

RESEARCH SERVICE MEMORANDUM
Standard Operating Procedure (SOP)
Research Service Chemical Hygiene Plan (CHP)

1. PURPOSE: To educate Research personnel of the hazards associated with the chemicals used within Research Service.

2. POLICY: The Research Service maintains a program of educating the employees on a continuous basis and providing protection them from health hazards associated with hazardous chemicals in the laboratory. The Service keeps exposure limits below permissible limits and ensures compliance with pertinent Federal, State and local regulations to insure patients, laboratory personnel, visitors, property, and the environment are protected.

3. SCOPE: Research personnel are initially and continuous made aware of the hazards of laboratory chemicals to which they may be exposed, by means of a hazard communication program, product labeling, material safety data sheets, training, and monitoring compliance of the personnel.

4. RESPONSIBILITIES:

a. ACOS for Research and Development

- (1) Oversee all phases of the laboratory chemical hygiene plan.
- (2) Appoint the Chairman, Safety Subcommittee (who will serve as the Chemical Hygiene Officer).
- (3) Ensure investigations of incidents or unsafe condition concerning hazardous chemicals and assure prompt action is taken to prevent recurrence.
- (4) Ensure development of procedures on the use, storage, spill control and disposal of hazardous chemicals utilized.
- (5) Ensure training of employees on safe handling and disposal of hazardous chemicals utilizing the Research Service Safety Subcommittee members and resources of the Industrial Hygienist.
- (6) Ensure that hazardous chemicals are substituted, where possible, for less hazardous chemicals to minimize potential exposure and minimize waste.
- (7) Maintain a current and detailed inventory of all chemicals within Research Service and provide copies to Safety Office upon request.

b. Chemical Hygiene Officer/Chairman. Research Service Safety Subcommittee

- (1) Assume functions described in 29CFR 1910,1450.
- (2) Assist in training employees on the safe handling and disposal of hazardous chemicals, utilizing the resources of the STVHCS Safety Office.
- (3) Ensure hazardous chemicals are stored, labeled, and disposed of in compliance with Federal, State and local regulations.
- (4) Insures each lab provides and maintains a current inventory of all chemicals including biohazards and/or potential infectious agents and provide copy when requested.
- (5) Insures the Research Service Safety Subcommittee investigates incidents or unsafe conditions concerning hazardous chemicals and assure prompt corrective action is taken to prevent recurrence.

(6) Ensure Subcommittee performs monthly inspection of the Research Service and compliance with the Safety Program.

(7) Ensure the Chemical Hygiene Plan is reviewed annually by the Safety Subcommittee for any possible changes or updates. Minutes should reflect review.

c. Employees

(1) Read and comply with this policy and all other service and hospital policies pertaining to chemical hazards.

(2) Promptly report unsafe conditions or unsafe use of hazardous chemicals to their supervisors.

5. ACTION:

a. **General Procedures for work with laboratory chemicals**

(1) Eating, drinking, and chewing gum are prohibited in areas where laboratory chemicals are present. Hands should be washed before conducting these activities. Smoking is not permitted in any research area and is limited to smoking areas designated by the hospital.

(2) Food/drink is not permitted in technical work area.

(3) It is strongly advised that contact lenses are not worn in the laboratories unless splash proof goggles are worn. Contact lenses, especially soft contact lenses, will absorb certain chemicals and in addition constitute a hazard in splashes and spills.

(4) Wash hands before leaving laboratory technical area.

(5) Mouth pipetting is prohibited.

(6) Use of a fume hood or wearing of face shields and gloves and/or eye protection when handling hazardous substances is required.

(7) Hair should be secured back and off the shoulders in such a manner to prevent contact with hazardous chemicals and contaminated materials.

(8) Avoid practical jokes or other behavior which might confuse, startle, or distract other laboratory personnel

(9) Keep work area clean and uncluttered, with chemicals and equipment being properly labeled and stored, clean up the work area on completion of task or at the end of each day.

(10) Each lab will dispose of glassware that is chipped or broken in a cardboard box sealed and clearly marked "broken glass".

(11) Consult material safety data sheets (MSDS) when performing new procedures and prepare appropriate protective procedures. Also consult MSDS for proper disposal procedure. If any questions, consult with STVHCS Industrial Hygienist.

(12) Accept delivery of no chemical unless a MSDS is on file or accompanies it.

(13) Do not centrifuge uncovered specimens.

(14) Chemicals and other hazardous substances will not be routinely stored in hoods.

(15) The wearing of open toe sandals or shoes is prohibited in the laboratory.

(16) Hallways may not be used as storage areas. Access to emergency exits, emergency equipment, or utilities control should never be blocked.

(17) Needles/sharps

(a) Precautions will be taken by all hospital personnel when there is the possibility of employee skin or mucous membrane exposure to any patient's non-intact skin, mucous membranes, blood or body fluid, or applicable body fluids as defined in 2 b.

(b) Fluids to Which Standard Precautions Apply: In accordance with Centers for Disease Control Guidelines, standard precautions shall apply to blood, semen, vaginal secretions, CSF, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid and all fluids contaminated with visible blood from all patients. These precautions do not need to be applied to feces, nasal secretions, sputum, sweat, tears, urine, or vomit unless visible blood is present.

(c) Extreme caution should be used when handling needles and syringes to avoid autoinoculation.

(d) Needles should not be bent, sheared, replaced in the sheath or removed from the syringe following use. Needle and syringe should be immediately placed in a puncture-resistant container. Containers are procured from Supply and Distribution Department (SPD) by Chemical Hygiene Officer for distribution to the labs. Full sharps containers will be placed in a red plastic-lined biohazard box located in Cold Room 2 for removal by SPD.

b. Protective Apparel and Equipment

Personal Protective Equipment (PPE) includes gloves, goggles, face shields, aprons, fluid impervious gowns, masks, respirators, and safety shoes. The equipment must be available for situations when an unexpected exposure to chemical substances, physical agents or biological materials could have serious consequences. The STVHCS Safety Office can advise on the acceptability of PPE prior to purchase.

(1) Eye

(a) Chemical splash goggles and/or face shields, rather than safety glass should be used when pouring any hazardous chemicals or hazardous waste as they provide the best protection against splashes.

(b) Protective eyewear must be available in all areas where hazardous substances are utilized.

(c) Protective eyewear should be easy to clean and disinfect. Eyewear should be kept clean and maintained properly (i.e. not hung on a hook by the strap, etc.).

(d) For those employees who wear glasses, goggles must fit over the glasses.

(2) Gloves

(a) Gloves (nonlatex/powder free) will be used by all lab employees.

(b) Employees are required to wear gloves when handling all patient or animal specimens.

(c) Special acid resistant gloves will be provided in all areas utilizing acids.

(d) Appropriate protective gloves should be used whenever hand contact with formaldehyde is possible, latex examination gloves are too fragile.

(3) Other personal protective equipment:

(a) Rubber, acid-resistant aprons should be worn when pouring concentrated chemicals.

(b) Respirators must be provided in areas where there is a possibility that the air may become contaminated with excessive concentrations, chemical fumes, harmful dusts and

mists and microorganisms. Surgical masks do not provide adequate protection. Respirators are not to be provided without consultation and approval of the Industrial Hygienist.

1. Respirators must be chosen as to the hazard for which they are intended.
2. Adequate training must be provided for all personnel who may use the respirator (N95 or better). The Industrial Hygienist administers this program.

c. Special Laboratory Procedures

(1) Compressed Gases

- (a) Cylinders must be secured at all times so they cannot fall.
- (b) Valve safety covers should be left on until pressure regulators are attached.
- (c) Cylinders must be labeled clearly with name of contents and hazards.
- (d) Hand trucks or dollies with a securing device installed must be used when moving cylinders.
- (e) The use of oil, grease, or lubricants on valves is prohibited.
- (f) Do not attempt to repair damaged cylinders or force frozen cylinder valves.
- (g) MSDSs will be obtained and be available for all compressed gases being used.
- (h) Cylinder tags available from Chemical Hygiene Officer.

(2) Flammable Gases

- (a) No more than two cylinders should be manifolded together. However, several instruments or outlets are permitted for a single cylinder. Goggles are recommended.
- (b) When more than one cylinder of a highly flammable gas is to be used in one room, specific approval by STVHCS Chief of Safety must be obtained.
- (c) Secured cylinders (full or empty) can be stored in the laboratory; however, only three cylinders may be kept in the laboratory.
- (d) Valves on all flammable gas cylinders shall be shut off when the unit is unattended.

(3) Radioisotope

- (a) Wear lab coats or other protective equipment (safety goggles, gloves) at all times in areas where radioactive materials are utilized.
- (b) Wear personnel dosimeter when working with radioactive material.
- (c) Wear disposable gloves at all times; preferably wear two pairs of disposable gloves.
- (d) In the event of a spill, monitor hands and clothing for contamination before leaving the area.
- (e) Non-porous absorbent lab mats are to be used on all work benches, trays, and other work surfaces where radioactive materials are handled. These mats will be replaced as necessary in those areas that are used regularly.
- (f) Two side arm flasks, one used as a trap to prevent radioactive contaminants and other contaminants from being suctioned into vacuum lines, and a one-way vacuum filter will be used on all hospital vacuum lines.

(g) Radiation Safety Office should be contacted for the disposal of liquid wastes if greater than 0.5 uu.

(h) Dispose of solid radioactive wastes in prescribed waste storage area in presence of Radiation Safety Office personnel.

(i) Pipetting with mechanical devices only. NEVER pipette radioactive solutions by mouth.

(j) Confine radioactive solutions in covered containers or shielded containers plainly identified and labeled with name of compound, radionuclide, date, activity and radiation level if applicable.

(k) A plastic lined metal or plastic can labeled "Radioactive Material" or "Radioactive Waste" will be located in each laboratory where radioactive experiments are conducted. When more than one room is assigned to an investigator, then radioactive waste can be combined and stored in one lab.

(l) Double contain radioactive liquids and liquid waste.

(m) Disposal of food or candy wrappers, and soft drink or coffee cups in laboratory trash containers where radioactive experiments are conducted is prohibited.

(n) A log is kept of the amount of radioactivity stored and used in procedures.

(o) A permanent record will be kept of the weekly survey results, including negative results. The record will include:

1 Location, date, and type of equipment used.

2. Name of individual conducting survey.

3. Drawing of area surveyed, identifying relevant features such as active storage areas, active waste areas, etc.

4. Measured exposure rates, keyed to location on drawing if required.

5. Detected contamination levels keyed to location on drawing.

6. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.

7 Action levels at which corrective action must be taken: Skin decontamination of radioisotope spills in the chemical laboratory.

(a) Wash contaminated area or areas thoroughly with mild soap and large quantities of water.

(b) Special attention should be directed to areas between the fingers and around the fingernails.

(c) Rinse thoroughly and repeat until monitoring indicates a background level.

(d) If the above steps are not sufficient, scrub with a soft brush using a mild soap with a heavy lather and tepid water. Use only light pressure on brush, do not bend bristles or erode skin.

(e) Rinse thoroughly and monitor.

(6) Notify Radiation Safety at earliest opportunity.

(p) More detailed information concerning radioisotope procedures may be found in the STVHCS Radiation Safety Handbook (available in the Radiation Safety Office, Rm A412, ext. 4035)

(4) **Caustic Materials**

(a) If quantities of acids or alkalis are being used, use a shield or barrier of some sort so that breaks and spills can be controlled. Spill cleanup materials are located in Room V203.

(b) Wear aprons, gloves, and eye protection when handling highly corrosive materials as recommended on MSDS.

(c) Do not mouth pipet.

(d) Do not sniff reagents.

(e) Dilution: Use great care and add reagents SLOWLY. Always add acid to water. Allow acid to run down the side of the container and mix slowly by gentle rotation. Avoid overheating.

(f) Transport using heavy plastic bottle carriers provided.

(5) **Toxic Chemicals**

(a) Material Safety Data Sheets will state the recommended limits or OSHA-mandated guidelines for exposure to toxic chemicals.

(b) When an OSHA permissible Exposure Limit (PEL) value for a chemical is less than 50 ppm or 100mg/m³, then the person using the chemical should conduct the work in an operating fume hood. If a fume hood is not available, in accordance with the OSHA respirator requirements (29 CFR 1910.134), a proper respirator will be used by the operator and all those who could be potentially affected by the exposure.

(c) Whenever handling of toxic substances with moderate to large vapor pressures is likely to exceed air concentration limits, laboratory work with such liquids and solids will be conducted in a fume hood.

(d) Toxic compounds are stored according to the nature of the chemical, with appropriate security employed where necessary.

(e) "Poison Control Network" telephone number is posted (1 800 222-1222).

(6) **Reactive Chemicals**

(a) Reactivity information is sometimes given in manufacturers' MSDSs and on labels. A reactive chemical is one which is either (i) ranked by the NFPA as 3 or 4 for reactivity; (ii) fits the OSHA definition of unstable in 29 FR 1910.1450; (iii) or is known or found to be reactive with other substances.

(b) Reactive chemicals will be handled with all proper safety precautions including segregation in storage, prohibition on mixing of even the smallest quantities with other chemicals without prior approval, and the use of appropriate personal protection equipment.

(7) **Formaldehyde**

OSHA issued a revised standard for the exposure to formaldehyde in 1987 (29CFR 1910.1048). The revision requires evaluation of Pathology, Anatomy and Histology laboratories and employees working in these areas. Depending upon results of the monitoring, the revised standards may require periodic monitoring, signage, implementation of engineering and work practice controls, respiratory protection, medical surveillance, record keeping, and employee training.

(a) The STVHCS Industrial Hygienist will perform exposure monitoring periodically to determine exposure levels of formaldehyde to employees. The permissible exposure level

for an 8-hour time weighted average is 0.75 parts per million (PPM), and the short-term (15-minutes) exposure level is 2.0 PPM (OSHA 29CFR1910.1048).

(b) The employer must assure that no employee is exposed to an airborne concentration exceeding .75 part formaldehyde per million parts air as an eight hour TWA. To be accomplished by:

1 Engineering controls, i.e., hoods, ventilation changes, etc.

2 Respiratory protection.

(c) Employees at risk of potential overexposure to formaldehyde are monitored by badge on an annual basis when exposure has been shown to exceed the standard.

(d) Monitoring is to be done by the Industrial Hygienist who will review and report results within 10 working days to the ACOS for Research.

(e) All detectable results must be shared with the employee affected and if an overexposure has occurred the Employee Health physician. Any overexposure will be medically evaluated by an employee health or triage physician.

(f) Written plans must be implemented to reduce exposure.

(g) Areas identified as exceeding permissible exposure limits must be identified with following warning:

1 DANGER: Irritant and possible cancer hazard.

2 FORMALDEHYDE AUTHORIZED PERSONNEL ONLY

(h) Biological samples preserved in formaldehyde should not be autoclaved.

(8) **Xylene**

(a) Exposure to xylene is not to exceed 100 ppm calculated as an 8 hour time weighted average (TWA). This is action level.

(b) Exposure is not to exceed 150 ppm per 15 minute short term exposure limit STEL.

(c) Any level exceeding recommended exposure requires medical evaluation by an employee health or triage physician.

(d) Employees at risk of exposure are monitored by badge on an annual basis when exposure exceeds the standard.

(e) Monitoring is done periodically by the STVHCS Industrial Hygienist.

(f) Results will be reviewed and submitted to the ACOS for Research by the Industrial Hygienist. The employee will be notified in writing by supervisor within 10 days of results of dosimetry.

(g) Written plans must be implemented to reduce exposure if there is any indication of overexposure..

(9) **Carcinogens -** Use of carcinogens requires the following:

(a) Designation of specific work areas with restricted access.

(b) Listing of personnel authorized to work in the area

(c) Inventory of types of reagents on hand.

- (d) Personnel must be trained in safe handling procedures for the carcinogenic chemical.
- (e) Records of exposure must be maintained.
- (f) Procedures for monitoring, storage, decontamination, disposal and emergency procedures must be established.
- (g) Medical evaluation is required in the event of any skin contact with a carcinogenic agent.
- (h) Protective clothing should be used and cleaned regularly.
- (i) Handwashing is required immediately after handling.

(10) **Biohazards**

- (a) Designation of specific work areas with restricted access.
- (b) Listing of personnel authorized to work in the area.
- (c) Inventory of types of biohazards on hand.
- (d) Personnel must be trained in safe handling procedures for biohazards.
- (e) Records of exposure must be maintained.
- (f) Procedures for monitoring, storage, decontamination, disposal and emergency procedures must be established.
- (g) Protective clothing must be used (minimally, disposable gloves, masks (N95)).
- (h) Handwashing is required immediately after handling.
- (i) The STVHCS Infection Control personnel (ext.5108) are available for consultation regarding any biohazard.

(11) **Perchloric Acid**

- (a) Use of goggles or other protective eyewear is mandatory.
- (b) Always transfer acid over a basin in the sink.
- (c) Heating of perchloric acid must be performed in fume hood.
- (d) Perchloric acid is to be checked monthly for discoloration; if discoloration is noted, the acid should be discarded following methods in Material Safety Data Sheets. Any excess of perchloric acid will be done in consultation with the Industrial Hygienist.

(12) **Picric Acid** - will be handled in accordance with VA policy memorandum #001-04-14.

(13) **Peroxide Forming Materials** - handle in accordance with VA Policy memo #001-04-13.

(14) **Mercury** - Must be handled in accordance with VA policy memorandum #001-04-31.

(15) **Inhalation anesthetics (isoflurane)**

- (a) Isoflurane must be used with a scavaging system that exhausts out of room.
- (b) Personal exposure monitors are available to all personnel working with isoflurane. Monitors and results maintained by Chemical Hygiene Officer.

d. **Procurement**

- (1) When ordering chemicals, MSDS must be requested and listed as line item on the order. Upon arrival, the lab technician must place a copy of the MSDS in the centralized location master binder on 3A, 3B or S202 for the second floor labs. MSDSs are also available on intranet and internet sites.
- (2) Every effort should be made to find less hazardous substitutes for more hazardous chemicals, provided a suitable substitute is available

e. **Storage**

(1) **Flammables**

- (a) Quantities of three liters or more must be stored in a safety cabinet. Smaller one-shelf flammable cabinets should be requested if required within lab.
- (b) Small quantities (working amounts) may be stored on open shelves, however, bulk storage (5 gallons or more) must be stored in an approved flammable storage cabinet.
- (c) Ether. Use of ether within labs is not permitted.
- (d) Store flammable liquids appropriately. Flammable materials may be stored in a refrigerator that is explosion proof.
- (e) The transfer of flammables from one metal container should be preceded by electrical bonding in order to avoid a static spark that may result from pouring the solvent.
- (f) No flammable will be stored on the floor.

(2) **Acids**

- (a) Quantities of three liters or more of acids must be stored in acid safety cabinet within the lab or in the acid/corrosive cabinet in V203.
- (b) In addition to required chemical labeling, a label must be placed on container indicating investigator's name, date placed in storage, and the name and number of the contact person.

(3) **Perchloric Acid**

- (a) No organic materials should be stored in the hood containing perchloric acid.
- (b) Do not allow perchloric acid to come in contact with strong dehydrating agents (concentrated sulfuric acid, anhydrous phosphorous pentoxide, etc.)
- (c) No more than five five-liter bottles are to be stored in the laboratory, and none stored on the floor.

(4) **Water-Reactive Chemicals** - Chemicals are kept in a cool and dry place

(5) **Oxidizers** - Oxidizers are stored away from flammables, combustibles, and reducing agents (e.g. zinc, alkaline metals)

(6) **Toxic Compounds** - Toxic compounds are stored according to the nature of the chemical, with appropriate security employed where necessary.

f. **Environmental Monitoring**

The Industrial Hygienist is responsible for coordinating routine and non-routine air monitoring to minimize exposure to potentially hazardous materials, including irritating odors/fumes of unknown origin. Personnel should notify the IH of potential hazards. The following are routinely monitored (*monitoring requested by Research Service):

| | | |
|----------------|------------------------|----------|
| Formaldehyde * | Ethylene oxide | Mercury |
| Nitrous oxide | Waste anesthetic gases | Asbestos |
| Xylene * | Toluene * | |

g. **Housekeeping and Maintenance**

- (1) Housekeeping

- (a) Floors – EMS is responsible for routinely cleaning all floors
- (b) Bench tops and other work surfaces such as fume hoods and laminar flow hoods - lab personnel are responsible for daily cleaning
- (c) Telephones - should be routinely disinfected by the user.

(2) Maintenance

- (a) Routine equipment maintenance - Biomedical Engineering Service performs maintenance
- (b) Hoods – must be inspected and certified on a yearly basis. Hoods without current certification may not be used and should be labeled as Out of Use until inspected.
- (c) Eye wash fountains
 - (a) Weekly – Lab personnel must flush, recap, and annotate the eyewash log weekly for each eyewash in the lab or in the hall outside the lab. Work order should be submitted for repairs. Eyewash log will be checked during monthly safety committee inspections and violations recorded.
- (d) Emergency drench-type showers - Safety Office will inspect quarterly.
- (e) Fire extinguishers - Safety Office will inspect all fire extinguishers monthly.

h. Inspections

- (1) Semi-annual - Safety Office will conduct an inspection
- (2) Monthly - Research Safety Subcommittee members will perform inspections.
- (3) Annual - The STVHCS Safety Committee reviews and evaluates effectiveness of Research Safety Program.
- (4) Periodic – Administrative Safety rounds, VISN safety inspections, NRC visits

i. Medical Program

(1) Routine Surveillance

Employee Health administers the surveillance program as outlined by OSHA regulations, for all VA employees who handle or are exposed to hazardous materials. The following are currently monitored by Employee Health when an overexposure is shown:

- (a) Formaldehyde
- (b) Asbestos
- (c) Anticholinesterases/insecticides
- (d) Chemotherapeutic agents
- (e) Ethylene oxide
- (f) Nitrous oxide
- (g) Noise
- (h) Ionizing radiation
- (i) Bloodborne pathogen exposure

(2) Pregnancy Surveillance

Supervisors shall inform female employees of child-bearing age about reproductive hazards in the laboratory to ensure safety of pregnant employee and her unborn child. Pregnant employees shall notify their supervisor as soon as the pregnancy is known. MSDS should be consulted for special precautions to limit unnecessary exposure to the unborn child and change chemical reagent to a less toxic one when possible. Pregnant employees are encouraged to contact Industrial Hygienist and/or Radiation Safety office for additional information and evaluation of their work environment relative to the individual's exposure.

j. Emergency first aid**(1) Eye**

- (a) In the event of a chemical splash to the eyes, ask coworkers to help you wash the eyes thoroughly. Lift eye lids to avoid pooling of chemicals under eyelids. Flush with water for 15 minutes.
- (b) Seek medical attention immediately
- (c) Report accident to immediate supervisor
- (d) Supervisor should initiate "Report of an Accident" and CA-1 in the VISTA/DHCP ASISTS accident database, information printout to the Research Administrative Officer.

(2) Cuts, punctures and needlesticks

- (a) In the event of a parenteral or mucous-membrane exposure to blood or other potentially infectious bodily fluids, the employee will report incident to supervisor or to Infection Control X4765. Employee should report immediately to Employee Health Service (MF 8am-4:30pm) or to Triage (other hours and holidays) the same day as the incident. Employee will submit VA Labor Form CA-1 (Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation) to supervisor. The supervisor will input the incident in the ASISTS computer program.
- (b) If the objects or bodily fluids which caused the injury are contaminated with patients, or research animal specimens, identify the specimen with the patients name or animal identification for further evaluation and investigation by supervisor. Clean affected area immediately with surgical soap. Consult Employee Health at once.
- (c) The Employee Health Clinic is responsible for initiating an investigation of the potential exposure, to include a careful history, identification of the source of the needle contact or mucous membrane exposure, and initiate appropriate studies to determine the need for treatment. Counseling for AZT prophylaxis will be provided by Employee Health Service of Chief Medical Office of Triage at the time of initial evaluation.
- (d) Needlestick packets can be obtained from Employee Health/Urgent Care.
- (e) If the injuries are clean cuts, punctures, and needlesticks, clean the affected area immediately with surgical soap, then flood or soak affected area in antiseptic fluid. Bandage to prevent infection.
- (f) If the injuries are dirty cuts, punctures, or needlesticks, i.e., those contaminated with blood or body fluids or bacterial agents, proceed as above as long as the object which caused the wound is not left in the wound.
- (g) If the object causing the injury is not easily removed, do not attempt to cleanse the area. Doing so may cause further damage. Consult Employee Health immediately.
- (h) Report all accidents of any degree and consult Employee Health. Needlesticks are tracked and exposures investigated by the STVHCS Safety Office.

(3) Chemical Burns

- (a) Corrosives can cause second or third degree burns. These chemicals include alkalis such as sodium hydroxide and common acids such as hydrochloric, sulfuric, and nitric.
- (b) Chemicals should be diluted and washed off with copious amounts of water. Minor splashes and spills can be flooded in a sink. Larger splashes and spills require the use of the emergency drench-type laboratory shower. Enlist the help of coworkers. Some chemical powders should be brushed off the skin, before flooding with water, to avoid further skin and tissue damage. Always consult the chemical manufacturer's MSDS for emergency first aid procedures BEFORE working with any chemical.

k. Chemical Inventories

Each lab must maintain a complete inventory of all chemicals utilized within the lab and submit to the Research Office when required. A copy of all lab chemical inventories will be maintained in a binder with the master copy of MSDS in Room S202, 3A, and 3B. The Research Office will forward a copy to the Safety Office and also maintain a copy within the Research Office, Q203

l. Accident Reporting

- (1) Always refer to the most current Accident/Incident Investigation and Reporting Policy Memo for procedures and delegated responsibilities. Employee should promptly report all accidents/illnesses/incidents to their supervisor. All incidents that involve VA or WOC employees shall be reported via the VISTA ASISTS computer accident reporting program. All accidents shall be documented properly in a timely manner.
- (2) The injured employee submits form CA-1 (Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation) electronically if the accident results in an injury or CA-2 (Federal Employees Notice of Occupational Disease and Claim for Compensation) for occupational disease.
- (3) Supervisors will conduct an investigation of the accident/incident. When applicable, this will be accomplished with the assistance of the hospital safety specialist.
- (4) Medical records will be retained in accordance with the requirements of State and Federal regulations.

m. Signs and Labels

- (1) Signs should be posted:
 - (a) Emergency telephone numbers of emergency personnel, supervisors, and laboratory workers.
 - (b) Location signs for safety showers, eyewash stations, and other safety and first aid equipment.
 - (c) Location of emergency exits.
 - (d) Location of spill kits.
 - (e) Location of MSDS.
 - (f) Warnings at areas where unusual hazards exists such as radioactive materials, x-ray equipment, etc.
 - (g) Location of Personal Protection Kits
- (2) Chemical labeling required:
 - (a) Chemical identity
 - (b) Appropriate hazard, i.e., caustic, corrosive, poison irritant, flammable, carcinogen, etc.

- (c) All chemical solutions of 1% or greater must bear same hazard warning label as concentrated chemical.
- (d) Date received
- (e) Expiration date, if any
- (f) Date opened
- (g) Storage requirements
- (h) In addition to the above, chemicals stored in common use cold rooms must be labeled with investigator name, date, contact person, and phone number.

n. **Spills and Accidents**

(1) **Chemical spills**

- (a) All spills must be reported to the Safety Office (Rm. 034 or ext. 14039). Spill control kits and protective equipment are provided in Room V203. Personnel should use appropriate protective equipment and clothing to minimize chemical exposure during spill clean-up. Employees should be trained on the proper use of spill kits.
- (b) Mercury Spills - ventilate area; evacuate personnel and patients from the area; immediately notify EMS (ext. 4063 including after hours) for cleanup and Industrial Hygienist (ext. 4039) as to location and degree of spillage.
- (c) Acid-base spills - Neutralize spill at once, using spill kits provided in room V203. Special protective equipment, i.e., goggles, gloves, masks, fluid impervious gowns should be used for clean up. For a large spill, ventilate the area and evacuate the area. Notify Industrial Hygienist.
- (d) Large Mixed Spills - Ventilate area, evacuate area immediately and notify Industrial Hygienist . Never attempt to clean up any spill larger than can be accommodated by the spill kits.

(2) **Biological Spills**

- (a) Large spills with significant aerosol formation - evacuate area immediately and notify Industrial Hygienist and/or Infection Control Program Manager (ext. 5108).
- (b) Small spills with aerosol formation - place paper towels over spill, flood with amphyll or 5% sodium hypochlorite, leave for 10 minutes, pick up contaminated materials with gloves, and dispose in biohazard bags and autoclave.

(3) **Spill Evaluation**

- (a) All spills and near spills will be carefully analyzed by Research Safety Subcommittee, and STVHCS Safety Committee. Following analysis, results will be given to all personnel to prevent further incidents.

o. **Training**

- (1) General - The supervisor shall insure a copy of the chemical hygiene plan (CHP) will be readily available to all personnel working in the lab. Additional copies may be obtained from the Research Office. Supervisors shall insure employees receive information on safe handling practices to avoid exposure above permissible limits. This should be documented in staff meeting minutes. Supervisors must convey the information to those not present during presentations.

- (2) Orientation/Annual Training. Supervisors must provide a safety orientation prior to the individual starting to work in the lab. Supervisors must also ensure all employees complete all mandatory safety training and the site-specific training on an annual basis.

p. **Hazardous Waste Disposal**

- (1) General - VA Policy Memorandum 001-04-36, "Waste Assessment and Disposal," describes the hazardous waste disposal procedures for the VA. The policy fully describes procedures for waste collection, segregation, storage, and transportation including materials that can be drained, disposed, or incinerated. MSDS should be consulted for manufacturers recommended disposal method. No listed hazardous waste may be disposed of without prior approval of the Industrial Hygienist.
- (2) Liquid waste sewer disposal - Some liquids may be flushed into the sewer system with copious amounts of water provided chemical volume is minimal. Disposal through the sewer system must comply with all Federal, State, and local regulations and ordinances. Consult Industrial Hygienist when in doubt as to whether a chemical can be disposed via the sewer system.
- (3) Contractor disposal (Formaldehyde, methanol and xylene) - The Safety Office should be provided a list of chemicals to be picked up (chemical, quantity, investigator & room). Lab personnel should ensure chemicals to be picked up are labeled, have an accompanying MSDS, and are stored in compatible groups. The Safety Office will advise the lab when the contractor will be on site for pickup. The Safety Office will maintain records on chemicals disposed.
- (4) Biological waste - Hazardous waste which includes animal waste, human blood and blood product, microbiological waste, pathological waste and other material which has become contaminated with the above material in such a way as to become an agent for transmission of diseases will be autoclaved.

6. APPENDICES ATTACHED:

- A. MSDS – Web site locations
- B. Incompatible Chemicals
- C. Shock Sensitive Materials
- D. Low Flash Point Chemicals
- E. High Toxicity Chemicals
- F. Carcinogens

7. REFERENCES:

STVHCS Policy Memorandum 001-03-16, "Hazard Communication Program"

STVHCS Policy Memorandum 111-04-11, "Isolation Precautions"

STVHCS Policy Memorandum 001-04-21, "Procedural Response to Bloodborne Pathogen Exposure"

STVHCS Policy Memorandum 001-04-36, "Waste Assessment and Disposal"

STVHCS Policy Memorandum 001-04-13, "Peroxide Forming Compounds,"

STVHCS "Radiation Safety Handbook" 2003.

STVHCS Policy Memorandum 001-04-43, "Formaldehyde Policy"

STVHCS Policy Memorandum 001-04-31, "Mercury Management Policy"

STVHCS Policy Memorandum 001-04-14, "Picric Acid Policy".

STVHCS Policy Memorandum 001-04-29, "Personal Protective Equipment and Clothing Policy"

STVHCS Policy Memorandum 001-04-33, "Respiratory Protection Program"

STVHCS Policy Memorandum 001-04-20, "Chemical Spill Clean-up Policy"

STVHCS Policy Memorandum 00104-23, "Fire Response Procedures"

8. RESCISSION: Research Service Memorandum 05-4, dated April 14, 2005.
9. RECERTIFICATION DATE: June 27, 2011

//signed//

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