Radiation Safety manual.
- (2) Wipe tests are to be performed in accordance with the Radiation Safety Manual.

c. Chemicals: Chemicals are to be stored and disposed of in accordance with the Hazard communication Guidelines and the Hazard Waste Management Policy.

d. Compressed Gasses

All glass cylinders are to be securely chained in place against a wall or bench. One chain may be used to secure no more than three cylinders at a time.

e. Biohazards

- (1) All labs using any biohazard must be clearly identified.
- (2) Those persons working with biohazards must adhere to the Infection Control Manual.

f. Animal carcasses are to be disposed of as follows:

- (1) Regular, uncontaminated carcasses are to be placed in the freezer in room LL406.
- (2) Those carcasses containing a radioisotope must be clearly labeled with the following information:

- * Name of isotope
- * Amount of isotope
- * PI using isotope

These carcasses should be placed in the designated radioactive freezer in Room LL406 for subsequent disposal by the Radiation Safety Officer (RSO).

- (3) All carcasses containing a biohazardous substance must be put in a red bag in the appropriate biohazard freezer in room LL406 until they are disposed of by the VMU staff.

6. **PROPER USE OF HOODS**

- a. Fume hoods are located in each individual laboratory except for the perchloric acid hoods, which are located in room B4342 and LL328. A radioisotope fume hood is located in B4342 and B4230.
- b. All persons using hazardous chemicals should use the appropriate hood.
- c. When using the hood area, always turn on the exhaust fan.
- d. Never work with your head under the hood.
- e. The door to the hood area must be pulled down to the indicated sash level.

7. **SAFETY EYEWASH STATIONS/SHOWERS**

These items are located in each laboratory. They must remain unobstructed at all times.

8. **VISITORS**

- a. Veterinary Medical Unit: **NO UNAUTHORIZED PERSONS ARE PERMITTED IN THE VMU.**
- b. Research Labs: All visitors must sign the visitor log book kept in the Research Office. All visitors to labs must wear appropriate protective clothing.

9. **PERSONNEL ACCIDENTS**

All accidents must be reported immediately to the Research Office and no later than 48 hours after the occurrence to the Safety Office.

10. **DATA SECURITY**

- a. Any loss of computer, disk, or files must be reported immediately to the ACOS/Research (or AO for Research) and Police & Security.
- b. The ACOS or AO will immediately notify the Privacy Officer and the Information Security Officer.

11. **EMERGENCY PHONE NUMBERS**

- a. Medical emergency 63333
- b. After hours emergency "0" operator
- c. Theft 63375
- d. Gas leak 63275
- e. Fire 63555
- f. Water leak 63275
- g. Electrical failure 63275
- h. Security 63375

12. **REFERENCES**

OSHA Safety and Health Standards (29CFR 1910)
VA Handbook 1200.8

13. **RECISSIONS**

Research Safety Policy #1, dated October 1, 2004

RESEARCH SAFETY POLICY #2

John D. Dingell VA Medical Center
Detroit, Michigan

SAFETY COMMITTEE/SAFETY INSPECTIONS

1. **PURPOSE**

This policy delineates the duties and responsibilities of the Research & Development Service Safety Committee.

2. **POLICY**

A Safety Committee will be appointed for Research & Development Service to meet the requirements of the Medical Center Safety, Health and Fire Prevention Program.

3. **RESPONSIBILITIES**

- a. The ACOS/R&D will be responsible for appointing a committee consisting of R&D Service personnel. This committee will be a subcommittee of the Subcommittee of Research Safety (SRS), which is a subcommittee of the R&D Committee. Current members are:

Timothy Hadden, Ph.D. (Chairman)	Tim Geddes
Mary Jo Brady (ex officio)	Anne Skoff, Ph.D.
Sandra Griffin	Pamela VandeVord, Ph.D.
Susan Seo, Ph.D.	Mary Walsh, Ph.D.
Stephanie Conatser	(Research Secretary)

- b. Appointed members of the R&D Safety Committee will be responsible for complying with procedures established by this policy, service specific policies and the Medical Center Safety, Health and Fire Prevention Program.

4. **PROCEDURES**

- a. The Committee will meet bi-monthly and forward all minutes, through the SRS, to the hospital-wide Safety Committee by the last Friday of each meeting month.
- b. Each laboratory shall conduct its own **monthly safety inspections**. At a minimum, the following items will be checked: eye wash safety shower, fire extinguishers, electrical equipment, flammable solvents, unmarked bottles, hazardous chemicals, isles and passageways. Eyewashes will be flushed weekly by laboratory personnel to prevent build-up of rusty water. Also, bi-monthly inspections will be made by the safety committee of all R&D areas within the hospital to discover any conditions that could be hazardous, as follows:

February – eye wash/shower accessibility
April – fume hoods
June – core rooms
August – chemical storage
October – fire safety
December – general walk through to include gas cylinder storage and electrical safety

- c. A report of any deficiencies noted will be forwarded to the ACOS, through the SRS, with recommendations for correction.
- d. Effort will be made to promote favorable staff attitudes toward safety requirements.
- e. Educational programs related to fire and safety measures will be planned and implemented through hospital and service facilities.
- f. Problem areas and accident causative factors will be identified.
- g. The Committee, through the SRS, will develop and/or review written policies and procedures designed to enhance safety within the service.

5. **REFERENCES**

OSHA Safety & Health Standards (29CFR 1910)
JCAHO Plant Technology and Safety Standards

6. **RECISSIONS**

Research Safety Policy #2, dated October 1, 2004.

RESEARCH SAFETY POLICY #3

John D. Dingell VA Medical Center
Detroit, MI 48201

EMPLOYEE HEALTH

1. The Employee Health section is located in Room C1783 on the main floor. Their extension is 64753.
2. **PROCEDURES**
 - a. TB Skin Test: All employees are expected to receive a skin test for tuberculosis (TB) yearly.
 - b. Hepatitis B: Immunizations for Hepatitis B and rabies are available through the Employee Health section. (All personnel who work with dogs are required to receive the vaccine against rabies.)
 - c. Infectious Waste: Employees working with infectious waste should have blood samples drawn for use in the event treatment is required in the future.
 - d. Hazardous Substances: Female employees should be mindful of the use of hazardous substances, especially radioactive materials if pregnancy is suspected or real. Suspected or actual pregnancy should be reported immediately to the Radiation Safety Officer. Consult the MSDS information substance with which you work. The Safety Office also has some materials on precautions to take during pregnancy.
 - e. Consultations: Employees should consult with Employee Health about questions related to work-related illness, symptoms, or the need for medical surveillance.
 - f. Medical Management: Medical consultations and any medical follow-up deemed necessary by the examining physician must be made available under any of the following circumstances:
 - When an employee develops signs or symptoms associated with a chemical in the laboratory
 - In the event of a spill, a leak, an explosion, or a chemical release potentially resulting in a hazardous exposure
 - When monitoring reveals an exposure level routinely above the action level (or when there is no action level, the PEL)
 - g. On-the-Job Injuries: An employee (paid or WOC) involved in an accident or contract a work-related illness should report to the Research Office for a referral to the Employee Health Clinic. (If the injury occurs on an off tour, the employee should report directly to the Emergency Room). The Research Office must be notified of accidents, work-related illnesses or suspected health hazards.
 - h. Needle and syringe handling procedures:
 - Do not destroy, bend or clip used needles. The preferred practice is to not replace the needle cap on a used needle (many needle sticks are caused in this manner.) The "one handed scoop and tap" method for recapping can be used when that procedure proves safer than delaying disposal or transporting an uncapped needle.

- Used needles should be placed in sharps containers, available from Environmental Management Service.
- Never leave needles or other sharp objects lying unattended at the patient's bedside or on workbenches.
- If injured, report immediately to the Research Office (ext. 63430) who will refer you to the Employee Health Clinic C1783. If an injury occurs on an off tour report to the Emergency Room.

3. **REFERENCES**

MCNM 001F-110, "Tuberculosis Program"

4. **RECISSIONS**

Research Safety Policy #3, dated October 1, 2004

RESEARCH SOP 1

GENERAL REQUIREMENTS FOR PERSONAL & LABORATORY SAFETY

1. Smoking
 2. Eating and drinking
 3. Food
 4. Cosmetics
 5. Contact Lenses
 6. Safety goggles
 7. Clothing
 8. Shoes
 9. Hair
 10. Beards
 11. Hand Washing
 12. Personal Hygiene
 13. Skin breaks
 14. Mouth pipettes
 15. Drinking fountains
 16. Exits and aisles
 17. Good housekeeping
 18. Glassware
 19. Centrifuges
 20. Autoclaves
 21. Needle and syringe handling procedures
 22. General Good Laboratory Practices
-
1. **Smoking** is prohibited in all areas of the hospital.
 2. **Eating and drinking** are prohibited in the lab areas. It is poor laboratory practice, a source of contamination, and specimens (blood, urine, feces, sputum) containing a variety of pathogens are handled daily in the lab areas and stored in the lab refrigerators. A refrigerator in Room B4269 has been designated for use by Research personnel. There is an area across from the red elevators furnished with tables and chairs for breaks, as is the canteen on the first floor of the hospital.
 3. **Food or beverages** are not permitted in laboratory refrigerators/freezers.
 4. **Application of cosmetics** in lab areas is prohibited.
 5. **Contact lenses**, especially the soft lenses, will absorb certain solvents. Contact lenses offer no protection from a splash and may concentrate caustic material against the cornea or prevent tears from washing caustic material away. You are strongly advised not to wear contact lenses in the laboratory!
 6. **Safety Goggles:**
 - a. Safety goggles are to be worn by personnel performing the following functions:
 - * Heating liquid in a test tube
 - * Pouring and handling caustic and corrosive materials
 - * Toxic or hazardous reagent preparation
 - * Handling or using volatile solvents

- b. All personnel in each lab will be advised of the location of safety goggles and instructed to wear them when performing the functions described in paragraph 6a. All new employees will be instructed in the use of eyewashes by each supervisor.
7. **Clothing:** Hospital uniforms or laboratory coats should be worn when working. Do not wear uniforms or coats with a high percentage of acetate, or other highly flammable material. Uniforms or coats are required when using radionuclides.
8. **Walkman radios** or headphones are not to be worn while on duty in the hospital.
9. **Footgear** should be comfortable, rubber soled, and cover the entire foot (lace or loafer type). Shoes with open toes or heels are not recommended. Sandals and thongs are especially dangerous.
10. **Hair** shall be secured back and off the shoulders in such a manner as to prevent it from coming into contact with contaminated materials or surfaces and to prevent shedding of organisms into the work area. This is especially true in bacteriology work. It is also important to keep hair out of moving machinery such as a centrifuge.
11. **Long beards** are a danger in regard to moving equipment and a possible source of bacterial contamination.
12. **Hand washing:** Hands should be washed frequently during the day, during specimen processing, before leaving the laboratory, before and after contact with patients, and before eating, smoking or drinking.
13. **Personal hygiene:** Close attention should be paid to hazardous habits of hygiene such as nail biting, head scratching, putting pens/pencils in the mouth, etc.
14. **Gloves** should be worn when using blood, body fluids, and radioactive materials.
15. **Mouth pipetting** is prohibited. There are pipetting aids (i.e. bulb, syringe, or mechanical pipetting) available for every task. The use of mechanical pipetting systems for all materials will be encouraged.
16. **Drinking fountains** are to be utilized only for that purpose and not for washing hands, rinsing items, or filling containers.
17. **Exits and aisles** must not be obstructed in any way. No equipment, chairs, supplies or trash are permitted in exit routes or areas. Empty boxes are to be placed in container(s) provided.
18. **Good Housekeeping:**
 - a. Rags and/or flammable solvents will be disposed of in self-closing metal containers.
 - b. Do not hang clothing on or near radiators, heating instruments, or open flames.
 - c. Do not allow trash to accumulate in any area. Trash and boxes are to be disposed of daily.
19. **Glassware:**
 - a. Do not use broken or chipped glassware. Discard it and order new.
 - b. Do not leave pipettes sticking out of bottles, flasks, or beakers.

- c. Do not attempt to remove stoppers on glass tubing by forcing. Instead, cut them off.
- d. Glass blowing and other artistic endeavors are prohibited.
- e. Decontaminate (by autoclave) glass exposed to possible hepatitis-containing samples.
- f. Heated glass containers should be handled with heat-resistant gloves (not asbestos).
- g. All glassware, broken or not, should be disposed of in special containers labeled for "broken glassware". Do not use these containers for disposable plastics e.g. pipettes.

20. Centrifuges:

- a. Do not operate any centrifuges (regardless of size) unless the covers are closed. Keep hair, beard, neckties, hair ribbons or other clothing OUT OF THE WAY.
- b. Do not centrifuge uncovered tubes of specimens (blood, urine, sputum) or flammable liquids. (Contaminated items become aerosols; flammable liquids become bombs, etc.). USE CAPS OR PARAFILM. Tubes must be counterbalanced.

21. Autoclaves:

- a. Personnel should not operate autoclaves until they have been checked out in the proper operation by their PI.
- b. Do not open until both temperature and pressure are back to normal. Do not stand in front of door when opening.
- c. Use heat resistant gloves when putting items into or removing items from the autoclave. The sides and door may be hot in addition to the material being autoclaved. Note: Beware of steam, which will permeate heat-resistant gloves.
- d. Loosen caps of any containers to allow equalization of pressures inside containers. This prevents explosions, boil-over, and implosions. Do not move heated liquids until they have cooled down. Moving such liquids while hot can lead to "flash ups" of hot fluids and cause serious burns.

22. Needle and Syringe Handling Procedures:

- a. Do not destroy, bend or clip used needles. Do not replace the needle cap on a used needle (many needle sticks are caused in this manner).
- b. Used needles should be placed in red, plastic, sharps containers, available from Environmental Management Service.
- c. Never leave needles, etc., lying on the workbench.
- d. If injured, report immediately to the Research Office (x 63430), who will refer you to Employee Health C1783. If you are injured on an off-tour, report to the emergency room

23. Good Laboratory Practices: The following practices, precautions, and procedures apply to all laboratories working with hazardous chemicals.

- a. Know the materials you are working with and their hazards. Read labels and Material Safety Data Sheets carefully. Contact the Chemical Hygiene Officer if more information is needed.
- b. Be prepared for emergencies: know what action to take. Make sure that spill kits and cleanup materials are available for small spills.
- c. Know the location of safety showers, eyewash stations, fire blankets, fire extinguishers, and alarms.
- d. Use the minimum amount of a hazardous chemical necessary.

- e. Never deliberately smell or taste a chemical.
- f. Inspect gloves and fume hoods before beginning procedures.
- g. Do not allow the release of toxic substances into warm rooms or cold rooms.
- h. Inspect equipment for damage before adding a hazardous chemical.
- i. Avoid direct contact with any chemical. Keep chemicals off clothing, including shoes.
- j. Do not engage in behavior that could distract and annoy others.
- k. Band loose clothing with tape.
- l. Keep the work area clean and uncluttered.
- m. Label all secondary containers.
- n. Keep hands and face clean. Wash with soap and water after handling any chemical.
- o. Promptly clean up small spills.
- p. If a chemical spill is such that it is immediately hazardous and cannot be handled by on-site personnel, police operations (x63375) should be called immediately.
- q. For unattended operations, leave the light on and post a warning notice.

RESEARCH SOP 2

WARNING SIGNS & LABELS

Area designations: In most laboratories, there are no "high risk" areas except in the chemical, bacteriologic and radioactive hoods and in the storage area. The technical work areas will be considered to be moderate risk and restricted to laboratory personnel. Administrative, clerical areas are considered to be "low risk", e.g. desks, non-technical work areas are not restricted.

Posting: In some laboratories, there may be high-risk periods that require posting while the hazard exists. In others, the designations are permanent and restrictions and signs should be permanent.

Labels: Chemical manufacturers are required to label their containers with identifying and hazard information. Whenever you put a chemical, whether purchased or produced yourself, into another container, that container must be adequately labeled. To insure uniformity among laboratories and reduce confusion, Research Service requires you to observe the following policy for labeling self-packaged items:

- a. The label must identify the contents of the container, the name of the investigator, and the date it was purchased or produced. This also helps later with disposal of items.
- b. The National Fire Prevention Association (NFPA) coding system for labeling chemical will be used for all self-packaged items. The NFPA code uses four colored diamonds with numbers, which identify chemicals for health, fire, reactivity and special hazards. Labels are widely available from safety catalogs. Information for coding chemicals can be found on the chemical's Material Safety Data Sheet (MSDS).
- c. If items are particularly hazardous, additional labeling, e.g. picture symbols, should be used to further identify the container. These will allow for quicker recognition of hazards.
- d. It is a good idea to go through chemical stocks periodically and properly dispose of out-dated or unwanted items. This prevents the accumulation of unnecessary chemicals, which will eventually need to be disposed of when the lab is vacated. Principal investigators will be financially liable for the cost of proper disposal of hazardous wastes when their lab is vacated. This can be quite expensive; so order only the quantities you need and substitute non-hazardous items whenever possible. Periodically Engineering Service provides a disposal service for hazardous chemicals. This is free of charge and each laboratory will be notified as to the time and date by the Research Service Chemical Hygiene Officer.

Material Safety Data Sheets (MSDS):

On all chemicals in use must be on file in each laboratory area, and easily accessible to all laboratory personnel. If you cannot locate a MSDS in your files, check with the Safety Office, or the Warehouse. All purchase orders for chemical must include the wording "request Material Safety Data Sheet". You should read a MSDS on a substance before ordering it to determine if special handling is required. If it is hazardous, inquire about the possibility of substituting a less hazardous substance (several suppliers have 800-numbers that can be used for this purpose). If you are unaware of the nature of a substance, read the MSDS before opening the container. A tragedy can occur if you open a container and the substance turns out to be toxic! Medical Center Memorandum 001F-111 gives more detailed information on the medical center policy on acquiring an MSDS.

Chemical Inventory: The Industrial Hygienist requires an updated inventory of the hazardous chemicals used in your laboratory annually. New items added to the chemical inventory should be highlighted.

RESEARCH SOP 3

PROCEDURES REQUIRING PRIOR APPROVAL: RADIATION, BIOHAZARDS, ANIMAL AND HUMAN STUDIES

Investigators must receive approval from the appropriate committees prior to use of the following items:

<u>ITEM</u>	<u>COMMITTEE</u>
Radioactive Materials	Hospital Radiation Safety Committee
Infectious Diseases	Research Subcommittee on Safety (SRS)
Recombinant DNA	Research Subcommittee on Safety (SRS)
Human Subjects	Wayne State University Human Investigation Committee and VA Research Clinical Investigation Committee.
Animal Subjects	Wayne State University Animal Investigation Committee
All Research Projects	R&D Committee

Phone numbers and contacts may be obtained from the Research Office.

RESEARCH SAFETY POLICY #4

John D. Dingell VA Medical Center
Detroit, MI

HEALTH AND SAFETY EDUCATION PLAN

1. **PURPOSE**

To establish definitive guidelines for maintaining an effective and comprehensive health and safety education program within R&D Service. The goal of training is to inform employees of the risks of hazardous chemicals in the workplace, the controls available for their protection and how to use them, and the contents of the CHP. Training must be conducted initially when an employee is hired or when the potential hazards of the job change. Refresher training must be conducted periodically thereafter at intervals determined by the employer. (See attachment A).

2. **POLICY**

It is the policy of this medical center to maintain a safe and healthy environment for both patients and employees by providing proper training for employees. These guidelines will be reviewed and updated as needed with a current copy being maintained in the Service. All R&D Service employees shall conform to accepted standards as described in VA regulations, JCAHO regulations, Medical Center and Service policies.

3. **RESPONSIBILITIES**

The ACOS/R&D or designee will be responsible for providing and documenting all training set forth by this policy.

4. **PROCEDURES**

a. Training

- (1) All new R&D personnel, compensated or without compensation, will receive workplace orientation to include the location and use of fire protection equipment, fire plan procedures and responses, evacuation plan and basic job safety and practices, in accordance with Medical Center Numbered Memorandum 00F-106.
- (2) All service personnel will be given on-the-job instructions involving potential hazards as well as proper and safe use of equipment.
- (3) All service personnel will receive annual refresher instructions based on safe work practices.
- (4) All users will receive annual radiation safety training and formaldehyde safety training.
- (5) Annual training will be conducted on Hazardous Communication/Chemical Hygiene Plan as outlined in Medical Center Memorandum 00F-119.
- (6) Additional training will be provided to R&D Service personnel on an as-needed basis.
- (7) Personnel will also be trained when there are changes in job techniques or assignments.

b. Training should include:

- (1) The contents of the OSHA laboratory standard, 29 CFR 1910.1450
- (2) The contents of this manual
- (3) The chemical and physical hazards of chemicals in the laboratory
- (4) Routes of entry and how exposures can occur
- (5) OSHA PELs, ACGIH TLVs, NIOSH RELs, and other standards and guidelines limiting exposure
- (6) Signs and symptoms associated with exposures
- (7) Methods of detecting chemicals (monitoring, visual appearance, smell, etc.)
- (8) Good laboratory practice
- (9) Locations, proper use, and limitations of all available personal protective equipment
- (10) Spill control policy and location of cleanup equipment and materials
- (11) Availability and location of information sources, such as books and MSDSs
- (12) Explanation of how to read an MSDS
- (13) Emergency plans

c. Frequency of Training

- (1) **New Employee Orientation** of Hospital and Fire and Safety Policies - offered every other Monday with room number to be announced. Attendance is mandatory for all new employees.
- (2) **Research New Employee Orientation:** Principal Investigators (or their designee) are responsible for reviewing the Research Laboratory Safety Manual & Chemical Hygiene Plan with new employees. They are also required to train them on special procedures followed in their laboratory. The employee must be shown the location of chemical inventories and MSDS's for all hazardous chemicals.
- (3) **Annual Safety Refresher Training:** This training consists of computer based training in the areas of the Hazard Communication Program, fire and safety plans, use of fire extinguishers, and the hospital disaster plan.
- (4) **Annual Research Safety Refresher Training:** This training is given to research employees annually to ensure knowledge of the safe practice of handling hazardous chemicals and the employees' "right to know". The Research Laboratory Safety Manual & Chemical Hygiene Plan will be reviewed with employees at this time. Universal precautions against infectious agents are also reviewed at this time. Annual review of the plan is documented and maintained in the laboratory safety manual.
- (5) **New Procedures:** Investigators must also train employees on safety concerns whenever a new hazardous chemical or procedure is introduced.

d. Documentation and Reporting:

- (1) The R&D Service's Health and Safety Plan will be revised as needed and submitted to the Safety Office yearly as required (see Appendix A).
- (2) All training will be documented in accordance with medical center policies.

5. **REFERENCES**

MCNM 001F-53 Health & Safety Education Program
MCNM 001F-54 Safety Management Program
VHA Handbook 1200.8

6. **RECISSIONS**

Research Safety Police #4, dated October 1, 2004

Research Service Training Plan for FY 08

1. NEW EMPLOYEES

New Employees (paid and WOC) will receive service specific training and orientation beginning on the first day of work in Research Service.

2. ALL RESEARCH EMPLOYEES

a. Refresher safety training will be conducted bi-monthly and cover the following topics:

- (1) Fire Safety - November
- (2) Chemical Hygiene Plan/ Hazardous Communication/ Personal Protective Equipment - January
- (3) Emergency Preparedness/Disaster Training - March
- (4) Equipment Management/Utilities - May
- (5) Security Management Program – July
- (6) Bloodborne pathogens - September

b. All employees are expected to complete assigned web based safety classes.

c. All employees will receive training on new equipment or current equipment and procedures on an as needed basis.

d. All training will be given by the Research Service Safety Coordinator, a member of the Safety Committee, or by selected individuals with specialized experience or training.

3. USER ONLY TRAINING

Radiation and formaldehyde users are required to complete annual training.

Policies and procedures cannot possibly address all situations. Please make sure that you exercise good judgment and common sense. Remember that patient needs always come first.

**OCCUPATIONAL HEALTH AND SAFETY PLAN FOR RESEARCH PERSONNEL
WITH ANIMAL CONTACT**

1. PURPOSE

The purpose of the Occupational Health and Safety Plan is to ensure health and safety awareness and protection and intervention for people who have contact with research animals. The plan also ensures compliance with federal regulations (e.g. OSHA, EEOC) and state regulations (e.g. MDPH, MIOSHA), and recognizes and abides by professionally developed standards established by select organizations that may apply to institutions performing research involving the use of animals.

2. RESPONSIBILITIES

a. The Medical Center Director, as the Institutional Official (IO) is responsible for ensuring that the animal research program has the resources and support necessary to comply with all federal regulations and guidelines that govern animal research and protection of personnel involved in animal research. The IO is the point of contact for correspondence addressing animal research with the United States Department of Agriculture (USDA), the Public Health Service (PHS), and the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC). However, because this VA Medical Center uses the affiliate's (Wayne State University) Public Health Service (PHS) Assurance, the Director of Laboratory Animal Research assumes the role of the IO for PHS correspondence to comply with PHS Policy.

b. The ACOS/R&D is responsible for ensuring proper oversight and care of all research animals housed on VA property, as well as research animals purchased with VA funds, no matter where they are housed. He/she is also responsible for developing and implementing a program for personal hygiene, protective safety measures, safe use of hazardous materials, and preventive medicine for personnel engaged in the care and use of research animals.

c. The Institutional Animal Care and Use Committee (IACUC) is responsible for performing the review and oversight functions required by PHS Policy, the *Guide for the Care and Use of Laboratory Animals*, the Animal Welfare Act, the USDA Animal Welfare Act Regulations and Standards, the requirements in VA Handbook 1200.7, and any other federal regulations that impact IACUC function. The IACUC is also responsible for performing a self-assessment review of the program of animal care and use and an inspection of the animal facilities and husbandry practices at least every 6 months. As part of this semi-annual inspection, the IACUC observes safety issues within all laboratories that use animals. The John D. Dingell VA Medical Center utilizes the Wayne State University IACUC. Any concerns are brought to the attention of (a) the investigators and research staff, (b) the Division of Laboratory Animal Resources (DLAR) employees, or (c) IACUC members, as appropriate.

2. Medical Center Numbered Memo 11R-2

d. The Division of Laboratory Animal Resources (DLAR) operates the animal housing sites on campus and procures all research animals. DLAR is responsible for maintaining a safe working environment for employees and students within the animal facility. DLAR is also responsible for providing education and training to personnel on the care and use of animals in research and teaching, including safe animal handling techniques.

e. Employee Health Physician conducts pre-employment physical examinations, orders appropriate tests, reports results, maintains medical records, conducts an annual review of workers with animal contact to detect problems in the early stage and ensure that required immunizations are current and identifies those employees who are adversely affected by hazard exposure and takes appropriate action.

f. Investigators are responsible for identifying occupational hazards, minimizing risk in their work environment, ensuring compliance with program requirements, and ensuring that all of their employees using animals have been properly trained and equipped to perform their job duties safely. Training involves both initial and annual training requirements in safety and animal care issues.

g. Animal Contact Personnel are responsible for identifying and reporting unsafe working conditions to their supervisor or principal investigator, complying with occupational health requirements (e.g. health and risk assessments), and complying with all other institutional health and safety policies and procedures.

3. SCOPE

a. All personnel need to participate in the Preventive Medicine Program if they have exposure to animals or parts of animals. A determination of what constitutes animal contact needs to include consideration of such factors as animal species, microbiological status of the animals, and frequency of animal contact. Commercially bred virus antibody free rodents pose significantly less infectious disease risk than primates, ruminants, dogs, cats, and other animal species in which the microbiologic status is unknown.

(1) **Basic Program Content**. Key elements of a preventive medicine program for employees with animal contact includes:

a. Medical Evaluation. A pre-employment physical exam is conducted to ensure that a prospective new employee is capable of the physical demands of the position.

b. Medical History. A medical history of each employee which includes a record of allergies, immunizations, immunosuppressive diseases or the use of immunosuppressive medicaments, and physical limitations needs to be taken and held on file.

c. Periodic Post-employment Survey. An annual survey of workers with animal contact to detect problems in the early stage and ensure that required immunizations are current. This evaluation is in the form of a questionnaire.

3. Medical Center Numbered Memo 11R-2

d. Occupational Safety Training. Personnel who have contact with experimental animals receive training in the proper handling of the animals with which they will work. Personnel are instructed to avoid unnecessary risk when working with animals, and to seek expert assistance when in doubt. Training includes the use of protective clothing, equipment, and hygiene practices. Personnel receive annual training in Universal Precautions, where applicable.

(1) **Reporting Injuries and Illness**. Injuries, animal bites, animal scratches, and cuts sustained in the animal facility or research laboratory are reported promptly to the employee's supervisor. The employee will be referred to the Employee Health Physician, and VA Form 2162, Report of Accident, will be completed.

(2) **Personal Hygiene**. An important factor in protecting the health of personnel engaged in animal care or research is personal hygiene. All employees need to understand the importance of personal hygiene and specific measures that are to be taken routinely to protect themselves against zoonotic agents found naturally in experimental animals as well as hazardous agents used experimentally in approved biomedical studies using animals. Hand washing is a crucial safety measure for safeguarding personnel in the animal facility. Although the proper use of disposable gloves provides an effective means of preventing hand contamination, hands can easily become contaminated during the removal of contaminated gloves.

(3) **Protective Clothing and Disposable Items**. Protective clothing is provided to employees, as appropriate, and the employees are required to wear it. Disposable protective items such as gloves, masks, and head and foot covers, and gowns or other body cover are to be provided when use of these items is required. Protective clothing may not be taken away from the work site. Outer garments worn in the animal facility or other animal use areas should not be worn in human patient care areas.

a. Hearing Protection. The noise level in animal facility areas may reach potentially damaging levels, particularly in cage washing areas and dog housing rooms. Ear protection will be provided whenever noise levels exceed those permissible levels established by the Occupation Safety and Health Administration (OSHA) regulations or whenever requested by an employee. The animal facility supervisor will assume responsibility for ensuring the appropriate use of ear protection.

b. Eye Protection. Protective eyewear should be used by employees who handle corrosive or otherwise dangerous liquids or vapors. Goggles or other devices that completely shield the eyes will be provided by the medical center.

c. Other Precautions. Personnel should be trained to avoid hand contact with their eyes, face, mouth, or other body surfaces with contaminated gloves or hands.

d. Special Circumstances. Special equipment and clothing may be required when personnel are engaged in studies that involve hazardous agents. The specific measures needed are to be appropriate for the agents used, as determined by the Safety Officer in consultation with the investigator and the Veterinary Medical Officer (VMO).

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5. **Smoking, Eating, Drinking, and Cosmetic Application.** Smoking, eating, applying cosmetics, installing contact lenses and similar procedures are prohibited within the animal facility or in animal study areas except in designated areas that are free of potentially contaminated materials. Employee food and beverages should be stored only in refrigerators and/or freezers designated exclusively for such use.

6. **Hazardous Agents Safety** in VA research laboratories is the responsibility of the VA Subcommittee on Research Safety (SRS). These responsibilities include inspections, training, investigation, documentation, and safety program review. (Refer to the Research Laboratory Safety Manual and Chemical Hygiene Plan.) Additional safety measures may be needed to protect personnel who use or work in the animal facility when research involving biological, chemical, or radiological agents is being conducted. The specific measures needed are dependent on the risk to human and animal health represented by the agent, and the difficulty involved in containing the agent.

a. **Procedure:**

(1) Before experimental animals are treated with any hazardous agent, an approved copy of the Animal Component of Research Protocol (ACORP), with the signature of the Safety Officer needs to be on file in the Research Office. The signature of the Safety Officer indicates that written instruction on handling the animals, caging, and animal wastes are available.

(2) These instructions are to be prepared for the husbandry staff by the VMO with assistance from the principal investigator and the Safety Officer. Instructions should be placed in a waterproof pouch that can withstand exposure to water and disinfectants, then posted outside the animal room where they are readily visible for the duration of the experiments.

(3) Personnel who work with animals exposed to hazardous agents are to be trained in proper procedures to work with the animals and related waste and equipment. Training should be provided in accordance with the safety program established by the VA SRS. Documentation of such training needs to be made before employees manipulate experimental animals treated with hazardous agents.

7. **Biological Agents.** The Centers for Disease Control and Prevention (CDC)/National Institutes of Health (NIH) handbook, Biosafety in Microbiological and Biomedical Laboratories, describes the minimum containment requirements that are to be followed when microbial pathogens are used in the laboratory and in the animal facility. A copy of the most recent edition of this manual should be available in the local Research Office. Contact the CDC Office of Safety, (404) 639-2173, for information on how to obtain a copy of the manual.

8. **Universal Precautions.** Universal Precautions is an approach to infection control in which all human blood and certain human body fluids are treated as if known to be infectious for Human Immunodeficiency Virus (HIV), Herpes B Virus (HBV), and other bloodborne pathogens. Intended primarily for personnel working directly with human blood components, other body fluids and excreta, and unfixed tissues, Universal Precautions is relevant to all personnel working with potentially infectious materials in animal studies. Personnel working

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with animals treated with such materials should receive annual training in Universal Precautions to comply with the Bloodborne Pathogen Standard.

9. **Chemical Agents and the Material Safety Data Sheet**

a. Although all chemicals and drugs are potentially dangerous, special concern is necessary when working with known carcinogens, mutagens, immunosuppressive agents, toxic drugs, potent steroids, agents of unknown pharmacological activity, and other chemicals listed as hazardous waste by the Environmental Protection Agency (EPA).

b. All chemical agents purchased commercially are to have a Material Safety Data Sheet (MSDS) that accompanies the shipment of the chemical. Purchasing offices should forward the MSDS immediately to the Research Office from where it should be distributed to the using investigator and the animal facility. The animal facility should maintain an MSDS logbook.

10. **Radioactive Agents**. The safety principles for work with radionuclides are similar to those for work with other hazardous agents with some important additions:

a. The Radiation Safety Officer is to review and approve, or require specific procedures that are to be followed when using radionuclides in animals.

b. Personnel working with radionuclides are to be trained specifically for work with these materials.

c. All acquisition and disposition of radionuclides are to be in accordance with the Nuclear Regulatory Commission (NRC) regulations covering these materials.

4. **GENERAL SAFETY CONSIDERATIONS**

a. New employees will receive service specific training and orientation beginning on the first day of work in Research Service. Each staff member must be trained in job-specific safety issues at the start of their assignment, when duties change and annually thereafter.

b. It is the responsibility of all employees to follow good safety practices common to all laboratory operations. Each staff member must read the research safety manual and sign and date a statement attesting to the fact that the individual has read, understands and will adhere to safety policy set forth in the manual. This must be done on an annual basis.

c. Refresher safety training will be conducted bi-monthly and all employees are expected to attend.

d. All employees are expected to complete assigned Learning Management System (LMS) classes.

e. All employees will receive training on new equipment or current equipment and procedures on an as needed basis. Each PI must ensure that each staff member is trained in the

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appropriate care, use and maintenance (if applicable) of each instrument the staff member will use. If required, assistance in equipment training is available through the Research Office.

5. REFERENCES

VHA Handbook 1200.7

Wayne State University Animal Contact Occupational Health and Safety Program Guidelines current edition.

Research Laboratory Safety Manual and Chemical Hygiene Plan, current edition.

6. RECISSIONS

Occupational Health & Safety Plan for Research Personnel With Animal Contact 11R-2 dated 5/2/03.

7. EXPIRATION DATE

May 9, 2010

Michael K. Wheeler
Director

Distribution: D, H

RESEARCH SAFETY POLICY #5

John D. Dingell VA Medical Center
Detroit, MI

EMERGENCY RESPONSE PLAN

1. PURPOSE

To describe the plan for responding to emergencies and disasters and the actions needed to provide support during response and recovery operations within the John D. Dingell VAMC. Emergency codes and disaster plans are identified in Appendix A.

2. SCOPE

This plan applies to all resources and personnel (VA or Without Compensation [WOC]) in Research Service and their response during an emergency/disaster.

3. RESPONSIBILITIES

- a. The Associate Chief of Staff for Research and Development has the responsibility for developing a response plan that will provide for the continued support of the Research Service mission and that of the John D. Dingell VAMC. ACOS/R&D will serve as to coordinate the activities needed to prepare for response to and recovery from an emergency and/or disaster. The ACOS/R&D will be responsible for implementing the ICS in a timely manner.
- b. The AO/R&D and Research Safety Coordinator will be responsible for assigning available personnel to cover all necessary positions to maintain the Medical Center mission and for ensuring that all Research Staff are adequately educated, trained and tested to respond to the consequences of any emergency and/or disaster, whether internal or external.
- c. At this time, except for a specified few, Research employees do not have an assigned duty in the event of a disaster. They should, however, report to the Research Office B4270, or the designated person in their area who will then report to the office, and obey all instructions given over the public address system or by Safety or Security Personnel. The Research staff will be assigned responsibilities as needed.

4. PROCEDURES

- a. When the ACOS/R&D or Research staff becomes aware of an emergency and/or disaster situation, initially the situation will be managed according to Medical Center policy and procedure guidelines. The priority of the response will be 1) safety of patients, visitors and staff; 2) containing the situation; and 3) preservation of property.
- b. The ACOS/R&D or Research Staff will notify the appropriate Medical Center staff to manage the disaster/emergency (e.g. Industrial Hygienist, Radiation Safety Officer).
- c. Research staff will be notified immediately if in area; 2) staff will be paged or telephoned to return to the research area if in the facility and if appropriate; 3) staff members will be notified at home through the service fan out system if necessary.

- d. During normal business hours the ACOS/R&D will activate the plan. During off hours, the person discovering the emergency/disaster situation should take the action necessary to activate the emergency/disaster plan.

6. **TRAINING AND EXERCISING**

- a. Appropriate training will be given at bi-monthly staff meetings and on an as needed basis.
- b. Staff will participate in drills or exercises scheduled by the Emergency Preparedness Coordinator (EPC).

7. **RESOURCE REQUIREMENTS**

- a. Telephones
- b. Current list of emergency phone numbers
- c. Current list/location of emergency (red line) phones
- d. Flashlights
- e. Personal protective equipment

8. **REFERENCES**

MCNM 001F-106, Emergency Management Program

9. **RECISSIONS**

Research Safety Policy #5, dated October 1, 2004

EMERGENCY CODES:

Code Red: Fire – **R**escue those in danger; pull the **alarm** and call 63555; **contain** the fire by closing the lab door; **extinguish** the fire, if it is safe to do so; **relocate** self and co-workers.

Code Blue: Cardiac Arrest – When the code blue alarm is sounded outside of Research area, no response is necessary. When someone in the lab area is suspected of experiencing cardiac arrest, call 63333 and give location.

Code Green: Violent Disturbance (no weapons) – When a code green alarm is sounded in the immediate area, respond by reporting to the identified area and providing what assistance you can.

Code Silver: Armed Disturbance – When code silver is called, avoid the area. Only the Police will respond to code silver.

MEDICAL CENTER DISASTER PLANS:

Plan Able: Internal Emergency - An emergency condition generated by a force or an event occurring on station that endangers the well being and safety of the medical center patients, visitors, staff, property or records.

Plan Bravo: External Emergency - Coordinated plan for assisting in the management of community emergencies. Community emergencies may be caused by natural or manmade incidents.

Plan Charlie: National Defense Emergency - Plan for survival during air raid or radiation fallout or nuclear attack on this country for survival during the attack phase and regaining non-military functions during the recovery phase and to provide relief and assistance consistent with humanitarian needs as stipulated by plan "Able" and plan "Bravo".

Plan Echo: Bomb Threats - Employees who receive calls (other than telephone operators) should immediately notify supervisors, Police/Security x 63375, and telephone operator of the call.

Plan Foxtrot: Severe Weather - Plan to protect patients, visitors, employees and property from injuries or damage due to severe weather conditions.

Plan Golf: Utility Interruption - Protective measures needed during utility interruption to assure maximum use of available/alternate utilities without endangering patients, visitors, employees or property.

RESEARCH SAFETY POLICY #6

John D. Dingell VA Medical Center
Detroit, Michigan

FIRE PLAN

1. **PURPOSE**

To clarify Research & Development Service staff duties and responsibilities in case of a fire.

2. **POLICY**

Research & Development personnel will respond appropriately in their assigned areas in case of fire.

3. **RESPONSIBILITIES**

- a. The ACOS/R&D will be responsible for ensuring that all staff is aware of their duties in incidents of fire.
- b. The R&D Safety Committee will ensure that all Research personnel are adequately trained regarding their duties in case of a fire.
- c. Individual staff members are responsible for knowing the appropriate procedures to follow in a fire emergency.

4. **PROCEDURES**

- a. Reporting a fire:
 - (1) **ALARM BOX:** When reporting a fire by alarm box, go to the nearest box, **pull the exposed lever down once, and release.** Remember: No alarm will be transmitted until the lever is pulled down and released.
 - (2) **TELEPHONE:** After turning in an alarm and if time permits, dial 63555, giving your NAME, EXACT LOCATION AND STATE THAT YOU ARE REPORTING A FIRE.
- b. Responding to a fire:
 - (1) Using the **R.A.C.E.R** criteria, R&D personnel will **REMOVE**/evacuate everyone from the fire danger areas immediately.
 - (2) Alert the station by **ALARM** box or telephone (see 4a (1-2) Reporting a Fire above).
 - (3) **CONTAIN** the fire by closing all doors and windows, including fire or smoke barrier doors.

- (4) **EXTINGUISH** the fire with the proper extinguisher if the fire small enough and you can put it out without danger to yourself or others.
- (5) **RELOCATE**/evacuate to an area beyond smoke doors or down the stairs as conditions require. **DO NOT USE ELEVATORS**. Evacuation will be accomplished by vertical routes using stairway exits to the ground level of each building. These routes are clearly marked on Evacuation Maps located in the corridors of all areas of Research including the animal facility. The Primary Evacuation Route is indicated by a solid line and the Secondary Evacuation Route is indicated by a broken line. Upon reaching the ground level, exit the building and proceed to a safe area away from the building.

5. **REFERENCES**

OSHA Safety & Health Standards (29CFR 1910)
MCNM 001F-101, Fire Prevention Plan

6. **RECISSIONS**

Research Safety Policy #6, dated October 1, 2004

RESEARCH SOP 4

FIRE PREVENTION AND CONTROL

Unless an announcement is made to the contrary, all fire alarms are to be treated as a warning of an actual fire - not as tests of the system.

1. Prevention:

- a. Be aware of ignition sources - open flames, heating elements and spark gaps (motors, light switches, friction and static).
- b. Do not use flammable liquids in presence of ignition sources - and conversely - keep ignition sources away from areas where flammable liquids are used and/or stored.
- c. Flammable liquids give off vapors that may also burn or explode. Be sure flammable liquids are properly stored.
 - * Quantities of more than one gallon must be in SAFETY CANS.
 - * BULK STORAGE should be in a safety cabinet. (Safety cabinet storage is limited to 60 gallons).
 - * Small quantities "in use" should be stored in well-ventilated areas, however not more than a 10-gallon aggregate may be available in any one lab at a time.
- d. Do not store any flammable liquids in areas exposed to direct sunlight.

2. Priorities in Case of Fire:

- a. The Medical Center Life Safety Management Plan describes the basic policy, procedures, and responsibilities in the event a fire occurs.
- b. The basic action is to remove, alarm, contain, extinguish, and relocate (remember the acronym R.A.C.E.R.).
- c. Digitized voice messages will be provided for Buildings 101 (blue Parking Deck), 102 (North (red) Parking Deck, 103 (Energy Center) and for each fire alarm zone in Building 100 (Main). The message will be arranged with a 10-second slow whoop alert tone, a "Code Red" message and a description of the fire alarm area (tower, floor, and zone).
- d. In the event the digitized voice message system is not initiated by the activation of the fire alarm system, Police and Security Service will use the word "Code Red" to alert employees of a fire situation over the public address system. In addition, the EXACT location will be announced. The fire area shall be defined as the point of origin and the immediate surrounding area; i.e., the floors directly above and below the fire, and the areas adjacent to the point of origin.
- e. EXIT VIA STAIRWELLS. DO NOT USE ELEVATORS! ELEVATORS MAY MALFUNCTION CAUSING YOU TO ARRIVE AT THE FIRE! Evacuation will be accomplished by vertical routes using stairway exits to the ground level of each building. These routes are clearly marked on Evacuation Maps located in the corridors of all areas of Research including the animal facility. The Primary Evacuation Route is indicated by a solid

line and the Secondary Evacuation Route is indicated by a broken line. Upon reaching the ground level, exit the building and proceed to a safe area away from the building. All personnel will meet across the street from the medical center at the parking lot on John R and a count will be taken to ensure all personnel are safe.

f. Security service will inform those waiting outside when the "all clear" has been given.

3. **Procedures in Case of Fire:** When a fire is discovered, the Medical Center fire plan is to be followed. This plan consists of five steps forming the acronym RACER. These steps are:

<u>REMOVE</u>	Remove the patients away from the fire/smoke source.
<u>ALARM</u>	Alert the Medical Center by pulling the nearest alarm box and if time and conditions permit go to the nearest telephone and dial 63555, and report the fire verbally.
<u>CONTAIN</u>	Contain the fire. Close all doors and windows, including smoke doors.
<u>EXTINGUISH</u>	Extinguish the fire if safe to do so.
<u>RELOCATE</u>	Relocate/evacuate to an area beyond smoke barriers or down the stairs, as conditions require. DO NOT USE ELEVATORS.

4. **Additional Responsibilities:**

a. Any employee, upon learning of a fire within the Research area will act as follows:

- * Remove endangered patient(s). **SOUND ALARM** - pull alarm box on wall. Call 63555 and report the fire.
- * Note the room number and tell the officer the room/area in which the fire is located.
- * Check the fire location again for possible fire victims.
- * Alert the nearest other employee - tell him/her the room number and instruct him/her to visit every room to alert other personnel.

b. Immediately upon being alerted to the fire, personnel in all rooms will:

- * Close windows and doors, especially those in corridors. (This will help contain fire and fumes).
- * Turn off equipment, stop fans, but not ceiling lights.
- * Evacuate the room, closing the doors.
- * If fire emergency occurs in any corridor immediately adjacent to any research work area, secure work areas as in "a and b" above and leave the area until the all clear is sounded.

5. **Fight Fire:**

a. Evaluation

- * Evaluate the type and extent of the fire. If it is going to be a large fire, get out! Control measures should only be undertaken for small isolated fires. Never risk a life to extinguish or recover personal or Government property. Risk a life only to save another life.
- * Evaluate the type of material burning (wood, flammable, liquids, electrical or gases).

b. Solid Combustibles - wood-paper-cloth (Class A)

- * Small objects may be handled with non-asbestos gloves and extinguished with water or with CO₂.
- * Water or dry chemical extinguishers may be needed for large fires.

c. Flammable Liquids - (Class B)

- * Dry chemical extinguishers are usually needed for safe and effective control of burning liquids. CO₂ will be effective only on a small fire. **DO NOT USE WATER** (it enhances spread).
- * If flammable liquids have spilled but not ignited, sand (or other nonflammable absorbent) may be used to prevent spread and reduce the fire hazard. A dry chemical extinguisher should be available in case of fire.

1. **Fire Safety Equipment/Alarms:**

- a. Fire extinguishers are located in the middle of short corridors. Fire alarms are located adjacent to corridor doors.
- b. Heat-resistant gloves may be used to move and handle a small burning object or to handle hot vessels, turn off hot valves or handles. **CAUTION:** Some gloves may be permeable, and steam or hot liquids may soak through them and cause injury.

RESEARCH SAFETY POLICY #7

John D. Dingell

VAMC Detroit, Michigan

EVACUATION PLAN

1. PURPOSE

To clarify Research & Development Service staff duties and responsibilities in case of an emergency requiring evacuation.

2. POLICY

Research & Development personnel will respond appropriately in their assigned areas in case of an emergency.

3. RESPONSIBILITIES

- a. The ACOS/R&D will be responsible for ensuring that all staff is aware of their responsibilities in the event an evacuation is necessary.
- b. The R&D Safety Committee will ensure that all Research personnel are adequately trained regarding these responsibilities.
- c. Individual staff members are responsible for knowing the appropriate procedures to follow in an emergency.

2. PROCEDURES

- a. In the event of an emergency:
 - (1) 4th floor personnel are required to report to the Research Office B4270 to sign the log sheet with their name and an extension where they can be reached.
 - (2) Lower level personnel will be required to report to one of two “wardens” – Ann Skoff or Pamela VandeVord who will record the information requested above.
 - (3) The personnel on the first floor (Clinical Research Center) and the third floor (Sleep Lab) will be contacted by the Administrative Officer who will record the information requested above.
- b. If an evacuation becomes necessary:
 - (1) Personnel will be contacted by phone or in person and informed that evacuation is necessary.
 - (2) Evacuation will be accomplished by vertical routes using stairway exits to the ground level of each building. These routes are clearly marked on Evacuation Maps located in the corridors of all areas of Research including the animal facility. The Primary Evacuation Route is indicated by a solid line and the Secondary Evacuation Route is

indicated by a broken line. Upon reaching the ground level, exit the building and proceed to a safe area away from the building.

- (3) All personnel will meet across the street from the medical center at the parking lot on John R and a count will be taken to ensure all personnel are safe.

3. **REFERENCES**

OSHA Safety & Health Standards (29CFR 1910)
JCAHO Plant Technology and Safety Standards
MCNM 001F-101, Fire Prevention Plan

4. **RECISSIONS**

Research Safety Policy #7, dated October 1, 2004

Policies and procedures cannot possibly address all situations. Please make sure that you exercise good judgment and common sense. Remember that patient needs always come first.

SECURITY FOR RESEARCH LABORATORIES

1. PURPOSE

To establish policy regarding the security of Research Laboratories.

2. POLICY

Research laboratories and inventory will be secured in keeping with the intent and scope of VHA Directive 2002-075, VHA Handbook 1200.6 and 1200.8. The policy applies to all individuals entering the secured area, to include VA employees, without compensation (WOC) employees, contract employees, oversight entities, vendors, employees from other VA services, and visitors.

3. RESPONSIBILITY

a. The Medical Center Director is the Responsible Official (RO). The term Medical Center Director is synonymous with the Facility Director or Chief Executive Officer of a medical center or health care system. The Medical Center Director may appoint one or more Alternate Responsible Official(s) (ARO) to assist in administering this program. The ARO(s) acting in the absence of the RO may conduct all activities required by the RO related to the facility's Hazardous Agents Program.

b. The Associate Chief of Staff for Research (ACOS/R), by and through the Administrative Officer for Research (AO/R), will maintain security policies in keeping with VA directives and policy and ensure compliance with established policies.

c. Research Safety Officer will serve as the Alternate Responsible Official.

d. Human Resources will communicate the results of background checks to the AO/R in a timely manner.

e. Police Service will conduct annual security vulnerability/risk assessments and act as a resource to Research in the creation and monitoring of security policies. Additionally, Police Service will monitor security compliance by walking through the secured area on a regular basis.

f. Responsibilities of Principal Investigator (PI):

(1) Complete appropriate WOC paperwork.

(2) Ensure that research laboratory staff receives and follows all safety and security procedures.

2.

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(3) Notify the Research Office immediately when any research laboratory staff no longer has a work-related need for authorized access.

(4) Review and certify the accuracy of chemical and biological inventory on an annual basis. The more potentially hazardous items may require more frequent review and certification. The need, and the review/certification standards, will be determined by the Subcommittee for Research Safety (a subcommittee of the R&D Committee) and communicated to the PI.

(5) Ensure that all data security policies and procedures are followed by all staff. Rooms where hardware is located shall be secured, or lockdown systems installed to secure the equipment to a table or desk.

g. It is the responsibility of each authorized individual to:

(1) Access:

(a) Use their keycard only for personal entrance into the secured area.

(b) Use their keycard on each entry into the secured area.

(c) Not allow any individual to follow them through the door.

(d) Report any security violations, including unauthorized individuals, to the AO/R or Police Service.

(e) Turn in their keycard to the Research Office immediately when laboratory access is no longer necessary.

(2) Information Security:

(a) Access only data for which they have authorized privileges and maintain confidentiality of sensitive data or information.

(b) Secure sensitive printed information in approved storage containers when not in use.

(c) Protect their assigned user ids, passwords, electronic signatures, and other access keys from disclosure.

(d) Log off systems before leaving a terminal or microcomputer unattended.

(e) Follow all data security policies & procedures. Report violations of IS security to the facility ISO. (See also Research Policy #16, Research Data Security)

(f) Report violations of privacy to the Privacy Officer. (See also Research Service Policy #12, Privacy & Confidentiality)

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(g) Complete IS Security, Research Data Security, and Privacy Training at orientation and annual refresher training.

4. DEFINITIONS

a. Terrorist Event. A terrorist event is the unauthorized removal or theft of hazardous agents capable of being used as weapons of mass destruction from research laboratories, including leased and off-site space, and/or the unlawful use of such hazardous agents. It specifically encompasses the illicit and unauthorized use of laboratory facilities (including equipment, supplies, computers, faxes, phones, etc.) for the production, purification, or dissemination of any hazardous agent. The term also refers to the illegal transfer of agents into or out of research laboratories and other research space such as the Veterinary Medical Unit (VMU), storage areas, and offices.

b. Hazardous Agent. A hazardous agent is a biological material including, but not limited to, the Centers for Disease Control (CDC) List of Select Agents (available at <http://www.cdc.gov/od/sap/>) and products of such a biological material, i.e., toxins. (The term also includes highly toxic chemicals or gases that have the potential for being used as weapons of mass destruction, as well as radioactive materials and/or radioactive sources.)

c. Select Agent. A Select Agent is one of a group of agents (viruses, bacteria, rickettsiae, fungi, toxins, and recombinant deoxyribonucleic acid (DNA) designated by the CDC as requiring registration with the CDC Laboratory Registration Program. The regulation of Select Agents is codified in Title 42 Code of Federal Regulations (CFR) Part 72, Additional Requirements for Facilities Transferring or Receiving Select Agents. All Select Agents are included in the list of hazardous agents available at <http://www.cdc.gov/od/sap/>. (Select Agents and Hazardous Agents are synonymous, and are to be handled at the same level of security.)

d. Weapons of Mass Destruction. Weapons of mass destruction include any of the classes of hazardous agents as defined and identified in paragraph 2.d (2) of Appendix A of VHA Directive 2002-075, or combinations of these agents that are capable of inflicting morbidity and mortality on a widespread basis.

e. Secured Area. The secured area refers to research laboratories located on the 4th Floor and the lower level of the John D. Dingell VA Hospital, as well as the animal facility located in the lower level.

f. Sensitive Materials. Sensitive materials include, but are not limited to, any hazardous agents as defined and identified in paragraph 2.d (2) in Appendix A of VHA 2002-075, as well as research equipment and/or supplies used to store, test, destroy or otherwise handle hazardous agents, and laboratory notebooks or other written or computerized records documenting possession of and/or research using hazardous agents.

g. USA Patriot Act. The USA Patriot Act, Public Law 107-56, October 26, 2001, was passed by Congress in response to the terrorist attacks of September 11, 2001. The purpose of the Act is to unite and strengthen America by providing appropriate tools to intercept and obstruct terrorist

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acts. The law includes provisions to deter and punish terrorist acts, enhance law enforcement investigatory tools, and other purposes such as aid to victims of terrorism. The Act also prohibits certain restricted persons from possessing biological agents or toxins that are identified as select agents in 42 CFR Part 72.

h. Prohibited Persons. As defined by the USA Patriot Act of 2001 (Sec 175b), prohibited persons are:

- (1) Individuals under indictment for a crime punishable by imprisonment exceeding 1 year;
- (2) individuals convicted of a crime punishable by imprisonment exceeding 1 year;
- (3) individuals in fugitive status from any local, state, national, or international law enforcement agency;
- (4) unlawful users of any controlled substance, as defined in 21 USC 802, Section 102;
- (5) illegal aliens or unlawfully in the United States;
- (6) persons adjudicated as mental defective or has been committed to any mental institution;
- (7) aliens (other than an alien lawfully admitted for permanent residence) who is a national of a country that has repeatedly provided support for acts of international terrorism; and,
- (8) has been discharged from the United States Armed Services under dishonorable conditions.

i. Research and Development (R&D) Committee is delegated oversight of matters relating to security of the secured area of Research Service.

5. PENALTIES

Failure to conform to the requirements may result in immediate withdrawal of VA research funding, suspension from the research program, and/or denied access of the secured area. Individuals who knowingly fail to follow the provisions of this policy are subject to disciplinary action proportionate to the severity of the violation, up to and including termination of VA employment or without compensation (WOC) status and criminal prosecution.

6. PROCEDURES

a. Laboratory Access.

(1) Access to research laboratories must be controlled and limited to authorized individuals. No research laboratories will be open to the public. All laboratory areas, including the VMU and storage areas, must include a state-of-the-art keycard system that generates permanent, dated records with identification of persons entering the area and times of entry. Entry must be controlled on a 24-hour/7-day per week schedule. An intrusion alarm system must be present and either connected to or otherwise monitored by Police Service.

(2) Current VA Identification (ID) badges will be used as keycards into the secured area. For employees and WOCs, the VA ID will be electronically programmed to allow entry into designated areas.

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(3) A record of keycard assignments must be current at all times. Personnel leaving VA employment or no longer working in the research laboratory must adhere to full clearance and checkout procedures to include turning in all identifications, keys, keycards, and other access items.

(4) Authorized health and safety inspectors, emergency response staff, Police Service, inspectors from regulatory agencies, and personnel from VHA oversight offices will have access to the secured area. The nature of that access will be determined on a case-by-case basis, based upon the frequency of access needs, the potential urgency of access needs, and the potential for after-hours access need.

(5) Routine cleaning, maintenance, and repairs are usually accomplished by VA employees who have been granted access by the AO/Research. If it is necessary for contractors to provide these services, they will sign the log book in the research office and will be accompanied by a laboratory staff member.

b. Requirements of individuals granted secured access.

(1) All authorized individuals must wear their VA ID above the waist at all times.

(2) Personnel may enter the secured area only to perform required duties.

(3) Unauthorized persons entering the secured area will be reported to Police Service.

(4) Authorized individuals must use their own card to enter the secured area. Multiple individuals, even when each person has authorization to enter the area, may not enter on one person's card access.

(5) Discrepancies in the legal permission of non-citizens to be in the U.S. will be reported to the appropriate authorities.

(6) Each individual must receive training in: Security Policies & Procedures; Data Security; Emergency Procedures; and Lab Safety Procedures. Research Administration will maintain verification of training.

c. Visitors

(1) Visitor's access is limited to hours where authorized individuals are present.

(2) Visitors must sign in and out, specifying name, affiliation, purpose for visit, time in and out, in the Research Office. They must be accompanied by a Research employee (VA or WOC).

d. Administration

(1) The AO/R will periodically complete and document a review of access records. Any security exceptions will be reported.

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(2) The AO/R or designee will notify Police & Security of any necessary access terminations.

(3) Irregularities in security access will be reported to Protection and Support Service.

(4) In the event an individual with secured access inexplicably disappears, is suspected to have violated procedures, or committed a security breach, the R&D Committee and Protection and Support Service must be notified immediately.

(5) Security Standards: Physical security must meet appropriate standards determined by the Office of Security and Law Enforcement, regulatory agencies, and/or applicable VA oversight offices. Protection and Support Service will conduct an annual vulnerability/risk assessment of the Research Laboratory area. The AO/R is responsible for informing Police Service of any issues affecting security.

(6) Safety Standards: All individuals given authorized access to the laboratory area must abide by all safety standards as mandated by Occupational Safety and Health Administration, Veterans Health Administration, and the medical center.

(7) Emergency Preparedness Standards: All individuals given authorized access to the laboratory area must be knowledgeable of the R&D Emergency Preparedness Plan.

e. Information Security Breach

(1) Any loss of computer, disk, or files must be reported immediately to the ACOS/Research (or AO for Research) and Police & Security.

(2) The ACOS or AO will immediately notify the Privacy Officer and the Information Security Officer.

7. REFERENCES

VHA Directive 2002-075, Control of Hazardous Materials in Research Laboratory
VHA Handbook 1200.6, Control of Hazardous Agents in VA Research Laboratories
VHA Handbook 1200.8, Safety of Personnel Engaged in Research.
Research Policy #16, Research Data Security
Research Service Policy #12, Privacy & Confidentiality

8. RESCISSIONS

None

7.

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9. EXPIRATION DATE

September 27, 2010

//signed//
Michael K. Wheeler
Director

Distribution: H

RESEARCH SAFETY POLICY #9

John D. Dingell VA Medical Center
Detroit, MI

BIOLOGICAL HAZARDS

1. POLICY

Biological hazards include recombinant DNA, infectious agents, and biological toxins. Medical Center Memorandum 001F-129 discusses the policy and procedures for handling and disposing of infectious wastes. Medical Center Memorandum 001F-119, and Medical Center Memorandum 001F-123, Exposure Control Plan, discusses exposure precautions. Principal Investigators are responsible for establishing procedures for handling and disposing of specific biohazards used in their laboratories that are not covered by hospital memoranda. **Investigators must receive approval from the Subcommittee for Research Safety (SRS) prior to working with biological hazards.**

2. BIOLOGICAL SAFETY LEVELS

- a. **BSL 1:** Biosafety Level 1 practices, safety equipment, and facilities are appropriate for work with defined and characterized strains of viable microorganisms that are **not known to cause disease in healthy human adults**. BSL 1 represents a basic level of containment that relies on standard microbiological practices with no special primary or secondary barriers recommended, other than a sink for handwashing. *Examples of microorganisms assigned to BSL 1 include Bacillus subtilis, Naegleria gruberi, E. coli K-12 derivatives and infectious canine hepatitis.*
- b. **BSL 2:** Biosafety Level 2 practices, safety equipment, and facilities are applicable to clinical, diagnostic, teaching and other facilities in which work is done with a broad spectrum of indigenous moderate-risk agents present in the community and associated with human disease of varying severity. With good microbiological techniques, these agents can be used safely in activities conducted on the open bench, provided the potential for producing splashes or aerosols is low. Hazards to personnel working with these agents are related to accidental percutaneous or mucous membrane exposure, or ingestion of infectious materials. *Examples of microorganisms assigned to BSL 2 include hepatitis B virus, salmonellae, and toxoplasma spp.* **BSL 2 practices and containment are also required when work is done with any human-derived blood/body fluids/tissue or cultured cells where the presence of an infectious agent may be unknown.**
- c. **BSL 3:** Biosafety Level 3 practices, safety equipment, and facilities are applicable to labs in which work is done with indigenous or exotic agents which pose a high individual risk of life-threatening disease, which may be transmitted via the aerosol route, and for which there is no available vaccine or therapy. Work with BSL 3 agents requires special training and facilities. Contact the Research Biosafety Officer for more information or if you are considering work that requires BSL 3 practices or facilities.
- d. **BSL 4:** Biosafety Level 4 is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease. Work with BSL 4 agents poses serious risks to workers, public health and/or agricultural interests. Contact the Research Biosafety Officer for more information.
- e. If you need assistance in determining the level of containment necessary for your work, contact the Research Safety Officer. A helpful online resource may be found at the American Biological Safety Association (<http://www.absa.org/resriskgroup.html>).

3. CELL/TISSUE CULTURE

Several risks are associated with cell and tissue culture work, especially with cells derived from human sources. These cells have the potential to carry pathogenic microorganisms. Additionally, it is possible for these cells to be come infected with human pathogens in culture. It should be noted that agencies that supply cultured cells do not test for the presence of human pathogens in their cell lines. As a result, work with cultured human cells should be conducted at Biosafety Level 2. Furthermore, it is not permissible for used tissue culture media to be discarded into the sanitary sewer until it has been sterilized or mixed with bleach (10%) and allowed to stand for at least 30 minutes.

4. RECOMBINANT MAMMALIAN VIRUSES

Experiments involving the preparation and/or use of mammalian viruses are becoming more widespread. Most commonly used are adenoviruses, adeno-associated viruses and retroviruses. Personnel who utilize these biological reagents must be aware of the potential hazards involved in their use. Work with recombinant mammalian viruses, even replication-deficient viruses, poses additional risks. For example, replication-deficient adenoviruses have the capacity to infect host cells. These viruses can infect and cause damage to the cornea and conjunctiva. Additionally, replication-deficient viruses may be complemented *in vivo* by endogenous wild type virus. Of particular concern are recombinant viruses that express growth-regulating genes, such as oncogenes.

To minimize the risks associated with mammalian viruses, work with these agents is to be conducted at Biosafety Level 2. As an additional precaution, virus stock containers should be opened only in the biological safety cabinet.

Investigators who plan to initiate work with mammalian viruses should consult with the Biosafety Officer for Research.

5. ADDITIONAL INFORMATION

The following experiments may not be conducted without prior approval by the HHS Secretary after consultation with experts:

- a. Experiments using recombinant DNA that involve the deliberate transfer of a drug resistance trait to select agents that are not known to acquire that trait naturally, if such acquisition could compromise the use of the drug to control disease agents in human or veterinary medicine or agriculture (42CFR Part 73).
- b. Experiments involving the deliberate formation of recombinant DNA containing genes for the biosynthesis of select toxins for vertebrates at a LD 50<100ng/kg (i.e., a dose of less than 100 nanograms per kilogram is lethal to 50 percent to the test animals).

6. PROCEDURES

- a. General:
 - Autoclave all items prior to cleaning or disposable.
 - Follow approved biohazard statement.
 - If using animals, consult approved Animal Use Statement.

- b. Route of infection: Infections may be spread by several routes. The actual occurrence of an infection depends on both the virulence of the infecting agent and the susceptibility of the host.
- **Air borne:** Droplets and aerosols may be formed by simply removing caps or cotton plugs or swabs from tubes. Heating liquids on needles too rapidly may also create an aerosol. Breakage in a centrifuge is a serious accident that may generate aerosols.
 - **Ingestion:** May occur through mouth pipetting, failure to wash hands after handling specimens or cultures, and by handling of food, cosmetics or cigarettes.
 - **Direct inoculation:** Scratches, needles, broken glass or animal bites may permit direct inoculation.
 - **Skin contact:** Some very virulent organisms, and others not so virulent, can enter through small cuts or scratches, or through conjunctiva of the eye.
 - **Vectors:** Mosquitos, ticks, fleas, and other ectoparasites may be potential sources of infection in the laboratory, especially if animal work is performed.
- c. Universal Precautions:
- Avoid contact with all visible blood, body fluids, mucous membranes and non-intact skin.
 - Wear gloves, gowns and masks as necessary to avoid blood/body fluid contacts.
 - Wear gloves for all invasive procedures, such as drawing blood, starting I.V.s dressing changes, track care, suctioning, opening specimen containers, working with specimens, and emptying urine bags.
 - Wear gloves, gowns, and goggles when splash of body fluids is likely.
 - Use ambu bags or seal-easy masks for providing CPR.
 - Protect yourself at all times; don't assume anyone's blood or body fluids are safe.
 - Wash hands (even if you wore gloves) after patient contact.

NOTE: RED BIOHAZARD BAGS AND OTHER BIOHAZARD WASTE CONTAINERS ARE NOT TO BE USED FOR GENERAL WASTE.

- d. Handling Specimens:
- Wash hands frequently.
 - Centrifuge: If specimens must be centrifuged, they must be covered by a sealed cap to prevent aerosol formation.
 - Safety Hood: Specimens for fungus culture should be placed in and handled in the biologic safety cabinet.
- e. Processing Specimens:
- All specimens are potentially contaminated – Use careful techniques at all times.
 - All cultures are potential pathogens – Use careful techniques at all times.
 - Large numbers of plates should be handled in baskets. Test tube racks or trays are required for tubed cultures. (DO NOT place tubes in glass or paper cups).
 - Tuberculosis and fungus specimens and cultures will be handled and processed in the biologic safety cabinet.
 - Needles and loops should be sterilized so as not to cause spattering of material on heating.
 - Benches are to be disinfected with 5-10% Clorox bleach.
- f. Disposal of Contaminated Materials:
- Discard microbiology specimens and cultures into plastic autoclavable bags. Autoclave prior to placement in hazardous waste container for removal.
 - Materials or containers that are to be reused should be autoclaved prior to cleaning. Place them in a sealed and clearly labeled container to minimize hazard to others prior to sterilization.

- Any breakage of bags or leakage of contaminated materials should be reported to the Research Safety Officer at once for instructions on procedures for safe clean up.
- All blood specimens are considered as biohazardous material and must be placed in the containers marked "biohazard" for disposal and subsequent incineration.
- Red triangle shaped metal cans are to be used for unbroken, non-sharp, non-hazardous glass. This container does not require a bag.
- Red plastic sharps containers are to be used for all materials that would puncture a bag (e.g., needles, broken glass, pipettes). This container does not require a bag.
- Sharps containers on the walls of the laboratory are for needles only.
- Waste containers with a red bag are for all hazardous materials that would not puncture a bag.
- Waste containers with a white bag are for use with all non-hazardous materials.

g. Accidents and Spills:

(1) IMMEDIATE ACTIONS:

- Clear the area at once.
- Notify the supervisor and the Research Office.
- Assess the type of spill and degree of hazard involved.
- Determine the most effective and least hazardous approach to clean up and decontaminate the area.
- Notify the hospital Safety Office, if warranted.

NOTE: LABORATORIES HANDLING HIGHLY VIRULENT INFECTIOUS AGENTS MUST HAVE SPECIFIC PLANS FOR HANDLING ACCIDENTS.

(2) "Dry" spills (overturned or broken culture plate) with no significant aerosol formation:

- Evacuation of room probably not indicated.
- Soak up the disinfectant and contaminated material with an absorbent material (paper towels) and dispose of in a plastic bag or sealed container.
- Gloves should be worn for clean up.
- **Clean area with disinfectant solution (e.g. Clorox bleach).**
- Spill area should be thoroughly washed after clean up.
- Autoclave the contaminated material.

(3) Liquid spills on bench or floor:

- If significant aerosols were formed, the area should be evacuated and not re-entered for at least an hour.
- Do not re-enter for at least one hour until aerosols have settled.
- Persons entering the area to clean up should wear protective clothing, gloves, and mask.
- If liquids are present, soak up in an absorbent material and handle as above. If not, clean the instrument and clean the room thoroughly before resuming work.

(8) Spills in incubators, or other closed areas:

- Soak up liquids with an absorbent and dispose of as outlined in paragraph 6b, if possible.

- If routine clean up is not possible, the unit may have to be decontaminated by means of a sterilizing gas such as formaldehyde or glutaraldehyde left overnight. This means of decontamination may only be done by authorized personnel.
- The unit should be thoroughly washed (if possible) after decontamination.
- Special spill control equipment is available in each section. This includes a powerful disinfectant in powder form.

h. Needle and syringe handling procedures:

- (1) Do not destroy, bend or clip used needles. The preferred practice is to not replace the needle cap on a used needle (many needle sticks are caused in this manner.)
- (2) Used needles must be discarded in sharps containers, available from Environmental Management Service.
- (3) Never leave needles, etc., lying at the patient's bedside or on bench tops.
- (4) If injured, report immediately to employee health or the emergency room and then notify the Research Office (x 63430). Additional information can be found in Medical Center Memorandum 001R-614.

NOTE: BLEACH-CONTAINING MATERIALS SHOULD NOT BE AUTOCLAVED, AS THIS MAY DAMAGE THE AUTOCLAVE.

7. **TRANSPORTATION OF POTENTIALLY INFECTIOUS AGENTS**

Federal regulations have established requirements for shipping materials of a potentially infectious nature. These materials include bacterial cultures, viruses, and samples derived from humans or animals, including cultured cells. When shipping potentially biohazardous materials, the following requirements must be met:

- f. Shipping must be done only by personnel who have received approved training and are certified. Research Service has purchased a CD-ROM-based training program to fulfill this requirement.
- g. Materials must be packaged in approved containers with required labeling. Packaging requirements are described in the training program.
- h. If the package includes dry ice, special packaging regulations are in effect, regardless of the biological nature of the items to be shipped.
- i. Biohazardous materials must be placed in secure, unbreakable secondary containers for transport between labs.

NOTE: THE FEDERAL GOVERNMENT IMPOSES SEVERE PENALTIES ON THOSE WHO DO NOT FOLLOW HAZARDOUS MATERIALS SHIPPING REGULATIONS.

8. **REPORTING**

All accidents must be documented and reported in detail. The supervisor and employee will complete the appropriate forms. Contact the Research Office for assistance. Exposure to blood/body fluid continues to be a concern to us all. Report all needle sticks, cuts, bites, splashes of blood or body fluids to eyes, nose or mouth, or large volume or prolonged exposure to blood on chapped or abraded skin promptly.

9. **REFERENCES**

MCNM 001F-123, Exposure Control Plan
MCNM 001R-614, Job Related Injuries and Illnesses
VHA Handbook 1200.8

10. **RECISSIONS**

Research Safety Policy #9, dated October 1, 2004

RESEARCH SAFETY POLICY #10

John D. Dingell VA Medical Center
Detroit, Michigan

HAZARDOUS MATERIALS PLAN

1. **PURPOSE**

To establish proper procedures for the use, storage and handling of hazardous materials.

2. **POLICY**

To promote a safe and hazard free work environment through appropriate training and safe work practices.

3. **RESPONSIBILITIES**

- a. The ACOS/R&D is responsible for the development and implementation of a hazardous material management plan.
- b. The R&D Safety Committee members are responsible for inspections of all R&D work areas and employee training.
- c. Individuals are responsible for maintaining safe work practices and reporting any suspected safety hazards.

4. **PROCEDURES**

- h. Investigators will train all new employees in a timely fashion.
- i. All R&D employees are required to attend one safety training session per year on the Hazardous Communication/Chemical Hygiene Plan.
- j. R&D employees will be made aware of:
 - (1) The location of MSDS statements, the service safety manual and procedures for safe storage, transport, handling and receiving of chemicals and radioactive chemicals;
 - (2) The location of sharps and broken glass containers and disposal procedures;
 - (3) The location of red bag containers and disposal procedures.

5. **REFERENCES**

MCNM 001F-119 Hazardous Materials Management Plan

6. **RECISSIONS**

Research Safety Policy #10, dated October 1, 2004

RESEARCH SAFETY POLICY #11

John D. Dingell VA Medical Center
Detroit, Michigan

INFECTION CONTROL/BLOODBORNE PATHOGENS POLICY

1. PURPOSE

To establish a mechanism to circumvent the possibility of contracting and/or spreading infection due to exposure to Bloodborne Pathogens from human and animal sources by Research Personnel.

2. POLICY

To promote a safe and hazard free work environment through education, training and safe work practices.

3. RESPONSIBILITY

- a. The ACOS/R&D Service is responsible for development and implementation of this policy.
- b. The R&D Safety Committee members are responsible for training and compliance with the policy.
- c. Individual R&D personnel are responsible for knowing and adhering to this policy.

4. PROCEDURES:

a. GENERAL RESEARCH LAB AREAS

(1) Personal Hygiene

- (a) All personnel are expected to wear lab coats while working in the lab area, which are to be removed when leaving the lab area.
- (b) When performing any experiment involving biological samples or chemicals, Research personnel are expected to utilize appropriate personal **protective** equipment.
- (c) To avoid contaminating other areas, gloves will be removed before doing the following: answering telephones, opening/closing any doors (e.g. refrigerator, freezer, office, lab, etc.), turning on/off lights and using any core equipment.
- (d) All Research personnel are expected to wash their hands on a frequent basis with a germicidal agent, usually after removing their gloves, after handling potentially contaminated material, and before leaving research areas.
- (e) Smoking, drinking, eating or applying cosmetics are prohibited in the work area.
- (f) While working, hands should be kept away from the mouth and face.

- (g) Personnel are encouraged to receive immunization against disease agents for which effective, safe and licensed vaccines have been developed (e.g. tetanus, Hepatitis B, etc.).
- (h) Research Service recommends that individuals involved with HIV or HBV research obtain a baseline sample of their blood prior to the beginning of the research project. These individuals will submit a sample of their blood to the Personnel Health Physician every six months thereafter for screening.
- (i) Personnel working with AIDS virus should wear protective clothing, in addition to sleeves, face shields and heavy duty gloves.
- (j) All research labs should have access to the following items if needed:
 - a puncture-resistant biohazard container and red bags
 - a radioactive waste container
 - a chemo waste container
 - a sharps disposal unit.

(2) Specimen Handling:

- (a) All specimens received by research personnel should be inspected to ensure the following:
 - There are no leaks
 - The samples have not been thawed (if shipped frozen)
 - The specimens are properly labeled and identified
- (b) All specimens will be clearly labeled (i.e. date, name of specimen, and PI's name) prior to placing them in freezers, refrigerators, incubators or any of the core equipment.
- (c) Do not mouth pipet any samples; use automatic pipetman, bulbs, etc.
- (d) All waste must be rendered safe and disposed of appropriately.

(3) Equipment

- (a) Gloves should not be worn when handling any equipment. This eliminates the possibility of contaminating the next person who uses the equipment.
- (b) All spills occurring in the centrifuge must be taken care of immediately.
- (c) No one should leave broken glass or spilled blood in rotors. If spills occur, the rotors should be properly disinfected and cleaned with the Beckman rotor cleaning agent.
- (d) Core biosafety cabinets should be wiped down with a 70% alcohol solution after each use. When an employee is leaving the room, the germicidal lamp should be turned on.

b. **VETERINARY MEDICAL UNIT**

- (1) All Veterinary Medical Unit (VMU) staff is required to change into their designated uniforms immediately upon entering the facility.
 - (a) In addition to coveralls, the VMU staff are requested to wear head bonnets, mask and gloves when coming in direct contact with animals (e.g. while changing cages).
 - (b) When VMU personnel are outside the facility, uniforms must be covered with a lab jacket.
 - (c) Research personnel (e.g. technicians, PIs, etc.) are required to wear lab jackets while in the animal facility. No procedures will be allowed to be performed on animals unless researchers are properly attired in lab coats, gloves and/or mask.
- (2) Hand washing should be done prior to leaving all animal rooms and before leaving the animal facility.
- (3) All animal rooms, corridors and procedure rooms are to be mopped and disinfected according to WSU/DLAR standard operating procedure.
- (4) Animals should not be handled with bare hands. Gloves are provided.
- (5) **Only persons directly involved with animal research are allowed in the animal facility. NO OUTSIDE VISITORS ARE ALLOWED EXCEPT AS AUTHORIZED BY/ACCOMPANIED BY VMU STAFF.**
- (6) All animals are delivered to the animal facility.
- (7) Once animals and containers are received in the animal facility from an outside vendor, they are appropriately disinfected and quarantined prior to placing them into the animal rooms.
- (8) All equipment coming in contact with animals (cages and water bottles) are washed and sanitized at 180 degrees Fahrenheit prior to delivery to the animals.
- (9) All animal carcasses must be properly bagged and tagged and placed in the appropriate freezer (see R&D Safety Program Policy 5[(f (1) (2) (3)]).

c. **CLINICAL RESEARCH AREA**

- (1) Universal precautions will be taken whenever contact with blood or body fluids is anticipated. Universal precautions require the use of gloves, masks, eye protection and/or gowns whenever necessary.
- (2) Frequent hand washing is required. Hands should be washed prior to and after obtaining a specimen from patient; hands should also be washed prior to performing procedures on patients.

- (3) Gloves should be worn in addition to a lab jacket throughout all procedures performed in a clinical setting.
- (4) Needles should never be recapped; they should be removed with a needle disposal unit and placed in a sharps disposal container. Non-reusable needles are also disposed of in a sharps disposal container. Containers are available from Environmental Management Service (EMS).
- (5) All biological waste should be disposed of in biohazard containers, which are available from EMS.
- (6) Hands should be kept away from mouth, eyes and face area while working in clinical areas.
- (7) All accidents (punctures, cuts, splashes, etc.) should be reported to the Personnel Health Physician immediately after the occurrence.
- (8) The clinical area will be routinely disinfected by EMS and/or technicians.
- (9) All instruments and supplies (needles, syringes, etc.) will be rendered sterile prior to any procedure performed on clients.
- (10) Research Service recommends that individuals involved with HIV research obtain a baseline sample of their blood prior to the beginning of the research project. These individuals will submit a sample of their blood to the Personnel Health Physician every six months thereafter for HIV screening.
- (11) All persons directly involved with patients and patient's body fluid should routinely (every six months) submit a sample of their blood for an HIV test to the Personnel Health Physician.
- (12) All anatomical material (tissue) must be rendered safe prior to disposal. This material must be refrigerated until disposal by incineration.

d. **WASTE DISPOSAL**

- (1) All potentially hazardous or infectious material must be safe prior to disposal. This can be accomplished by placing it in a liquid agent such as bleach ~~and~~/or autoclaving.
- (2) All infectious waste should be placed in red biohazard bags. This waste should be double bagged to prevent leakage.
- (3) All sharp items should be placed in red rigid puncture-proof containers provided by EMS.
- (4) All red biohazard bags should be properly sealed in containers to be picked up by EMS in the individual laboratory areas.
- (5) All broken glassware must be placed in the proper containers located in individual laboratory areas.

5. **REFERENCES**

OSHA Hazard Communication Standard (HAZCOM)
JCAHO Accreditation Criteria Accreditation Manual for Hospitals, 1992
Hospital Infection Control Manual
MCNM 001F-123, Exposure Control Plan

6. **RECISSIONS**

Research Safety Policy #11, dated October 1, 2004

RESEARCH SOP 5

RADIATION SAFETY

1. Emergencies Involving Radioactive Materials:

- a. During normal working hours, report immediately to the Radiation Safety Officer (RSO) **Steven D. Conatser (Ext 63595/Pager 1-877-230-8208)** any fires, spills or accidents involving radionuclides.
- b. After hours, call (0) for the Operator, and announce "I have a radiation emergency," and proceed with more specific information.

2. Authorized Information:

- a. You may acquire and handle radionuclides **ONLY** under a specific permit issued by the Radiation Safety Committee. Contact the RSO on how to submit an application to use radionuclides.
- b. Individuals must have written authorization from either the Radiation Safety Committee or the RSO **BEFORE** handling radionuclides.
- c. The requirements and restrictions of a permit of a given laboratory vary according to the type, quantity, and chemical form of the radionuclides being handled. Refer to your Permit or contact the RSO for any questions regarding authorized uses and conditions.

3. General Radionuclide Handling Guidelines:

- a. Handle and store radionuclides only in those rooms authorized on your Permit.
- b. Use absorbent, plastic-backed paper under your work area for all procedures.
- c. Wear a lab coat, closed-top shoes, and disposable gloves at all times while handling radionuclides.
- d. Ensure with a calibrated radiation survey meter that adequate shielding (e.g., Plexiglas, lead) for external radiation is in place for each procedure.
- e. Wear appropriate personnel dosimetry for the radiation type and activity being handled.
- f. Label with appropriate caution tape all materials and equipment **BEFORE** they come into contact with radionuclides. Never place any unlabeled items within a bench zone delineated as the radionuclide procedure area. Keep any "hot" items carefully segregated from non-contaminated materials and areas. A "dry run" with non-radioactive components should be considered for any new procedures utilizing radionuclides.
- g. Carefully segregate all waste materials by radionuclide. Refer to Medical Center Numbered Memorandum 001F-144 entitled, "Radioactive Waste Management Program".
- h. Survey yourself and your work area when finished; perform a wipe test and any necessary decontamination before leaving the laboratory.
- i. Conduct all procedures involving volatile radioiodines in a posted fume hood; be sure to follow all handling, bioassay, and room survey requirements.

4. **Inventory of Radionuclides:** Maintain required records of receipt, use, storage and disposal of radionuclides, and records of all radiation surveys.

5. **Pregnant Workers in Radiation Work Areas:** Staff are urged to report all confirmed or suspected pregnancies to their supervisor.

6. **PLEASE REFER TO THE VAMC RADIATION SAFETY MANUAL OR CONTACT THE RSO FOR SPECIFIC INFORMATION.**

RESEARCH SAFETY POLICY #12

John D. Dingell VA Medical Center
Detroit, Michigan

CHEMICAL HAZARDS

- SECTIONS**
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1. **Introduction:** A number of routine procedures in a research laboratory involve the use of highly caustic, poisonous, or flammable reagents. These should be appropriately labeled to indicate the hazards. Read labels and observe precautions. Failure to follow safe practices is cause for disciplinary action.
2. **Material Safety Data Sheets (MSDS):**
 - a. Material Data Safety Sheets (MSDS) must be made available for all hazardous chemicals by the manufacturers. MSDS are important because they provide the most specific information about a product and its proper and safe use. Medical Center Memorandum No. 001F-111 has a sample of a MSDS. A MSDS provides the identity of the chemical, the identity of the manufacturer and how to contact them, a list of hazardous ingredients, physical and chemical characteristics of the product; also fire and explosion data, reactivity data, health hazard data, precautions for safe handling and use, and control measures required.
 - b. Material Safety Data Sheets on all chemicals in use must be on file in the research office, and easily accessible to all laboratory personnel. If you cannot locate a MSDS in your files, check with the Safety Office (pager 250-4188). All purchase orders for hazardous chemicals must include the wording "request Material Data Safety Sheet". You should read a MSDS on a substance before ordering it to determine if special handling is required. If it is hazardous, inquire about the possibility of substituting a less hazardous substance (several suppliers have 800-numbers that can be used for this purpose). If you are unaware of the nature of a substance, read the MSDS before opening the container. A tragedy can occur if you open up a container and the substance turns out to be toxic! Principal investigators are responsible for ensuring that instructions on MSDS's are followed.
 - c. Medical Center Memorandum 001F-111 gives more detailed information on the medical center policy on acquiring MSDS's. Additional information on hazardous materials can be

obtained from the Medical Library and the Safety Office ext. 63303. These two sources also have training materials on various aspects of safety.

3. **Chemical Inventory:** An updated inventory of hazardous chemicals in your laboratory must be submitted to the Chemical Hygiene Officer for Research (Dr. T. Hadden) yearly.
4. **Classification** of dangerous chemicals:
 - a. **Caustic or Corrosive:** Acids and alkalis may cause burns of skin, mouth, or eyes and may cause damage to equipment and storage areas.
 - b. **Poisons/Toxins:** Almost any substance in quantity can be poisonous. For these purposes, a poison will be classified as a substance that may cause death or serious effects if relatively small amounts are inhaled, ingested or contact the skin (such as concentrated phenols). Poisons may be gas, liquid or solid.
 - c. **Carcinogens:** Substances designated by OSHA as carcinogenic require special handling. (See section VII for listing).
 - d. **Flammables:** Such materials that easily ignite, burn, and serve as fuel for a fire.
 - e. **Explosives:** Materials that may explode under special circumstances.
 - f. **Radioactives:** Materials that spontaneously emit ionizing radiation.
5. **Labeling:** Refer to section II of this manual for more information about labeling requirements.
6. **General Practices for Chemical Storage:**
 - a. All containers in storage must be in good condition and clearly labeled.
 - b. The stock must be monitored monthly to ensure that containers are not deteriorating or leaking.
 - c. Chemicals should not be stored in alphabetical order.
 - d. **Incompatible chemicals should not be stored in proximity to each other.**
 - e. Chemical storage: All laboratories must implement the chemical storage system outlined below. The system is based on the National Fire Protection Association (NFPA) Manual of Hazardous Chemical Reactions. The NFPA Manual is available in the Research Office and is the ultimate arbiter of correct storage procedures.
 - f. Separate all reagents into at least five categories for storage. (When a chemical falls into more than one category, it should be stored according to its greatest hazard.) The categories are:
 - Flammable: Organic acids fall in this category. Store in Flammables cabinets.
 - Health hazards: Volatile substances require special storage.
 - Reactive or oxidizing: Store strong oxidizing agents and strong reducing agents separately.
 - Corrosives: Store strong acids and strong bases separately in Corrosives cabinets.
 - Moderate to low hazards: Non-flammable, non-toxic, non-reactive and non-corrosive compounds.
 - g. **Flammable material storage areas must have a portable Class-B fire extinguisher of at least 12-pound capacity within no more than 25 feet of any point in the storage area.**
 - h. **Chemical storage refrigerators must be explosion proof.**
 - i. **Hazardous chemicals must not be stored on refrigerator door shelves.**
 - j. Corrosion-resistant cabinets should be used for storing corrosives.
 - k. Spill trays or other containment devices should be used under containers of strong reagents.

- l. Liquid chemicals should not be stored above eye level.
- m. Larger containers should be stored on lower shelves.
- n. Expired chemicals should be disposed of promptly.
- o. Excess chemicals should be recycled or disposed of promptly.
- p. Storage of chemicals in laboratories should be minimized.
- q. In-laboratory storage should be in accordance with National Fire Protection Association (NFPA) limits.

7.1 **Precautions and Procedures for Working with Hazardous Chemicals:**

The following precautions, procedures, and requirements apply to chemicals according to the hazards they pose. Specific procedures for any class of hazardous chemical may be written by responsible parties subject to the approval of the Chemical Hygiene Officer and the Research safety committee.

7.2 **Physical Hazards:**

7.2.1 **Flammable/Combustible Chemicals:** All chemicals that have vapor pressures high enough to generate sufficient, ignitable vapor at standard conditions:

- a. Flammable - can generate sufficient, ignitable vapors at temperatures below 140° F
- b. Combustible - can generate sufficient vapors at or above 100° F and below 104° F

When working with flammables and combustibles, employees must:

- a. Eliminate all ignition sources, including open flames, hot surfaces, sparks from cutting equipment, electrical devices, and static.
- b. Keep minimum quantity in the work area.
- c. Put no more than one quart of flammable liquid in a glass container
- d. Store materials in cabinets approved for flammable substances
- e. Store these materials in explosion-proof refrigerators
- f. Store these materials away from oxidizers
- g. Ensure that there is proper grounding when transferring flammable chemicals from bulk containers.
- h. Make sure of the location of the nearest appropriate class of fire extinguisher.

7.2.2 **Corrosives, Acids and Bases:** These substances can cause chemical burns and degrade metals. For corrosives:

- a. Use corrosion-resistant containers and storage equipment.
- b. Always wear eye protection and appropriate protective gloves. Use face shields and rubber boots and aprons when procedures warrant.
- c. When diluting concentrated acids with water, always add the acid to the water. Never add the water to the acid.
- d. Separate acids and bases from each other in storage. Store organic acids with flammable materials and away from oxidizers.
- e. Ensure that an eyewash station and a safety shower are readily accessible to areas where corrosives are stored.
- f. Flush skin or eyes that have come into contact with corrosives continuously for at least 15 minutes and summon medical help.

7.2.2a **Special Precautions for Hydrofluoric Acid:** Hydrofluoric acid (HF) is an extremely dangerous corrosive, eye hazard, and respiratory threat. HF attacks glass, concrete, many metals (especially cast iron), wood, leather, and rubber. HF can penetrate the skin, burning out subcutaneous layers, and ultimately can decalcify bone. When working with HF:

- a. Cover work surfaces with wax.
- b. Use containers coated with Teflon, polyethylene, or polypropylene.
- c. Conduct all work in a fume hood.
- d. In case of severe exposure, remove contaminated clothing at once and place employee under a safety shower.
- e. In case of severe exposure, summon medical help at once. Continue medical surveillance for delayed systemic effects.

7.2.3 **Oxidizers:** By various definitions, oxidizers are materials that promote oxidation reactions in which a substance is combined with oxygen, loses hydrogen, or generally loses electrons. When working with oxidizers, employees should:

- a. Know the reactivity of the materials. Make sure that there are no materials in the work area that could become involved in the reaction.
- b. Isolate the work area behind a shield if there is a potential for violent or explosive reaction.
- c. Use the minimum amount of substance required for the procedure. Do not store oxidizers in the work area.
- d. Store oxidizers away from organic materials, flammables, and reducers.

7.2.3a **Special Precautions for Perchloric Acid:** Perchloric acid (HC104) is a particularly powerful oxidizer that has been the cause of many laboratory accidents. Perchloric acid is incompatible with:

- Plastics
- Nylon (polyamide)
- Modacrylic ester, Dynet (35% to 85% acrylonitrile)
- Polyester
- Bakelite
- Lucite
- Micarta
- Cellulose-based lacquers
- Metals
- Copper
- Copper alloy (for shock-sensitive perchlorate salts)
- Aluminum
- High-nickel alloys
- Other substances
- Cotton
- Wood
- Wool
- Glycerin-lead oxide

The following special precautions should be exercised for HClO₄:

- a. Notify the Chemical Hygiene Officer in advance when perchloric acid is to be used.
- b. Use perchloric acid in laboratories with tile or epoxy-painted concrete floors.
- c. Equipment should not be bolted to the floor because perchloric acid can enter into bolt holes.
- d. Shelves and cabinets should be epoxy-painted steel.
- e. Use a fume hood especially designed for perchloric acid. The hood should be made of 316 stainless steel with ducting and connections of 316 stainless or other materials compatible with perchloric acid. The hood should have a 316 stainless nozzle for wash down. B4342 has the only fume hood approved for use with perchloric acid.
- f. Do not perform direct-flame heating.
- g. Use quartz containers.
- h. Perform all transfers over a sink.
- i. Keep quantities to a minimum.
- j. Only experienced workers should handle anhydrous perchloric acid.
- k. Two or more persons should be in the room when anhydrous perchloric acid is used.
- l. Make only as much anhydrous perchloric acid as required for one day's work.
- m. Neutralize spilled perchloric acid before cleaning it up.
- n. Dilute acid to 5% and then neutralize with aqueous sodium hydroxide for disposal. Dispose of resulting mixture into a sanitary sewer.

7.2.4 **Water-reactive Materials:**

- a. Materials that react with water to produce flammable or toxic gases. They include alkali metals (e.g., lithium, sodium, potassium, rubidium, and cesium) and metal hydroxides.
- b. The following are procedures for handling water-reactive materials:
 - Purchase and store only the minimum amount of water-reactive materials necessary.
 - Do not expose water-reactive materials to water or moisture.
 - Store sodium and lithium under mineral oil.
 - Store potassium under xylene.
 - Perform procedures under a fume hood.
 - Make sure that the laboratory contains a Class-D fire extinguisher.

7.2.5. **Peroxidizables:** Chemicals that can react with oxygen to form peroxides, which explode from impact, heat, and friction. Peroxides can form in containers even if they are unopened. For working with peroxidizables:

- a. **Purchase the minimum amount necessary.**
- b. Date all peroxidizables on receipt and on opening. Dispose of all materials after 18 months.
- c. Do not open any container that has crystal formation around the lid.
- d. Test containers for peroxides each month.
- e. Handle as flammables during procedures.
- f. Store in cool, dry places. Post storage areas with a warning sign: CAUTION POTENTIAL EXPLOSIVE HAZARD

7.2.6 **Light-sensitive Materials:** Materials that degrade in the presence of light and that can create pressure in containers or form toxic by-products. For light-sensitive materials:

- a. Store in a cool, dark area in amber-colored bottles or another form of container that blocks light.
- b. Date containers on receipt and on opening. Discard unopened containers after one year; discard opened containers after six months.

7.2.7. **Shock-sensitive/Explosive Materials:** Compounds that can spontaneously release energy under normal conditions or when subjected to agitation. For working with shock-sensitive or explosive materials:

- a. Inform the Chemical Hygiene Officer at least a day in advance of activities.
- b. Date all containers on receipt and on opening. Discard unopened containers one year from date of receipt. Discard opened containers six months from date of opening.
- c. Purchase and use the minimum amount necessary.
- d. Use shielding to isolate the materials during procedures.
- e. Post the work area with a warning sign: CAUTION EXPLOSIVE HAZARD

7.2.8. **Compressed Gases:** Materials that are under pressure. They can present both pressure and toxic hazards. When working with compressed gases:

- a. **Use the smallest-size cylinder that will suffice.**
- b. Handle cylinders of compressed gas as high-energy sources.
- c. Always wear safety goggles or safety glasses with side shields when working with compressed gases.
- d. Use and store toxic, corrosive, and reactive gases under a fume hood.
- e. Make sure that the cap is securely in place when moving or storing cylinders.
- f. Use racks, straps, chains, or retainers to support cylinders during use, transport, and storage.
- g. Use an appropriate dolly to move cylinders.
- h. Do not bleed cylinders until they are empty. Leave a small amount of gas in the cylinder to prevent contamination.
- i. Use gauges and fittings compatible with the gas being used.
- j. Do not lubricate oxygen regulators or use fuel gas regulators on oxygen cylinders.

7.2.9 **Cryogenics:** Liquefied substances that are kept under pressure at low temperatures. They present a number of hazards:

- a. **They can damage skin and eyes with brief contact.**
- b. They condense oxygen out of the air and increase fire hazards.
- c. They can create an explosive hazard from the increase in pressure when they change from liquid to gas.
- d. They can embrittle materials.

For working with cryogenics:

- a. Wear goggles or safety glasses with side shields.
- b. Do not wear watches, rings, and other jewelry.
- c. Wear gloves that are resistant to low temperatures and chemically resistant to the substance, if necessary.
- d. Keep equipment clean, especially when working with oxygen.

- e. Control mixtures to prevent formation of flammable or explosive mixtures.
- f. Follow the precautions for flammable materials for flammable cryogenics.
- g. Ensure that containers of cryogenics have pressure-relief valves.
- h. Ensure that containers and associated piping are able to withstand extreme cold without becoming brittle.

7.3 **Toxic Chemicals:** The primary reference for toxicity is the MSDS. The MSDS should contain OSHA and other exposure limits, if there are limits. Other sources for exposure limits are:

- a. OSHA. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances
- b. AC ACGIH *Documentation of the threshold limit values and biological exposure indices*. 5th ed. (with updates). Cincinnati: ACGIH, 1986.
- c. NIOSH. *Pocket guide to recommended exposure limits*.

The procedure for limiting exposure to a toxic chemical depends on the form of the chemical and the route of entry.

7.3.1 **Allergens or Sensitizers:** Substances that produce dermal and/or respiratory sensitivity (allergic rash or asthma-like symptoms). Once sensitization occurs, even minute exposure can trigger a full-blown response. For working with allergens:

- a. Wear suitable gloves.
- b. Conduct operations with volatile substances under fume hoods.

7.3.2 **Reproductive Toxins:** Substances that affect the reproductive capacity of male and female employees or the development of their progeny. When using reproductive toxins:

- a. Consult with the responsible party to review the procedure to be used.
- b. Label containers with the warning: REPRODUCTIVE TOXIN READ SPECIFIC PROCEDURES FOR USE.
- c. Store in unbreakable containers in well-ventilated areas.
- d. Guard against spills and splashes. Use appropriate safety apparel, fume hoods, or glove boxes.
- e. Notify the responsible party of all incidents of exposures or spills.
- f. Arrange for medical consultation if exposed.

7.3.3 **Chemicals of Moderate Chronic to High Acute Toxicity:** Materials that do not constitute a significant carcinogenic or other long-term threat but that can be dangerous to those exposed to high doses or repeated small doses. Use the following procedures:

- a. Review the toxic properties and the effects of the chemicals to be used.
- b. Use and store substances in designated restricted access areas that are posted with the appropriate warning.
- c. Use a hood with a filter or other containment device for working with volatile or aerosol substances.
- d. If local exhaust ventilation is not feasible, wear a respirator (see section 7.1 of this CHP).
- e. Avoid skin contact: wear gloves, long sleeves, and other appropriate protection.
- f. Maintain careful records of the amounts of materials purchased, amounts used, and the names of employees who used them.
- g. Be prepared for spills and accidents.

- h. Ensure that at least two people are present when working with highly toxic substances or substances of unknown toxicity.
- i. Store breakable containers in chemically resistant trays. Keep resistant trays under work and under apparatus.
- j. Cover work and storage surfaces with disposable, absorbent, plastic-backed paper.
- k. Call the Safety Office if a major spill occurs outside of a containment device.
- l. Dispose of contaminated clothing as hazardous waste.
- m. Store contaminated waste in closed, leak-proof containers that have been appropriately labeled.

7.3.4. **Chemicals of High Chronic Toxicity:** Materials that can cause cancer or other chronic conditions in humans or that have shown high carcinogenic potency in test animals. Substances currently regulated by OSHA as carcinogens are:

- 2-Acetylaminofluorene
- Acrylonitrile
- 4-Aminodiphenyl
- Asbestos, tremolite, anthrophyllite, actinolite
- Benzene
- Benzidine
- Bis-chloromethyl ether
- 1,2-Dibromo-3-chloropropane
- 3,3'-Dichlorobenzidine (and salts)
- 4-Dimethylaminoazobenzene
- Ethylene oxide
- Ethyleneimine
- Inorganic arsenic
- Methyl chloromethyl ether
- Naphthylamine
- 4-Nitrobiphenyl
- N-Nitrosodimethylamine
- (-Propiolactone
- Vinyl chloride

For chemicals of high chronic toxicity, use the following procedures in addition to the procedures for chemicals of moderate chronic and high acute toxicity:

- a. Perform all work, including transfers, in controlled areas of restricted access, such as hoods, glove boxes, or portions of a laboratory specially designated.
- b. Train all persons with access to controlled areas in the hazards of the substances used.
- c. Ensure that the controlled area is posted with signs such as: **CANCER-SUSPECT AGENT: AUTHORIZED PERSONNEL ONLY**
- d. Label all containers: **WARNING HIGH CHRONIC TOXICITY** or **CANCER-SUSPECT AGENT**
- e. Keep glove boxes at negative pressure (at least 0.5 inch of water lower than the surrounding environment) with a minimum of two air changes per hour.
- f. If positive-pressure glove boxes are used, ensure that they are tightness tested before each use.
- g. Vent glove boxes into a hood equipped with a HEPA filter and an appropriate scrubber for vapors.

- h. **Equip vacuum pumps with HEPA filters or scrubbers.**
 - i. Use sorbents for spilled volatile liquids. Use a wet mop or a vacuum equipped with a HEPA filter for other substances. Do not dry-sweep spilled solids.
 - j. On leaving the controlled area, remove protective equipment and place it in an appropriate container.
 - k. Wash hands and arms thoroughly after contact with the agent before eating or smoking and at end of the workday.
 - l. Keep accurate records of the amounts of substances stored and used and the names of persons using them and the dates used.
 - m. Prepare contingency plans to ensure minimum exposure in case of accidents.
 - n. Use chemical decontamination when possible.
 - o. Ensure that contaminated wastes are removed under the supervision of authorized personnel.
8. **Mercury:** Medical Center Memorandum 001F-118 explains the policy and procedures regarding mercury spillage, including the number of who to call to properly clean the spill. Employees who notice large mercury spills should contact Police and Security Section at x3375. Police will then contact Environmental Management Section and the Safety Office. It is the policy of this medical center to be as “mercury-free” as possible. For this reason, items that traditionally contained mercury, but for which there are mercury-free alternatives, should be replaced with the mercury-free item (e.g. thermometers).

In addition, follow these general guidelines:

- a. Good personal hygiene practices will be observed when using these items. Consumption of food and beverages is prohibited where mercury is handled. Gloves, aprons, facemasks and fume hoods will be used when handling these items.
- b. Mercury will be stored in closed non-breakable containers. Surface of mercury may be covered with water or oil to slow vaporization.
- c. Do not place mercury waste in drains.
- d. Mercury disposal procedures apply to instruments containing mercury as well, e.g. blood pressure monitors, thermometers.

9. **Hazardous Unstable Chemicals:**

- a. Such materials with limited shelf life (e.g. ether) should be purchased in the smallest containers and smallest quantity possible.
- b. A discard (expiration) date should be permanently applied to each container upon receipt. This will be determined based on the safe or useful shelf life or on the estimated duration of the process requiring its use, whichever is shorter.
- c. Periodic surveys of all chemical storage areas should be made. Containers which are undated or have passed their discard date will be disposed of immediately.

10. **Storage & Disposal of Ether or Containers (Center for Disease Control Recommendation):**

Storage of solvents: Open vaporization inside the hospital must not be used for routine disposal of flammable and combustible liquids. Acceptable disposal procedures include the following:

- a. Waste ether should be treated with a 30-40% solution of ferrous sulfate in water to eliminate peroxides (at least 10% FeSo₄ by volume). Disposal should be by an EPA

licensed disposal company, or by methods approved by local environmental authorities (i.e., incineration, secure landfill, and open land evaporation).

- b. Waste ether, even when treated to eliminate peroxides, should be handled as a flammable liquid. Unless stored below -50(F, it will continue to vaporize. Storage in an approved flammable liquid storage cabinet, in a refrigerator listed as safe or explosion-proof, or in an approved hood is acceptable. Containers that show signs of crystals are extremely hazardous and are an uncontrolled explosion hazard that should not be handled by other than an explosion hazard specialist.
- c. Safe practices for management of ethers include: maintaining the least inventory practicable; purchasing the smallest containers practicable; dating all containers on both receipt and opening; disposing of any residual amounts as soon as possible after initial opening and use; and disposing of unopened containers after expiration date.

11. **Formaldehyde:** Medical Center Memorandum 001F-115 explains the VAMC policy on the use of formaldehyde. In addition to following these guidelines, notify the Research Office if you plan to use formaldehyde.

12. **Breaks and Spills:**

- a. Skin/eye/mouth contact: wash area immediately. (Eye wash and showers should be utilized).
- b. Clothing spills: take item of clothing off immediately, preferably while under shower, to avoid soaking through to skin. This includes belts and shoes (if affected).
- c. Contain spills with sand or absorbent materials, wash area thoroughly after clean up.
- d. Call the Research Safety Officer for assistance/guidance.

13. **Handling, Usage and Disposal of All Hazardous Chemicals:** This shall be in accordance with Medical Center Memorandum No. 001F-114. The essential concern for disposal is environmental responsibility. Check the Material Safety Data Sheet or Safety Office prior to dumping such wastes. You will be instructed on what to do or the substance will be disposed of for you. If you use the substance regularly, the Safety Office can arrange scheduled pick-ups of hazardous wastes. (See 001F-114, "Hazardous Chemical Waste Management")

14. **Personal Protective Equipment/Apparel:** Personal protective equipment (PPE) must be used in those circumstances when engineering controls are not feasible, when emergencies occur, and when routine protection of eyes, skin, and clothing is needed. (See 001F-103, "Personal Protective Equipment")

14.1 **Respirators:** Respirators must be provided by the investigator when engineering controls are not feasible. Persons required to wear respirators are subject to the regulations in 29 CFR 1010.134. They must be evaluated by a physician for their ability to wear respirators, fit tested, provided with fitted respirators, and trained in respirator use and maintenance. Contact the Safety Office, ext. 3303 or pager 250-4188, to arrange this testing and training. (See 001F-109, "Respirator Program")

14.2 **Eye Protection:** The following rules must be followed at all times:

- a. Safety glasses with side shields must be worn by all employees within the laboratory when working with eye irritants.

- b. Full face shields with neck protection must be worn over safety glasses for all hazardous chemical operations that could result in splashing, spraying, or misting.

14.3 Skin Protection: The following rules apply:

- a. All skin must be protected. Employees must wear lab coats and, when procedures warrant, coveralls or aprons. Employees may not wear open-toed shoes or sandals.
- b. Employees working with extremely hazardous chemicals should tape all clothing openings and wear caps. If the responsible party or the CHO deems it necessary, or if indicated by the MSDS, impervious clothing must be provided.
- c. Employees must wear appropriate gloves when working with hazardous chemicals.
- d. Safety showers are located in every laboratory.
- e. PPE should not leave the laboratory unless it is being discarded or taken to the laundry.
- f. PPE contaminated with hazardous chemicals must be disposed of as hazardous waste.

14.4 General - Personal Protective Equipment: The MSDS for a substance should be consulted to determine what protective equipment is needed and whether or not monitoring is required. After consulting the MSDS, employees should notify their Principal Investigator of the need for protective equipment. It is the Principal Investigator's responsibility to provide these items for their laboratory. (See 001F-103, "Personal Protective Equipment")

Anyone whose work involves regular and frequent handling of toxicologically significant quantities of a chemical should consult the Industrial Hygienist ext. 63018 and the Employee Health physician, ext. 64753, to determine, on an individual basis, whether a regular schedule of environmental monitoring or medical surveillance is desirable. Copies of the annual inventory of hazardous chemicals found in each lab will be made available to the Industrial Hygienist, who may also determine that monitoring is required for specific items.

The hospital's Radiation Safety Officer (RSO) will establish the necessary monitoring for use of radioactive materials by all permit holders and their personnel. Questions should be directed to the RSO at ext. 63595 or pager 250-0345.

15. Disposal of Chemical Wastes: The essential concern for disposal is environmental responsibility. Check the Material Safety Data Sheet or Safety Office prior to dumping such wastes. You will be instructed on what to do or the substance will be disposed of for you. If you use substance regularly, the Safety Office can arrange scheduled pick-ups of hazardous wastes. (See 001F-114, "Hazardous Chemical Waste Management")

16. Chemicals Developed in the Laboratory: The following requirements apply to chemical substances, including pharmaceuticals, developed in laboratories:

- a. If a chemical is produced exclusively for the laboratory's own use, the principal investigator must determine if it is hazardous and, if so, provide appropriate training to protect employees.
- b. If the composition of a chemical produced in the laboratory is not known, the chemical must be treated as hazardous.
- c. If a chemical is produced for use outside the laboratory, the responsible party must comply with the provisions of the OSHA hazard communication standard, including the issuance of an MSDS.

17. **Prohibition on Picric Acid:** Picric acid is a highly explosive chemical that poses a hazard to personnel. Likewise, disposal of picric acid is extremely expensive, involving the use of a "bomb squad". Therefore, the use or storage of picric acid is prohibited in research laboratories. If discovered, the principal investigator will be charged with the cost of disposing of the substance.

18. **REFERENCES**

MCNM 001F-114, Hazardous Chemical Waste Management

MCNM 001F-111, Hazard Communication

MCNM 001F-128, Waste Minimization Program

19. **RECISSIONS**

Research Safety Policy #12, dated October 1, 2010

RESEARCH SOP 7

CARCINOGENS

1. **Introduction:** Specific regulations have been established by OSHA regarding the handling of certain compounds designated as carcinogenic.

2. **Carcinogens:** The use of the substances listed below, considered by OSHA to be carcinogenic (i.e. containing 0.1 to 1% or more of such chemicals by weight), in the VA Medical Center is prohibited, unless an exception is made. Requirements for obtaining this exception are available in the Safety Office.
 - 4 Nitrobiphenyl
 - Alpha-naphthalanine
 - 4, 4'-Methylene bis 3, 3'-Dichlorobenzidine (and its salts)
 - (2 chloroaniline)
 - Methyl chloromethyl ether
 - Bis-chloromethyl ether
 - Alpha-Naphthylamine
 - Benzidine and its salts
 - 4 Aminodiphenyl
 - Ethylenimine
 - Beta-Propiolactone
 - 2-Acetulaminofluorene
 - 4-Dimethylaminoazobenzene
 - N-Nitrosodimethylamine
 - Beta-Naphtylamine

(More names are available from the Safety Office, ext. 63303.)

3. **Carcinogenic chemicals** should be segregated from other materials. Likewise, a list of these chemicals should be posted in the cabinet where they are stored.

Medical Center Memorandum 001F-119 gives specific information about handling carcinogenic chemicals.

RESEARCH SOP 8

COMPRESSED GASES

1. **Introduction:** Compressed gases constitute several hazards. Any gas cylinder with a broken valve head becomes a missile capable of penetrating walls. Specific gases may be toxic or flammable. Finally, heating of cylinders may result in explosion.
2. **General Standards:**
 - a. Cylinders must be secured at all times (limited to three per chain) to prevent accidents.
 - b. Valve safety covers should be left on until pressure regulators are attached.
 - c. Containers must be marked clearly with the name of the contents. Tanks with wired on tags or color code only SHOULD NOT be accepted.
 - d. Hand trucks or dollies MUST be used in moving cylinders. Do not roll or drag cylinders.
 - e. The use of oil, grease, or lubricants on valves, regulators, or fittings is PROHIBITED.
 - f. Do not attempt to repair damaged cylinders or to force frozen cylinder valves.
3. **Flammable Gases:** Special care must be exercised when gases are used in confined spaces.
 - a. Do not manifold more than two cylinders together; however, several instruments or outlets are permitted for a single cylinder.
 - b. No more than one cylinder of highly flammable gas shall be in one room without specific review by safety office.
 - c. Cylinder size is limited to 200 cubic feet.
 - b. Valves on all flammable gas cylinders shall be shut off when the laboratory is unattended.
4. **Pressure Regulators and Needle Valves:** Needle valves and regulators are designed specifically for different families of gases. Use only the properly designated fittings.
 - a. Threads and surfaces must be clean and tightly fitted. Do not lubricate.
 - b. Tighten regulators and valves firmly with proper sized wrench. (Do not use adjustable wrenches or pliers. They damage the nuts.) Do not force tight fits.
 - c. Open valves slowly. Do not stand directly in front of gauges (the gauge face may blow out). Do not force valves that "stick".
 - d. Check for leaks at connections. Leaks are usually due to damaged faces at connections or improper fittings. Do not attempt to force an improper fit. (It may only damage a previously undamaged connection and compound the problem).
 - e. Valve handles must be left attached to the cylinders.
 - f. The high pressure valve on the cylinder should set the maximum rate of flow. Fine tuning of flow should be regulated by the needle valve.
 - g. Shut off cylinders when not in use.
5. **Leak Testing:** Facility Management Service will check any suspected leak. (Call 63275).
6. **Empty Cylinder:**
 - a. Must be marked "empty".
 - b. Empty or unused cylinders must be returned promptly.
 - c. Replace valve safety caps.
 - d. Notify the Research Office of the empty tank. Research office will then contact Supply for the removal/replacement of spent tanks.

RESEARCH SAFETY POLICY #13

John D. Dingell VA Medical Center
Detroit, Michigan

EQUIPMENT MANAGEMENT PROGRAM

1. **PURPOSE**

To establish proper procedures for the safe operation of all equipment, storage and handling of hazardous materials.

2. **POLICY**

To promote a safe and hazard free work environment through the appropriate use of Research equipment.

3. **RESPONSIBILITIES**

- a. The ACOS/R&D is responsible for the development and implementation of an equipment management plan.
- b. Biomedical Engineering shall inspect all equipment, regardless of ownership and category that is brought into the medical center prior to initial use. A sticker indicating who inspected the unit and when shall be affixed to the unit.
- c. Investigators are responsible for instructing their staff and ensuring the safe operation of equipment. Supervisors are also responsible for corrective action on noted deficiencies.
- d. Individuals are responsible for maintaining safe work practices, reporting any suspected safety hazards and reporting unsafe equipment or conditions immediately to their supervisor.

4. **PROCEDURES**

- a. Investigators will train all new employees on the safe operation of each piece of equipment and any new equipment.
- b. In-service training should address all of the following:
 - (1) Proper operation, function, and application of the unit.
 - (2) Safety procedures/hazards associated with use of the equipment.
 - (3) Personal protective equipment required during use of the equipment.
 - (4) Electrical safety hazards associated with use of the equipment.
 - (5) Operator inspection procedure to be performed prior to each use of the equipment.
 - (6) Operator maintenance procedure as outlined in the operator's manual.

(7) User errors found through actual operation of the equipment.

(8) Any other items related to the safe and proper use of the equipment.

c. Supervisors will give periodic reminders to the staff of appropriate safety standards.

5. **REFERENCES**

MCNM 001F-135, Medical Equipment Management Program

MCNM 001F-142, Equipment Training Program

6. **RECISSIONS**

Research Safety Policy #13, dated October 1, 2007

RESEARCH SAFETY POLICY #14

John D. Dingell VA Medical Center
Detroit, MI

UTILITIES MANAGEMENT PLAN

1. PURPOSE

To clarify Research & Development Service staff duties and responsibilities in case of lost utilities.

2. POLICY

Research & Development personnel will respond appropriately to any type of emergency.

3. RESPONSIBILITIES

The ACOS/R&D will be responsible for ensuring that all service employees are aware of their duties during loss of utilities.

4. PROCEDURES

- a. Telephone – Loss of telephone services will immediately be reported to the Telecommunication Unit, located in Room LL220.
- b. Computers – When there is a shutdown of the computer system, all data and/or requests normally entered into the computer system will be handled manually. Records will be maintained for later entry into the computer system. Assistance is available (ext. 63430) in the Research Office for trouble calls Monday through Friday from 7:30 a.m. to 5:00 p.m. should a problem beyond your abilities arise.
- c. Heat – Heat shutdowns are normally announced in advance and are of limited duration. However, in case of an unexpected shutdown during the winter months, Facility Management Service should be notified of any emergency especially in the Veterinary Medical Unit (VMU).
- d. Water – Normally water shutdowns for plumbing repairs are known in advance, notification is disseminated and preparations can be made. Unexpected shutdowns should be immediately reported to Facility Management Service. Provisions have been made through Facility Management for water to be provided from alternative city sources, which should limit shutdown duration.
- e. Electricity – Routine generator testing is announced in advance. Computers and other electrical equipment susceptible to power surges should be turned off during this time. Unexpected electrical outages should immediately be reported to Facility Management Service. Outages also need to be reported to the research office ext. 3430 as soon as they occur.
- f. Paging System – The overhead paging system will be used to make announcements of planned periods of outage for repairs, emergencies or general information of employee importance, etc. Breakdown of individual pagers should be reported to supervisors immediately.

- g. Elevators – In the event of a stalled elevator, follow procedures contained in the elevator. To report a non-working elevator, call ext. 3275.
- h. Air Conditioning – Facility Management Service should be notified of air conditioning outages and will take the necessary action to restore service. Outages in the Veterinary Medical Unit need to be reported as emergencies.

5. **REFERENCES**

OSHA Safety & Health Standards (29CFR 1910)
MCNM 001F-102, Utilities Management Program

6. **RECISSIONS**

Research Safety Policy #14, dated October 1, 2004

RESEARCH SOP 9

ELECTRICAL SAFETY

1. **Grounding:** All instruments must be grounded. An annual inspection of proper grounding of instruments is made by Facility Management Service. The only exceptions to the rule are items entirely encased in plastic (such as microscopes).
2. **Report Shocks:** All shocks must be reported immediately, including small tingles. Small shocks often precede major shocks and a light tingle may indicate potential trouble.
3. **Corrective Actions:** Shut off the current and/or unplug the instrument. Do not attempt to use an instrument that is causing shocks. Not only is it potentially dangerous, but also any results from the instrument would be suspect. Report any defective equipment, inadequate electrical outlets, or shock hazards to the office for repairs.
4. **Repairs: DO NOT** work on or attempt to repair any instrument while it is plugged in. An exception is the calibration of instruments, which require adjustment while plugged in. In this case, be sure hands are dry, remove all jewelry (watches and rings) and proceed with caution. Do not attempt if you do not know the hazards involved.
5. **Repairs on the Electrical System of the Building are Prohibited.** Any work needed on switches, outlets, or circuit boxes (fuses, circuit breaker) must be referred to the Research Office, which will prepare a work order.
6. **Extension cords** not approved by Facility Management Service should not be used due to the dangers posed by overloading the circuits and by the possibility of tripping over loose cords.
7. **Miscellaneous:**
 - a. Employees should be on the lookout for frayed wires.
 - b. Small metal objects or large metal objects with protruding extensions will be kept free of outlets to prevent the possible contact with the receptacle.
 - c. All electrical outlets will remain accessible at all times.
 - d. Electrical equipment will not be operated near sinks. Personnel are cautioned about water standing on the floors and counters, and attempting to operate electrical equipment when this condition exists. Do not stand in water. Additionally, be careful when using electrical cords near hot plates to insure that the insulation of the cord does not melt and expose hot wires or cause short-circuiting.

RESEARCH SOP 10

FUME AND BIOLOGICAL HOOD MAINTENANCE PLAN

1. The following **general guidelines** should be followed:
 - a. Daily inspections should be conducted by employees at the beginning of each shift. They should visually inspect the hood area for blockages, place a piece of tissue paper at the hood opening, and observe it for directional flow.
 - b. The hood should never be operated with the sash fully open.
 - c. Chemicals stored in hoods should not block airflow.
 - d. No procedures should be performed in hoods designated strictly for storage.
 - e. All fume hoods are numbered to facilitate record keeping.

2. Fume and biological hoods are inspected and rated annually by an **independent contractor**. Inspection dates and ratings are listed on stickers affixed to each hood. The Research Office insures the repair of hoods with insufficient ratings. Immediately contact the Research Office for any malfunctioning occurs. Do not attempt to work on it by any employee.