

April 2019

VAMHCS RESEARCH SERVICE LABORATORY SAFETY MANUAL

Please note that the policies and procedures stated in this manual apply directly to research conducted in the VAMHCS facilities. The University of Maryland Baltimore's Environmental Health and Safety (EHS) lab safety, radiation safety, and waste management policies and procedures may differ. It is the responsibility of the Principal Investigators and team members to be knowledgeable of both institutions safety policies and adjust their practices based on location of research.

By completing the review of this document and the assessment on TMS you agree to comply with the policies and practices contained in this manual.

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1. QUICK REFERENCE EMERGENCY PHONE NUMBERS

VAMHCS EMERGENCY CONTACTS	
Police	X57300
Fire	X56999 “CODE RED”
Medical Emergency	X56999 “CODE BLUE” Say “Code Blue” and provide details on the location only
Emergency Department (ED)	X57272 VAMC ground floor, 1-D
NEEDLE STICK Emergency Pager	410-447- STIK (7845)
Occupational Health (Employee Health)	X54323, Room 1D-118 X55061, Room 2C-59
Facilities & Engineering	X57020 (After Hours Medical Administration Assistant [MAA]): x55144 / 57020 or call Operator at “0”)
Radiation Safety Officer Oscar James	410-605-7032/7020 Cell 410-804-0225
Safety Officer Emmanuel Mbong	X54548/57020 Pager 410-447-4470
Industrial Hygienist Sarah Jones	X53697
Emergency Management Coordinator Dawn Ivancik	X56024
Chemical Hygiene Officer: Tom Bowen	X54848, Room 3D-148 Safety Data Sheets (SDS) for all chemicals are available online on the VAMHCS homepage under: “Quick Links”. http://vaww.ceosh.med.va.gov/ceosh/MSDS.shtml
Green Environmental Management System (GEMS) Coordinator Jennifer Dallaire	25227 (Perry Point) Jennifer.Dallaire@va.gov

Environmental Management Service (EMS) (Housekeeping)	x 7064 Pager 410-447-0490
Biosafety Officer (UMB)	410-706-7845
ABSL-3 Facility Director Irena Alexeeva, Ph.D.	410-605-7000 x56462 Cell 443-472-2084
Veterinary Resources Dr. Ned Kriel	UM SOM 410-706-3540 Cell 443-677-9034
RESEARCH SERVICE ADMINISTRATIVE OFFICE	
	410-605-7130; Room 3D-150 After hours <u>Non-Medical</u> Emergency: Engineering: x7020 Tom Bowen: 443-302-6566 Carol Fowler: 240-454-6219 After hours <u>Medical</u> Emergency: x6999 report “Code Blue” or “Rapid Response Team” and the location of the emergency.
Associate Chief of Staff (ACOS/R&D) and Research Integrity Officer: Thomas Hornyak, MD	X57130
Deputy ACOS/R&D: Carol Fowler, PhD	X56510
Laboratory Manager: Tom Bowen	X54848
Human & Animal Research Protections Officer (HARPO): Frederick Ivey, PhD	X56582
Subcommittee on Research Safety (SRS): Chair: Heidi Ortmeyer, PhD SRS Coordinator Tina McGinley, Acting	X55419 X56568
Research Compliance Officer: TerryLisa Johnson	X56544

2. OVERVIEW OF THIS MANUAL

*The purpose of this manual is to provide you with the basic elements of laboratory safety, the major safety policies, and procedures that govern this VA facility and to provide you a reference for contact numbers when assistance is needed or an emergency occurs. Your well-being and that of your fellow laboratory workers is of the utmost importance to Research and Medical Center management and is dependent upon your efforts to assure the same. It is **your responsibility** to read, understand, and adhere to the practices and procedures outlined in this manual. Failure to comply with the following practices and procedures may result in termination of access to this facility.*

The Subcommittee on Research Safety (SRS) reviews this manual annually and will update it to help provide guidance and support in your effort to remain compliant with the VAMHCS's required safety policies.

We welcome any comments or suggestions on revisions to this manual. Please contact the R&D Service if you have information to contribute.

Please retain this manual for your future reference and use the R&D Service website (www.maryland.research.va.gov) for additional resources.

3. YOUR RIGHT TO KNOW

By law under the requirements of OSHA (the Occupational Safety and Health Administration), the federal government or any employer must protect your **RIGHT TO KNOW** about hazardous substances present in your work environment. You should become familiar with the VAMHCS Occupation Health and Safety Plan (VAMHCS Policy 512-001/OPS-134).

4. MEDICAL CARE / INJURY REPORTING

- a. If you work in VANMHCS space, regardless of how you are paid (whether you are a VA-paid employee or a WOC or an IPA), you are treated as a VA employee for injuries or illnesses experienced at work.
- b. In case of any major medical emergency:
 - If the person has stopped breathing, call **x56999** and report **“Code Blue”** and **the location of the emergency**.
 - If the person is breathing, call **“x56999”** and report **“Rapid Response Team”** and **the location of the emergency**.
 - If able, contact your supervisor for assistance.

- **IF unable to walk, CALL FOR HELP or assistance.** If able to walk without active bleeding, proceed to either Occupational Health located on the second floor Rm. 2C-59 or the EMERGENCY ROOM located on the first floor, 1D. Present your VAMHCS Identification card.

c. Report all injuries to your supervisor and to the Research Office (x57130). Supervisors must then ensure an incident report is entered into ECOMP.

d. Discuss with your supervisor on whether you should also go to the University of Maryland Immediate Care Center or report the injury/illness in the UM system. The procedures and forms can be found here:

http://www.ehs.umaryland.edu/Insurance/Workers_Comp/index.cfm

5. REPORTING REQUIREMENTS FOR INJURIES OR NONCOMPLIANCE ISSUES

a. Injuries, exposures and reportable incidents should be reported as below:

	Event	Method	Timing	How
1	Human Deaths	oral notification of the VAMHCS Subcommittee on Research Safety (SRS)	Immediately upon becoming aware of any human death that may be the result of work (or other activity) in a research laboratory or dedicated research area (e.g., research specimen storage area).	<ul style="list-style-type: none"> • Also notify ACOS/R&D and HARPO immediately • Contact SRS Chair directly or through ACOS/R&D or HARPO. • Notify IRB if associated with an IRB-approved project (See “Reportable Events – Human” chart.)
		written notification of the SRS	within 5 business days of becoming aware of the death	Cc ACOS/R&D, DACOS, and HARPO
2	Human Accident, Injury, Illness, or Exposure	written notification of the SRS	Within 5 business days after becoming aware of any serious accident, injury, illness, or exposure (other than those that result in death) that may be the result of work (or other activity) in a research laboratory or dedicated research area (e.g., research specimen storage area)	<ul style="list-style-type: none"> • Also notify ACOS/R&D, DACOS, and HARPO immediately • Contact SRS Chair directly or through ACOS/R&D or HARPO. • Emails should Cc SRS Chair, ACOS/R&D, DACOS, and HARPO.

	Event	Method	Timing	How
3	Reportable Incidents Under Applicable Federal Standards	<u>written</u> notification of the SRS	Within 5 business days after becoming aware of any incident related to research safety that is reportable under relevant VHA Handbooks or applicable Federal requirements, including Occupational Safety and Health Administration (OSHA) requirements.	<ul style="list-style-type: none"> Also notify ACOS/R&D, DACOS, and HARPO immediately Contact SRS Chair directly or through ACOS/R&D or HARPO. Emails should Cc SRS Chair, ACOS/R&D, DACOS, and HARPO.
4 ¹	ORC audit findings reported by the RCO	ORC <u>written</u> report to SRS	Scheduled SRS meetings	<ul style="list-style-type: none"> See R&D Service Process Module 030
5	Laboratory Decommissions and Reassignments	<u>Oral/email conversations</u> between Principal Investigator and ACOS/R&D	<u>As soon as</u> Principal Investigator decides to vacate laboratory space or becomes aware of a plan to decommission of reassign laboratory space	<ul style="list-style-type: none"> See R&D Service Process Module 026
		<u>written</u> decommissioning plan to SRS and ACOS/R&D	Within 1 week of notifying the ACOS/R&D and SRS	

- **Work-Related or Research-Related Injuries.** Any apparent work-related injury or illness requiring more than minor medical intervention, such as basic first aid.
- **Work-Related Exposures.** Any apparent work-related exposure of personnel to hazardous, toxic, or infectious materials at greater than routine levels (i.e., Permissible Exposure Limits or Infection Threshold).
- **Reportable Incidents Under Applicable Federal Standards.** Any incident reportable under applicable Federal standards, including but not limited to: VHA Handbooks on Research Safety; NIH Office of Biotechnology Activities (OBA) guidelines; Occupational Safety and Health Administration requirements; Center for Disease Control (CDC) requirements, Department of Transportation requirements, and Nuclear Regulatory Commission (NRC) requirements.

¹ Local R&D Service item. This is not specified in 1058.01.

b. Physical security concerns that pertain to research laboratories or other areas used exclusively for research should be reported as below:

	Event	Method	Timing	How
1	Any intrusion, physical security breach, break-in, or other security violation that occurs in dedicated research areas	<u>oral</u> notification of the VAMHCS Police Service	<u>Immediately</u> after becoming aware	<ul style="list-style-type: none"> Also notify ACOS/R&D and HARPO immediately
		<u>written</u> notification	within <u>5 business days</u> of the event	<ul style="list-style-type: none"> Cc ACOS/R&D, DACOS, SRS Chair and HARPO
2	Any finding by any entity other than ORO of noncompliance with research laboratory security requirements.	<u>written</u> notification	Within <u>5 business days</u> after becoming aware	<ul style="list-style-type: none"> Also notify ACOS/R&D, DACOS, and HARPO immediately Contact SRS Chair directly or through ACOS/R&D or HARPO. Emails should Cc SRS Chair, ACOS/R&D, DACOS, and HARPO. Written report to SRS
3	Any unplanned suspension or termination of research by the ACOS/R&D or another facility official due to concerns about research laboratory security			
4	Any other deficiency that substantively compromises the effectiveness of the facility's research laboratory security program			
5	Events/incidents in other areas whose use for VA research is limited or infrequent	<ul style="list-style-type: none"> Same as above, as applicable Contact SRS Chair, ACOS/R&D, DACOS or HARPO for questions or guidance. Emails should Cc SRS Chair, ACOS/R&D, DACOS, and HARPO. 		

c. Examples of noncompliance and other reportable incidents include, but are not limited to:

- Any finding of noncompliance with research safety requirements by any VA office (other than ORO) or any other Federal or state entity.
- Premature initiation of VA research before receipt of SRS, R&D and/or IACUC approval without written notification from the ACOS for Research that the project may begin.
- Conduct of research requiring safety review without required approval by the SRS, RDC or other relevant research review committees.
- Conduct of research requiring safety review without required approval by the SRS, RDC or other relevant research review committees.

- Continuation of research beyond the expiration date established by the SRS without appropriate renewal of the protocol, even if the research is a continuation of work that was previously approved by all relevant research review committees.
- Failure to implement changes required by the SRS as a condition of approval.
- Unauthorized deviation from an SRS-approved protocol. **NOTE:** *The SRS must be consulted in advance of implementing changes to determine if a protocol modification requires SRS approval.*
- Failure to comply with continuing review requirements of the SRS or other relevant research review committees.
- Conduct of research by unauthorized personnel, or personnel who lack appropriate training.
- Any noncompliance or other deficiency that substantively compromises the effectiveness of the facility's research safety programs.

6. LABORATORY DECOMMISSIONS

The Principal Investigator or Laboratory Director must obtain authorization (i.e., permission) from the SRS and the ACOS for Research prior to reassigning, vacating, converting to non-laboratory use, or otherwise decommissioning existing laboratory space that requires identification and disposal of hazardous materials, infectious agents, or equipment between uses. The request for authorization to decommission laboratory space must be made in writing as soon as s/he becomes aware of the need to vacate and/or decommission a laboratory space, no later than 6 weeks prior to implementation. Contact the R&D Office (ext. 57130) for R&D Process Module 026, "Laboratory Decommissions, Deactivation, and Reassignments". At the same time, the Principal Investigator must contact VAMHCS GEMS Coordinator to arrange for hazardous chemicals disposal. Please see R&D Chemical Hygiene Plan and Paragraph 11 of this Manual.

7. LABORATORY ACCESS RESTRICTIONS

- **Children aged 16 and below are not permitted in the laboratory areas.**
- Visitors / unauthorized personnel wishing to visit research laboratories or offices in restricted VA areas (areas requiring key card access) **MUST** be signed in at the R&D Office, Room 3D-150, in order to receive and wear a visitors badge and be escorted while in restricted VA laboratory areas. On leaving, they are to return to the R&D office to sign out and return the visitors pass.
- Visitor access is not to be used in lieu of obtaining “without compensation” (WOC) appointments for laboratory workers.
- Investigators or laboratory managers found to violate visitor access rules are at risk of repercussions including loss of access to the laboratory area.

8. MANDATORY TRAININGS

The R&D Service sponsors an annual in-person safety training session. All personnel that will be working in research areas, including VA employees, WOC employees, students, and/or student volunteers are expected to attend or to view videotaped sessions at least annually.

Required Annual Training Includes:

- a. Fire Safety and evacuation plans
- b. Blood Borne Pathogens and Infection Control
- c. Hazardous Materials Management, Chemical Purchasing and Safety
- d. Radiation safety training for those using ionizing radiation
- e. Emergency Preparedness Training
- f. Hazardous Waste Management
- g. Biosecurity
- h. In addition, Investigators and Laboratory Managers are required to provide and document safety trainings that are specific to the laboratory’s activities and to the individual team member’s assigned duties. Team members must feel comfortable with conducting their assigned tasks and must contact the Principal Investigator, Lab Manager or the R&D Service with any training concerns. See

R&D website for details: [VA Maryland Research and Development - Laboratory Safety Training - VA Maryland Health Care System](#)

9. PHYSICAL HAZARDS

- a. Prior to working with human pathogens, read the following VAMHCS Policies: “Blood Borne Pathogens” (512-101/MC-005), “Exposure Control Plan” (512-11/COS-IC-002), “Guidelines for Hand Hygiene” (512-11/COS-IC-006), and “Standard Precautions” (512-11/COS-IC-012), and consult your supervisor to assess your risk for infection from blood borne diseases.
- b. All employees will be current on their Tetanus vaccinations.
- c. Before working with human blood or tissues consult Occupational Health to receive Hepatitis B vaccinations or sign a declination form.
- d. If pregnant or you are planning to become pregnant you should arrange a consult with Occupational Health to evaluate your work environment as to potential hazards that may affect your pregnancy, as well as your Primary Care Physician.
- e. Prior to working with or obtaining access to the VAMHCS animal facility, you will need to complete the VA Occupational Health and Safety (OHS) questionnaire related to exposure to animal allergens, which is reviewed by Occupational Health. This questionnaire must be submitted ANNUALLY!
- f. Persons working with animals should consult their supervisor as to the need for a rabies vaccination or related measles vaccination depending on which species of animals you may work with.

10. EMERGENCY PROCEDURES

Become familiar with the “R&D Disaster/Emergency Preparedness Plan” (VAMHCS SOP 151/R&D-002).

a. KNOW YOUR AREA:

- The fire alarms nearest your laboratory work areas.
- The fire extinguishers nearest your laboratory work areas
- The nearest stairwells in case elevators are not operative

- Your “muster points”: Conference/Lunch room (3C138) so all persons can be accounted for and receive more information and further instructions. If room 3C138 is not safe, report to R&D office room 3D150. If you leave the building, inform your supervisor, and meet at the corner of Green St. and Fayette St. It is important for your supervisor to be made aware of where you are so that s/he knows whether you are safe.
- The eye wash and shower stations nearest your laboratory work areas
- Location of chemical spill kits: Rooms 3C-101, 3C-111, and 3C-127.

b. FIRE or SMOKE hazard:

- **If you are the first to note a fire or excessive smoke in an area, utilize the “RACE” plan:** Rescue

Alarm

Confine

Extinguish

- **Rescue** all persons from the fire area that you can reach safely.
- **Alarm** via manual pull stations that are located at all stairwells. Call the fire reporting number at **ext. 56999** and give specific information about the fire. If safe to do so notify staff in the immediate area of the fire to leave the lab area and report to the “muster station”.
- **Confine** the fire by closing all doors in the immediate area.
- **Extinguish** the fire if it is small in size and you have adequate fire extinguisher training and feel comfortable to attempt.
- If you hear the fire alarm, check to see if the fire is in your area. If not in your area, listen for further information on the overhead speaker system.
- **DO NOT USE ELEVATORS TO MOVE BETWEEN FLOORS!!! Only USE STAIRS!**

NOTE: Fire regulations do not permit storage of any materials within **18" from the ceiling in any room**, as this clearance is required for fire sprinkler function.

c. OTHER ALARMS

In the case of any emergency announced via overhead speaker system such as Code Red (fire), Code Green (disaster), Code Orange (violence), notify other lab personnel if safe to do so. If the emergency requires personnel to leave the R&D laboratory area report to the Conference/Lunch room 3C138 so all persons can be accounted for and receive more information and further instructions. If room 3C138 is not safe, report to R&D Office room 3D150. If the building has to be evacuated, inform your supervisor and meet at the corner of Green St. and Fayette St. This is important so that your supervisor can know whether you are in a safe place.

d. INTRUSION

If unauthorized individual(s) (example: an activist or "anxious patient") gains access to the research area, enter your lab or nearest office, lock the door and call the police at **ext. 57300**. Do not attempt to stop the individual(s) yourself. Report suspicious activity and or persons to the police at **ext. 57300**.

e. PERSONAL CONTAMINATION

(1) Eye splash with chemical or biological agent:

- Use the closest available eye wash station to flush your eye(s) for a minimum of 15 minutes.
- Call for assistance if the incident is severe or impairs your vision.
- Contact your supervisor as well as the R&D office to report the incident. Report to Employee Health, Room 1D-118, or the Emergency Room/Department for evaluation.

NOTE: PIs or their staff must test/flush eyewash stations in their assigned space WEEKLY and record it on the weekly testing log. Assure eye wash areas are free from obstruction. Get additional testing logs from www.maryland.va.gov/reasearch.

(2) Contamination to the skin:

- **If corrosive**, or presenting other chemical hazard to small areas of the skin; rinse with copious amounts of water.
- **If infectious**, wash with soap and rinse with copious amounts of water. Report the exposure as in paragraph 5, above, on pages 5 and 6..
- If contamination occurs on large surface area of your body and is corrosive, or presenting other chemical hazard, remove lab coat and use emergency showers located in the hallways of research corridors and shower for a minimum of 5 minutes. Remove contaminated clothing while showering to avoid further contamination to the skin and call for assistance. Report to Occupational Health or Emergency Department in 1D.
- Report all exposures, as in paragraph 5, above, and have someone contact EMS at ext. 57064 to clean up shower water and decontaminate the area as needed.

f. CHEMICAL SPILLS

- (1) **Minor Chemical Spill / Class 1 Spill** (Spills easily cleaned up by the user by neutralizing or absorbing with spill kit.)

In the Event of a Minor Spill:

- Spill kits are available in rooms: 3C-101, 3C-111, and 3C-127.
- Alert people in immediate area of spill.
- Wear protective equipment, including ANSI (American National Safety Institute) approved laboratory safety glasses/goggles or face shield, gloves, and long-sleeved lab coat.
- Avoid breathing vapors from spill.
- Confine spill to small area with absorbent materials.
- Use the appropriate/compatible kit. Collect residue, place in container, label as hazardous waste, and call the Industrial Hygienist (ext. 53697) for disposal information.
- Clean spill area with soap and water.

- (2) **Major Chemical Spill or Spill of an Extremely Hazardous Substance / Class 2 Spill** (i.e. all leaking gas cylinders, spills beyond control of neutralizing agent or spill kit, very hazardous substances, or acutely toxic or unknown substances)

Only safety and emergency personnel should clean up Major Spills.

Examples of very hazardous substances include: Class 1A flammable solvents.

In the event of a major spill:

- Immediately call the Safety Office/Engineering Service at 57020 or after hours the MAA at 5144/7316 (See page 2 of this Manual).
- Attend to injured or contaminated persons and remove them from exposure. In case of personal contamination, remove affected clothing and flush contaminated skin with water for at least 15 minutes (See above). Seek medical attention immediately.
- Alert people in the surrounding area to evacuate.
- **If there is no health or safety risk**, turn off ignition and heat sources, and maintain chemical safety hood ventilation to increase ventilation.
- Close doors to affected area once the area is evacuated.
- Have someone knowledgeable of the spill incident to assist emergency personnel upon arrival.

Employee Health
Security

ext. 54323
ext. 57300/56999 or the operator

(3) Mercury Spill

Mercury spills are cleaned up by Environmental Management Service (EMS). Contact EMS at ext. 57064 for cleanup and alert Emmanuel Mbong ext. 54548/57020 following a spill.

Note: Use of mercury containing equipment is no longer allowed. Call Tom Bowen at X54848 for pick-up of any items that contain mercury.

g. POWER OUTAGE

- Contact R&D Office at ext. 57130 and Engineering at ext. 57020.
- DO NOT open refrigerators or freezers unless necessary. If it is necessary to open refrigerators or freezers, try to minimize the time the doors are open.
- ABSL-3, Contact Engineering at ext. 57020 and refer to ABSL-3 SOPs located in BB122

11. HAZARDOUS CHEMICAL or RADIOISOTOPE USAGE

a. CHEMICALS

- (1) Each laboratory must maintain and submit an up-to-date inventory of all chemicals present in laboratory:
 - i. The inventory must be submitted semi-annually to the facility safety director and R&D Service Chemical Hygiene Officer (CHO) utilizing the electronic chemical inventory form. Template is posted on R&D website www.maryland.va.gov/reasearch or can be obtained from CHO.
 - ii. Submitted chemical inventory will be posted on VAMHCS homepage (vaww.maryland.va.gov) with up-to-date Safety Data Sheet (SDS) attached. See Attachment A for specific instructions for accessing SDS'.
 - iii. Each container of hazardous chemical has to have an attached label that is compliant with the Globally Harmonized System (GHS). Compliant labels can be obtained via the VAMHCS homepage (vaww.maryland.va.gov)
 - iv. Contact the VAMHCS Industrial Hygienist (IH) or CHO for more information.
- (2) Read the chemical label and applicable SDS sheets before using any chemicals. The new (June 2016) laboratory chemical inventory template has hotlinks to the Safety Data Sheets (SDS) that coincide with the chemicals used in your laboratory. Also, the VAMHCS homepage (vaww.maryland.va.gov) has a link to a list of Safety Data Sheets (SDS): <http://vaww.ceosh.med.va.gov/ceosh/MSDS.shtml>.
- (3) Protect yourself from chemical exposures. Be sure to use proper personal protective equipment (PPE) such as lab coats, gloves, face shields, appropriate respiratory protection, ANSI approved laboratory safety glasses/goggles, etc. when working with hazardous chemicals. Date chemicals upon receipt.

- (4) Highly volatile chemical compounds (i.e. Mercaptoethanol) will be opened, aliquoted, etc. only in a chemical safety hood.
- (5) All hazardous chemicals: flammable, corrosive, reactive and toxic substances must be kept in their appropriate cabinets. Low flashpoint reagents requiring refrigeration will be kept in the marked, flammable safe refrigerator located in room 3C121.
- (6) Laboratory Chemical storage areas should be periodically examined. Determine that all chemicals are within expiration date, containers are intact and labeled for rapid identification of content and associated hazards.
- (7) Please become familiar with the proper waste procedures for the chemicals you use. Questions about chemical waste can be directed to the R&D Chemical Hygiene Officer (CHO) Tom Bowen at ext. 54848 or VAMHCS Industrial Hygienist (IH) Sarah Jones at ext. 53697, and GEMS Coordinator Jennifer Dallaire at Perry Point 25227.
- (8) If you have any chemicals for disposal (old, no longer used or past expiration date), please notify the GEMS Coordinator, IH, and the CHO and use the appropriate form. Please see paragraph 12.3 Chemical Waste for details.
- (9) Hazardous chemicals are NOT to be stored in chemical safety hoods or above eye level.
- (10) Chemical fume hoods and biosafety cabinets must be certified annually.
- (11) After completion of daily work procedures, all hazardous chemicals MUST be returned to their proper storage locations.
- (12) If you plan to work with perchloric acid, picric acid, ethyl ether, or any potentially reactive/explosive chemical consult the policies in the R&D Safety Policies and Procedures folder, located in 3C-139 or 3D150 or posted on website www.maryland.va.gov/research, for their use and storage, as these are highly hazardous chemicals. All protocols involving the use of these chemicals require prior approval by SRS.
- (13) If you are unclear about the safety procedures and or proper disposal procedures for handling chemical substances speak to your supervisor, the

R&D Service Research Chemical Hygiene Officer, VAMC Industrial Hygienist or our GEMS Coordinator.

Please become familiar with R&D Service documents regarding chemical safety such as Chemical Hygiene Plan, Chemical Storage Guidance, Management of Reactive/Explosive Hazardous Chemicals, Picric Acid SOP, Perchloric Acid SOP. All these documents are stored in the binder located in room 3C139 and in R&D Office room 3D150 or available electronically via the R&D website:
http://www.maryland.va.gov/research/lab/lab_safety_and_security.asp

b. RADIOISOTOPES

The following are only basic guidelines for working with radioisotopes. All questions concerning radiation safety or proper procedure for working with radioisotopes should be directed to the Radiation Safety Officer (RSO), Oscar James at ext. 57032/57020 or cell (410) 804-0225 in room 6D-191.

- (1) All procedures using radioisotopes must comply with the VAMHCS Policy Memorandum 512-001/Ops-116, available on the VAMHCS home page.
- (2) New laboratory personnel are not allowed to work with radioactive material until they complete the required Radiation Safety training and are approved by the RSO. Do not use radioisotopes unless you have had prior instruction from your supervisor.
- (3) Personnel radiation monitoring dosimeters are required for workers likely to receive greater than 10% of Federal radiation exposure limits. When working with radioisotopes, always wear a lab coat, radiation monitoring dosimeter, and gloves. Dosimeters will be exchanged quarterly, and distributed to the laboratories by a designated Research Service representative. Do not take

dosimeters out of the building and when not being worn, always store them away from sources of radiation.

- (4) All purchase requests for radioactive material to be used at the VAMHCS shall be pre-approved (signed) by the VA RSO or his designated representative. Purchase request forms must be completed to clearly indicate that the user intends to purchase radioactive material and it must be signed by the RSO before it is taken to the Research Office.
- (5) Radioactive material must be stored in a cabinet, freezer, or refrigerator that is clearly labeled "Caution Radioactive Material".
- (6) Any room where radioactive work will be performed must be labeled "Caution Radioactive Material".
- (7) Never allow the radioisotope container to be uncapped any longer than necessary.
- (8) A radioisotope record must be maintained in each laboratory. The log must include:
 - A record of each vial of radioactive material (RAM) recording date received, lot number, amount used, and date
 - A sink disposal record
 - A record of the amount of waste generated and its location, and
 - Weekly or monthly wipe tests reports for radioactive material use areas.
- (9) Wipe test data must be converted from Counts Per Minute (CPM) to Disintegrations Per Minute (DPM) by dividing CPM's by the counting efficiency of the counter. Any wipe test results greater than 200 DPM above background DPM must be decontaminated and retested. The RSO will conduct periodic inspections of all radioactive work areas and records.
- (10) Use a radiation survey meter to check for all radionuclide except Tritium (-3). Be careful not to contaminate the probe. When taking a break, leaving the laboratory or completing the procedure, the work area and personnel involved should be monitored for contamination.
- (11) All containers, equipment and work areas to be used during a procedure should be properly labeled with radioactive tape.

- (12) Users of the liquid scintillation counter in 3C-127 shall label all sample racks with the Principal Investigator's name, enter all required information in the counter's ledger (book) and remove samples promptly after counting is complete.
- (13) Immediately report all spills to your supervisor, and contact the RSO ext. 57032 for assistance. The spill should be contained with paper toweling, and then cleaned with detergent until counts register at background level. All potentially contaminated toweling, gloves, bench cover, etc. should be disposed of in the appropriate radioactive waste container. Monitor hands, lab coat, and shoes when finished.
- (14) Skin contamination should be removed by washing with mild soap and flushing with large volumes of water. Care must be taken not to abrade the skin.
- (15) Only liquid radioactive waste approved by the RSO can be disposed of in a designated sink and the activity recorded in the sink log.
- (16) The Radiation Safety Officer will pick up dry waste and scintillation vials. RSO should be notified when a waste pick up is necessary for your lab. All waste must be bagged and clearly labeled. Dry and liquid waste must be separate. If possible, leave scintillation vials in their cardboard trays.
- (17) The label should include:
 - ISOTOPE
 - DATE SEALED
 - ACTIVITY (mCi)
 - Name of Responsible Principal Investigator
- (18) If it is not radioactive, do not put items in radioactive waste. **Deface** all radioactive labels and tape before discarding containers, vials, tubes, etc. into radioactive waste.
- (19) Iodination: There are no hoods available at the VAMHCS for iodination procedures. There are facilities available at UMB for iodination. Please consult the RSO for further information.

c. **IN VIVO PROCEDURES WITH USE OF RADIOISOTOPES**

- (1) Prior approval is required of all animal protocols involving radioisotopes by the VAMHCS Radiation Safety Committee, VAMHCS Research Subcommittee on Research Safety and IACUC.
- (2) Investigators wishing to work with radioisotopes in animals must review the procedure with the Animal Facility Manager and Chief Veterinary Medical Officer, prior to the initiation of the study. He/she will ensure that there is appropriate space and equipment.
- (3) A room housing studies with radioisotopes in animals must be clearly identified with appropriate signage on the door.
- (4) It is the Investigator's responsibility to correctly dispose of radioactive carcasses and other materials.

12. WASTE MANAGEMENT

a. **Solid Waste**

Housekeeping will empty trashcans with clear bags. These should only contain non-hazardous trash. **Gloves and other lab ware known NOT to be contaminated with biohazard agent can be thrown in regular trash** (clear bags).

- (1) **GLASS:** Disposal of Glass materials: All broken glass must be disposed of in a box lined with a clear plastic bag and marked "GLASS WASTE", unless contaminated with bio-hazardous materials. When the box is 3/4 full, close it securely with tape and place it in the hall for pick-up. This also applies to empty glass containers that are not broken but need to be disposed of. Boxes should only contain glass that is not contaminated with biohazard agent. Broken glass disposal boxes can either be purchased or a heavy cardboard box labeled "GLASS WASTE" can be used.
- (2) **Cardboard boxes:** Empty cardboard boxes should be placed in the hall for pick-up by Housekeeping.

- (3) **Confidential document waste:** Any paper waste that contains confidential information should be placed into the shredding box located in the hallway by 3C110.
- (4) **Ink & toner cartridges:** Ink and toner cartridges generated from printers should be disposed of in the box located in 3C139 for recycling.
- (5) **Batteries:** Used batteries should be disposed of in the container located in room 3C111 for recycling.

b. **Biohazard Waste**

Please follow directions in R&D Biohazard waste SOP and get familiar with “VAMHCS Regulated Medical Waste Management Policy” 512-001/ops-117 for details related to (bio-hazardous) regulated medical waste.

c. **Chemical Waste**

- (1) If you have any chemicals for disposal (old, no longer used or past expiration date), please notify via e-mail: VAMHCS GEMS Coordinator Jennifer Dallaire (jennifer.dallaire@va.gov), Tom Bowen (CHO) (tom.bowen@va.gov), and [VAMHCS Industrial Hygienist.sarah.jones2@va.gov](mailto:sarah.jones2@va.gov) Attach Chemical Disposal Form with all chemicals for disposal listed. Obtain the form from www.maryland.va.gov/reasearch or contact CHO via e-mail.
- (2) Questions about disposal of chemical waste can be directed to GEMS Coordinator, IH or CHO.
- (3) All chemical containers waiting for disposal have to be labeled “WASTE” and have accumulation start date, chemical content and associated hazards clearly posted. Chemical waste storage area has to be labeled “Satellite Accumulation Point”. Please refer to **Attachment B** for a quick reference table that lists Satellite Accumulation Point regulatory requirements. This table may also be used as your Satellite Accumulation Point sign to be posted in your chemical waste storage area.

- (4) Ensure that items for disposal are organized by compatibility in secondary containers. Ensure that the chemical containers are in good condition and properly closed or sealed.
- (5) For restrictions on chemical disposal via the sewer systems please read and follow the instructions posted above every laboratory sink in the Research Service area.
- (6) Empty plastic chemical containers can be disposed of as solid waste. Empty glass chemical containers can be placed in cardboard boxes labeled “glass waste”. Please contact CHO or GEMS Coordinator for recycling methods.

Exception: Empty containers of chemicals on EPA P-list (e.g. Sodium Azide) must be disposed as Hazardous Waste. The EPA p-list is found on the [laboratory resources page of the R&D Service website](#) or at the following URL: http://www.ecfr.gov/cgi-bin/text-idx?SID=43a12e65fc62ad2c4af072873b86c581&mc=true&node=pt40.26.261&rgn=div5#se40.28.261_133.

d. **Radioactive waste**

See Section 11.b for information on radioactive waste.

13. ANIMAL FACILITY SAFETY

- a. Only personnel that have been listed on an active R&D approved IACUC protocol or are a VA employee that has been cleared by VA security may enter the Animal Facility unescorted. “Visitors “must be signed in and receive a “visitor badge” from the 3rd floor R&D office, 3D-150. These visitors must be escorted the entire time they are in the animal facility.
- b. Tetanus vaccination is required every 3 years.
- c. Personnel working with animals or their unfixed tissues or performing work in areas of the animal facility where they may be exposed to animal allergens or pathogens in the performance of their duties are to be enrolled in the VA Preventative Medicine Program or participate in the SOM LAERAP (SOM WOCs). VA employees are to have been cleared by VA Occupational Health to

perform such duties. For the VA program, this requires an initial physical examination by a VA physician and completion of a related questionnaire as to current allergies, etc. with resubmission /update of the questionnaire annually. Please contact Ms. Ginny Bohrer to arrange an appointment with VA occupational health for your initial evaluation. Ms. Bohrer may be reached at ext. 56426 or e-mail virginia.bohrer@va.gov.

- d. Personnel working with animals or their unfixed tissues are to read the VA Occupational Health and Safety Program/ Plan for those with Laboratory Animal Contact. If you have questions, please contact the VA attending Veterinarian ext. 410-706-2684 or 443-677-9034.
- e. Where the potential exists for a splash, spill or, accidental exposure to skin from hazardous chemical and/or biological materials; protective clothing and adequate PPE must cover exposed skin during the laboratory procedure.
- f. Personal protective clothing, face mask, disposable gown, shoe covers and gloves are required before entering an animal room or working with animals, live or dead. There are 3 PPE stations located in the hallways outside of the animal husbandry rooms. Contact a caretaker or the facility manager if you find they need refilling.
- g. Upon leaving the animal room, dispose of personal protective clothing in the trash can located in the animal facility hallway. Upon leaving Quarantine/Hazardous areas, personal protective clothing is to be disposed of in bio-trash incineration boxes.
- h. All sharps must be disposed of in approved sharps containers. **Needles are not to be recapped!** Place sharps in the sharps container immediately post use. However, if the needle must be recapped for procedural purposes, use equipment designed for that function to protect you from possible needle sticks.
- i. All cage cleaning, feeding, and watering is to be done by the animal caretakers unless specifically addressed in an R&D Committee approved IACUC protocol and related protocol SOP. Give used/dirty husbandry cages to an animal caretaker for disposal of bedding, do not dump out the bedding yourself as this may expose you to pathogen or dust in the used bedding.

- j. If animals are taken to a laboratory on the 3rd floor they are to be transported by the dedicated research elevator that only travels from the animal facility to the 3rd floor research area. **The use** of public elevators is not allowed. No live animals may be removed from the animal facility unless so stated in an R&D Committee approved IACUC protocol or in special circumstances with consent from the attending veterinarian, Dr. Ned Kriel, 443-677-9034 or contact Veterinary Resources ext. 410-706-3540 and ask for Dr Kriel or Dr. DeTolla, the VMO.
- k. If animals or their carcasses are to be transported to School of Medicine Laboratory / Research areas, **they are not to be transported through public areas**, but must leave by a VA loading dock area in a container that secures their safety, prevents public view and potential spread of dust/ bedding that may contain allergen or infectious components.

They should enter the SOM facility using a freight elevator when possible. **DO NOT use the bridge between the VA and SOM hospitals for transport of any animal live or dead!**
- l. Live Animals that are removed from the animal facility may not re-enter the facility. Animal carcasses must be returned, double bagged in red biohazard bags with the outer bag having been sprayed with diluted household bleach, Roccal or Cavicide for transport back to the animal facility for disposal.
- m. To dispose of animal carcasses, place the double-bagged carcass in either a holding freezer or refrigerator located in BB-145. Only these refrigerators or freezers may be used. DO NOT use refrigerators or freezers located in a research lab or research core area or those designated for human food storage.
- n. Gloves (latex, nitrile, natural rubber) are to be worn to handle animals (live or dead) or their unfixed tissues.
- o. If animals are exposed to bio-hazardous agents (bacterial, viral / viral constructs or fungus) or toxic chemical agents (ex. chemotherapeutics, toxins), a "Biohazard" sign must be placed on the husbandry room doors. The cages containing animals exposed to such agents are to be identified with the specific agent used in animals in that cage, routes of elimination and the Principal Investigator's emergency contact information. **PIs are to consult with**

employee health to develop an SOP as to emergency care procedures for those that may be exposed to any bio-hazardous agent, directly or via animal waste products used in their research animals to facilitate rapid treatment in the event of an exposure.

- p. Animals exposed to bio-hazardous agents are to have cages changed out in a Biological Safety Cabinet (BSC) with ‘dirty bedding’ placed in biohazard bags. Bags are to be ‘closed’ prior to removal from the BSC. Dirty cages are to have bonnets replaced for removal from the BSC or for transport to be autoclaved or processed / as stated in the R&D Committee Approved RPSS form and IACUC protocol associated SOP or per approved VA animal facility SOPs as applicable.
- q. Animal contaminated or bio-hazardous materials must be disposed of as stated in BVAMHCS Animal Facility waste management specific SOPs or SRS and IACUC approved SOPs if/ when special situations arise.
- r. Post discontinuation of use of biohazards in any animal room. The outer room “biohazard sign” is to be removed or turned over to the blank side and replaced in the room holder.
- s. Facility or animal room doors should never be “propped open” as this affects room air balance and air flow that may allow allergens or contaminated dust into the facility hallways.
- t. **Use of Controlled Substances in Research Animals:** Controlled substances are to be ordered and distributed only through the Baltimore VA pharmacy. When provided by the Animal Facility Manager, for IACUC approved research, or under veterinary directed use for animal care, substances are to be administered to animals in the facility with any un-used dosages returned to the Animal Facility Manager or Facility Veterinarian for disposal or return to stock. Use in VAMHCS 3Rd floor labs is only by permission of the VA pharmacy and SRS and subject to handling requirements as indicated on the RPSS form. VA dispensed controlled substances for VA animal research are **NOT** to be transported or utilized outside of the VA Medical Center.
- u. **Security:** The South loading dock door should never be left unattended while open. Someone must stand "guard" at the door until the door is securely closed.

The rear exit door next to the South loading dock door is only for emergency exit. If key/card to animal facility is lost or stolen, report loss to the Animal Facility Manager, Ginny Bohrer at ext. 56426 and the Research office ext. 57130 immediately.

14. USE OF SPECIFIC RESEARCH EQUIPMENT

a. Biological Safety Cabinets (BSCs)

- (1) When using a biological safety cabinet (BSC) work at least 6" back inside the front intake so you do not disrupt the "air curtain".
- (2) All human and animal specimens should be considered potentially infected with hazardous agents. Appropriate PPE should be used. If there is a potential for generation of aerosols, work inside a Class II Bio-safety cabinet.
- (3) Spilled infectious samples should be contained with paper towel and immediately covered with a solution of 10% solution of household bleach in water for 30 minutes or SRS approved SOP for decontamination related to the agent being utilized has to be followed. During cleaning procedure leave the BSC blower motor on. After 30 minutes the area should be thoroughly cleaned with water to remove the bleach. When finished discard contaminated paper towel, gloves etc. into the biohazard bag. Wash your hands and report the spill to your supervisor.
- (4) Plastic pipettes that are contaminated with infectious agents are to be placed in a biohazard container lined with red bag. Glass pipets are to be placed in the red sharps container.
- (5) **Decontamination of BSCs:** *The NIH, CDC and America Biological Safety Association agree that UV lamps are not recommended **nor required** in biological safety cabinets.* The use of appropriate liquid based sprays (chlorine based, or hospital infection control approved sprays) applied appropriately to the inner surfaces of the cabinet and viewing glass are more effective than UV light exposure for decontamination.

- (6) BSCs must be certified annually. It is the responsibility of each laboratory to have their BSC certified at least annually.

b. Chemical Fume Hoods

- (1) When using a chemical safety hood work at least 6” back inside the front and have protective sash positioned to protect your face.
- (2) Do not use chemical fume hoods as storage. Leave ample space for your work and ensure proper ventilation.
- (3) When not in use keep the slash all the way down to conserve energy and to prevent contamination with dust.

15. COMMON USE RESEARCH EQUIPMENT (VAMHCS “CORE LAB”)

- a. Attend Orientation session with Core Lab Manager before conducting any activity in the Core lab.
- b. Sign-in using the Core Lab log book for every use of the Core Lab.
- c. Follow posted rules and, read instruction manual before first use of any equipment.
- d. Clean up any mess you generate.
- e. If your sample contains an isotope, you must wipe test the equipment when finished. If counts are above background, decontaminate and do wipe tests until counts are at background level.
- f. Users of the liquid scintillation counter in 3C-127 shall label all sample racks with the Principal Investigator’s name, enter all required information in the counter’s log book and remove samples promptly after counting is complete.
- g. If you have any questions or are unsure about any aspect of common equipment, or find any common equipment not in working order please contact Tom Bowen at ext. 54848. GUESSING is a good way to be hurt or damage an expensive piece of equipment.

16. **BASIC PRACTICES FOR LABORATORY SAFETY**

a. **Personal Hygiene:** An important factor in protecting the health of personnel engaged in research is personal hygiene. All employees need to understand the importance of personal hygiene and the specific measures that routinely are to be taken to protect themselves when working in laboratory. Do not bring or eat food, drink, chew gum, apply cosmetics, or use tobacco products in a laboratory or animal husbandry room. Always store food or drink items in a refrigerator or freezer designated for storage of human consumable items.

b. **Hand Washing:** Hand washing is a crucial safety measure for safeguarding personnel in the research 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. Hands need to be washed with soap and water every time you remove gloves, whenever they touch contaminated or potentially contaminated surfaces, liquids, or body fluids. Hands need to be routinely washed before leaving laboratory area or touching your skin, hair or glasses.

ALWAYS wash your hands before consuming and food or beverages.

c. **Long Hair:** if you have long hair that might touch laboratory counter surfaces or tends to fall in front of your eyes requiring you to ‘brush’ it back with your hand, use a hair bonnet, hair ties, or clips to prevent it from becoming contaminated or getting in your visual field while working in the lab area.

d. **Footwear:** Wear closed toe shoes with heels no greater than 1 inch high. No sandals, flip-flops, etc. No high-heels.

17. PROTECTIVE EQUIPMENT

The use of personnel protective equipment (PPE) is dependent upon the hazards associated with the task being performed. At a minimum for working in a laboratory they include:

- a. Lab coat (long style) **NOTE:** Lab coats are utilized to prevent contamination of your personal clothing, they should be left IN THE LAB and not worn to public areas, rest rooms, or other investigators labs or offices to prevent contamination of areas outside your laboratory. It is suggested to have a coat rack or coat hooks available in your laboratory for lab coat storage.
- b. Gloves
 - (1) Wear appropriate laboratory gloves to protect your hands when working with infectious/ toxic or hazardous chemical agents.
 - (2) **DO NOT WEAR GLOVES OR OTHER POTENTIALLY CONTAMINATED PPE INTO PUBLIC AREAS SUCH AS BATHROOMS, STAIRWELLS, ELEVATORS, CAFETERIA, ETC.**
 - (3) Only ungloved hands should be used to open doors, even in Research Laboratory Quadrant, to ensure that these areas are not contaminated.
 - (4) You may need to place materials into secondary containers so that they can be transported without gloves.
- c. Safety Glasses or Table Top Splash Shields: The use of ANSI approved laboratory safety glasses should be utilized whenever there is a chance for material to splash. When using equipment that may create splashes such as a tabletop sonicator, use tabletop splash shield between the unit and personnel.
- d. Biological Safety Cabinet (BSC): If handling infectious agents, or processes that could create an aerosol, use a BSC to protect yourself and others in the lab.
NOTE: BSCs will not protect you from vapors or fumes. Also, contact ext.

57130 if the certification sticker date is reaching its annual recertification date or if expired (do not use BSC if certificate is expired).

- e. Use a Chemical Fume Hood when handling chemicals that vaporize easily to protect you from noxious/ toxic / hazardous fumes/ odors.
- f. Disposal: Only PPE known or suspected to be contaminated with biohazards should be disposed of in biological waste containers.

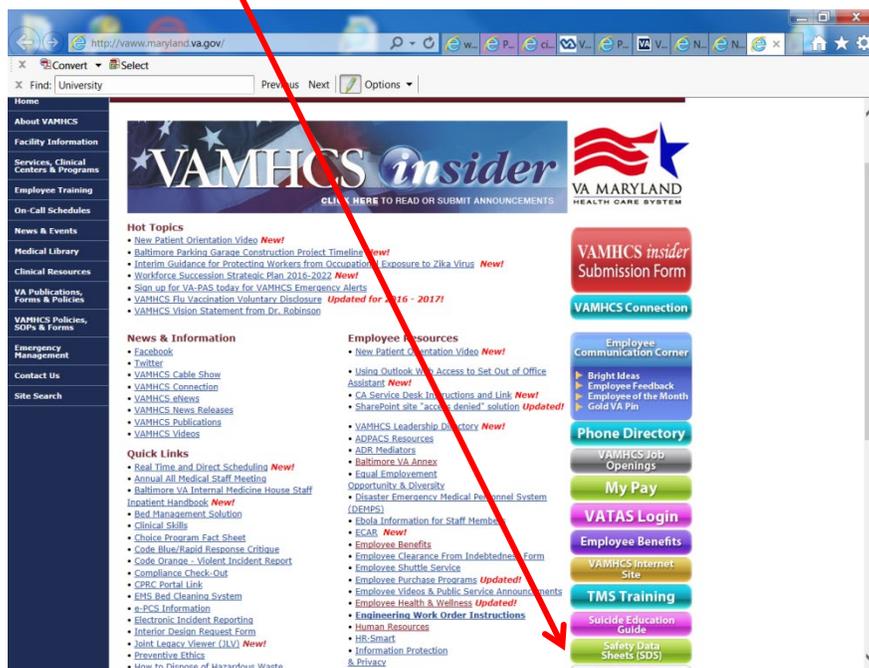
18. FINAL WORDS

One more important aspect of laboratory safety is taking time to plan out your activities prior to the day they are to be performed. When planning a new / unfamiliar procedure, prepare a detailed protocol. You might perform a practice or “dry run” substituting tap water to simulate/ help identify different components of the procedure. Such “dry run” practices might prevent waste of costly reagents caused by your inexperience and prevent potential accidents.

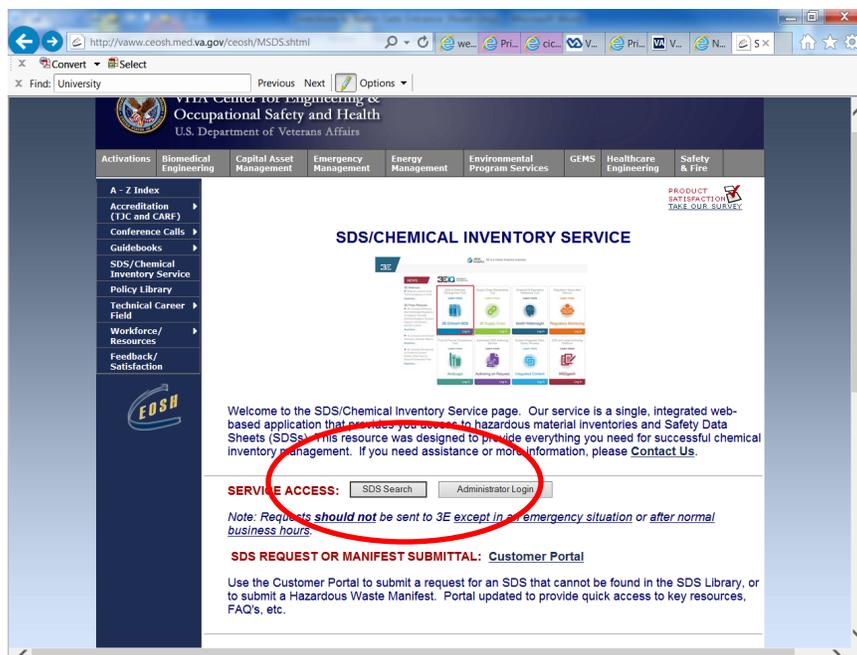
RUSHING is a good way to increase the likelihood of a mistake occurring or for personnel to be harmed or injured.

Attachment A: Instructions for Accessing Safety Data Sheets (SDS) from the VAMHCS Homepage

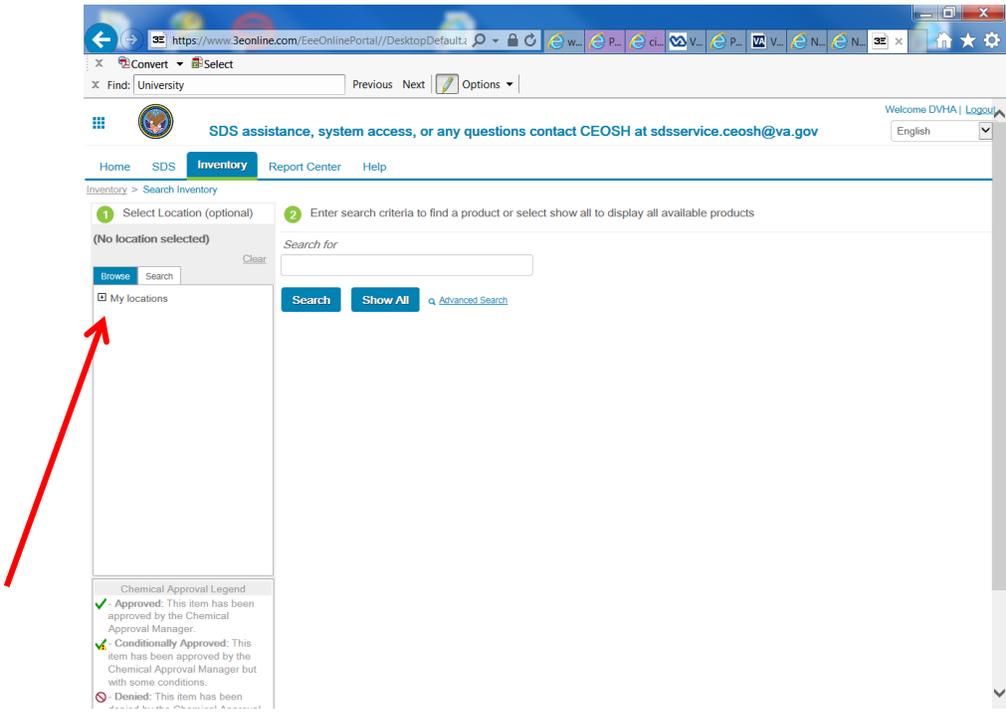
1. Choose the green “Safety Data Sheet (SDS)” button at bottom right of the VAMHCS home page (vawww.maryland.va.gov).



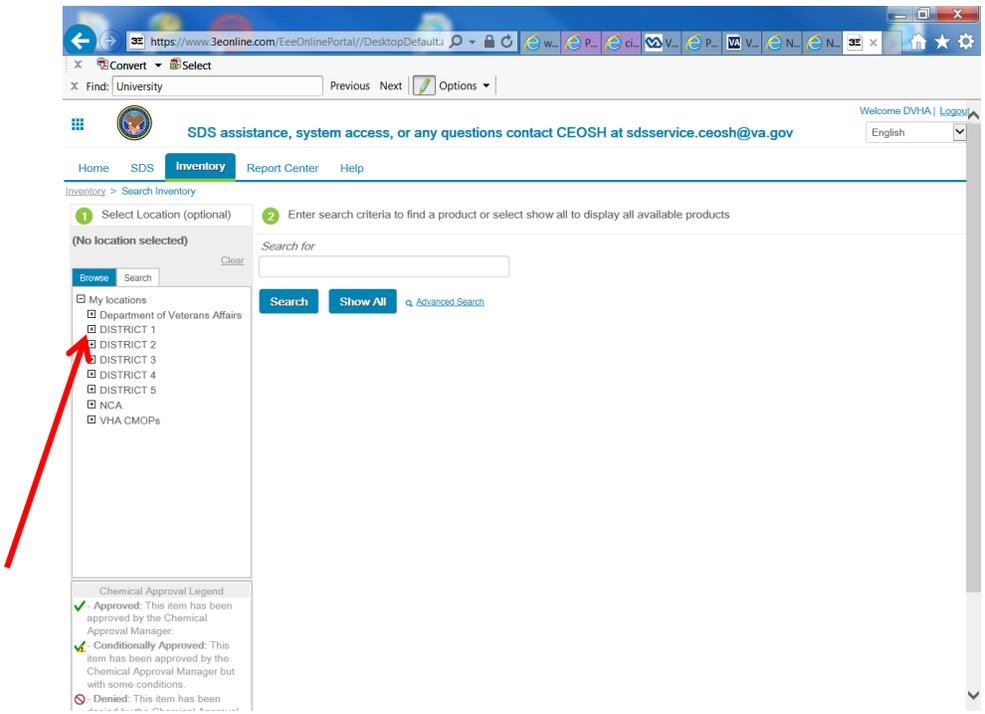
2. Choose the green “SDS Search” button at center left of the page.



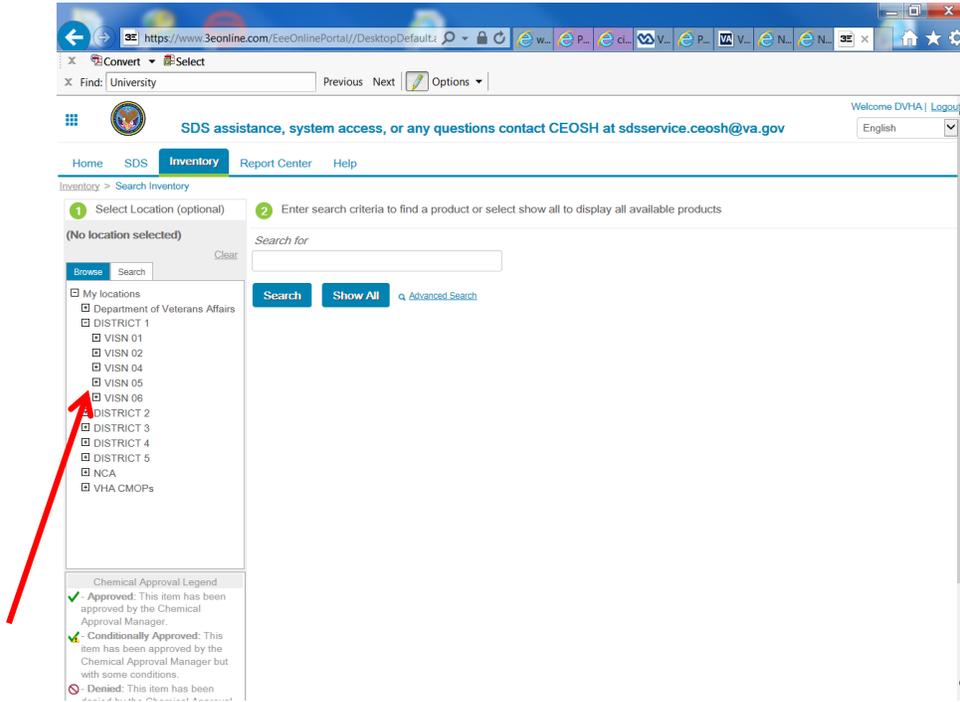
3. Click on the “+” box at the “My Locations” button on the left side of the page.



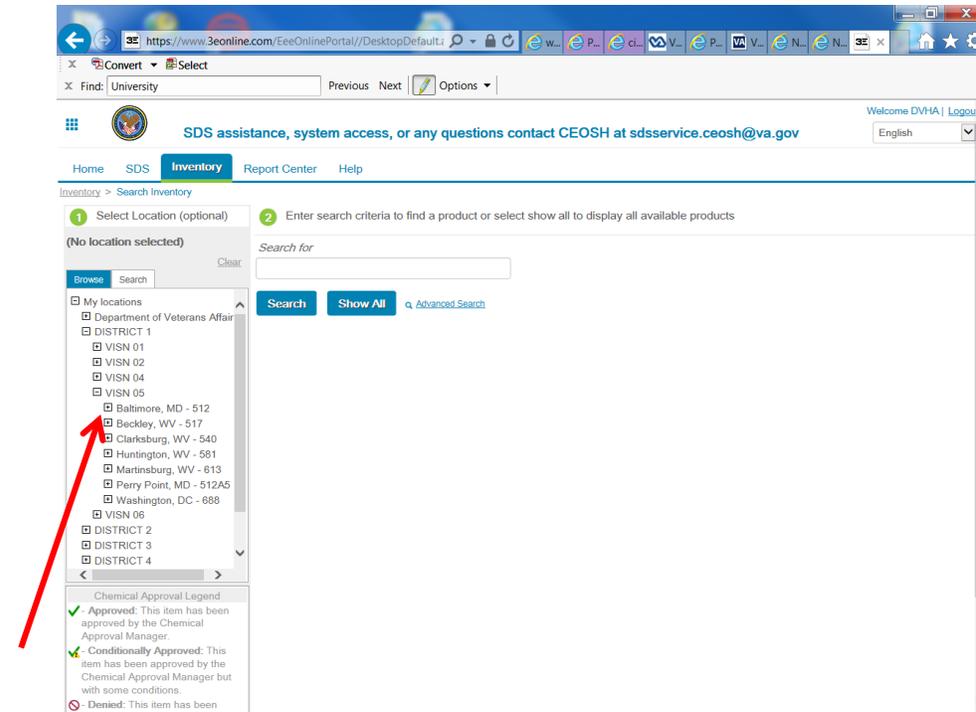
4. Choose “District 1”.



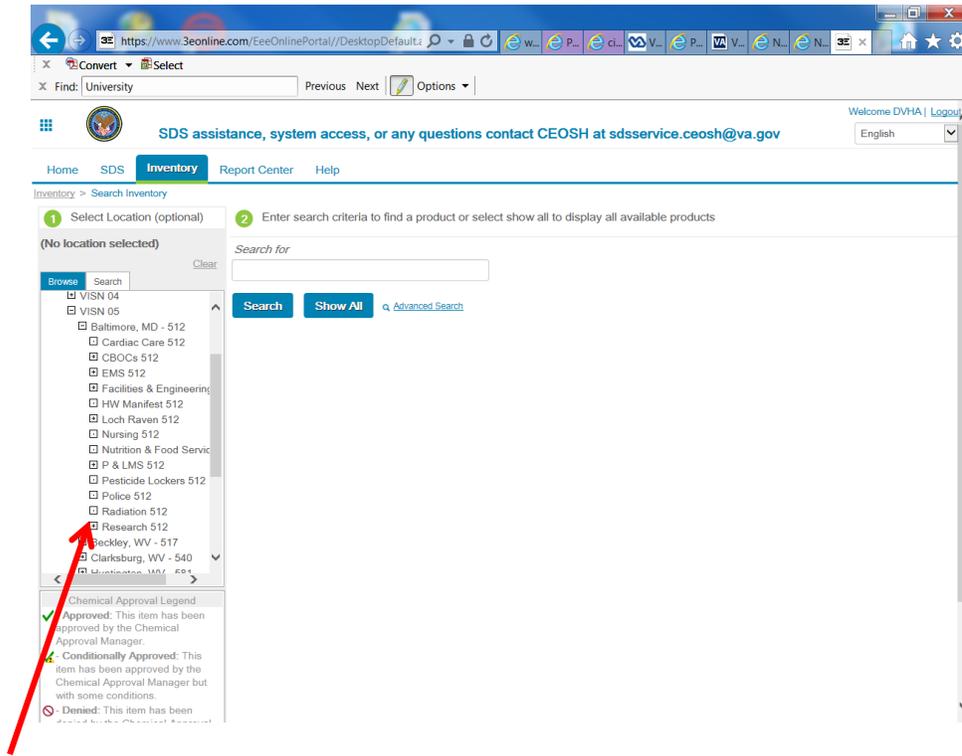
5. Choose "VISN 5".



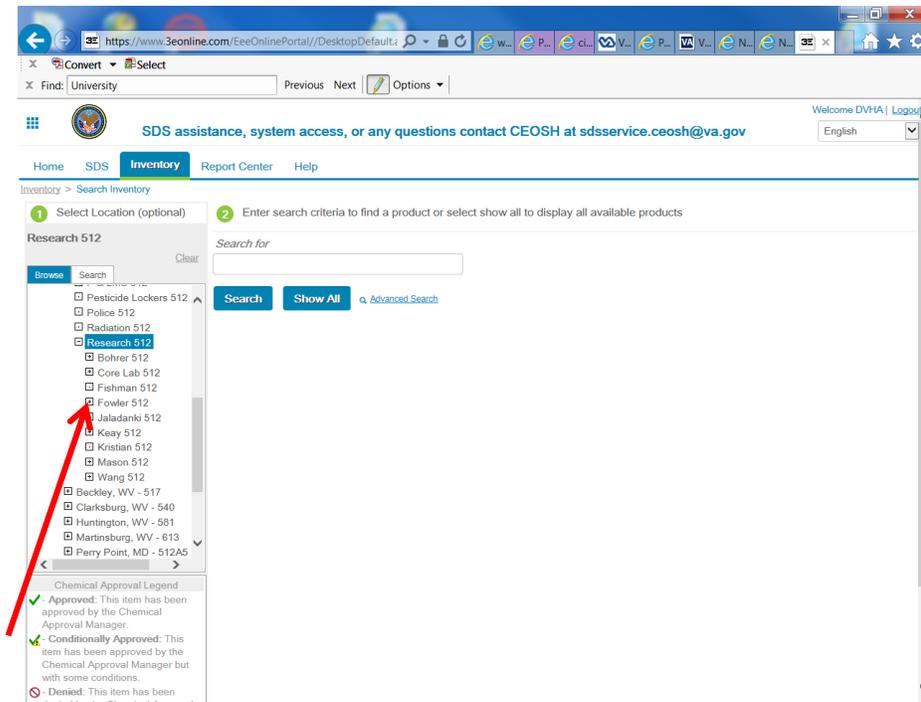
6. Choose "Baltimore".



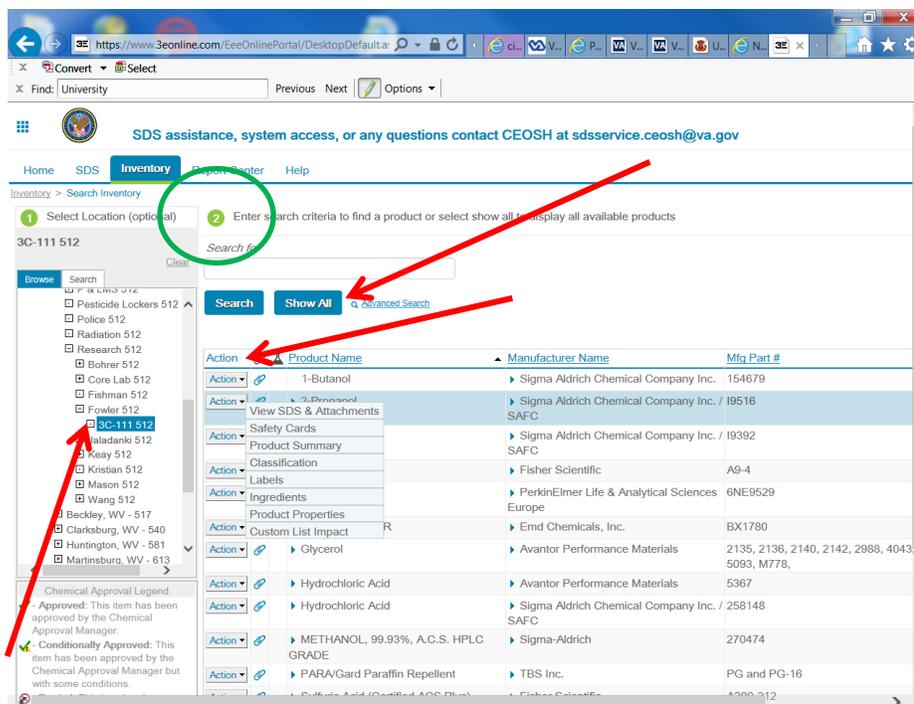
7. Choose "Research".



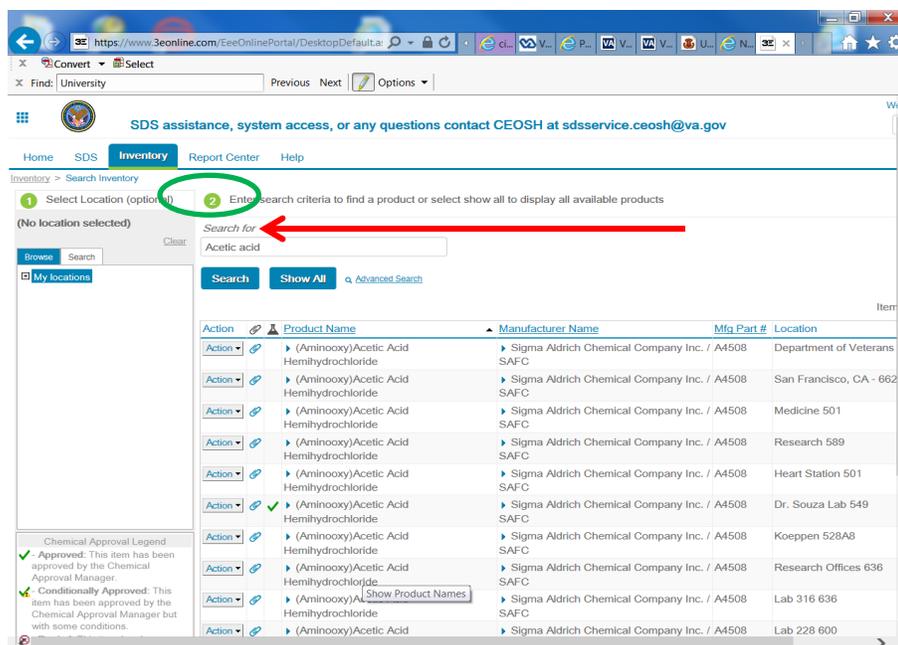
8. Choose "Search by Principal Investigator".



9. Select a room number (if applicable). Then, in the main page (Part “2” in green circle), select “Show All” to see entire chemical inventory for that laboratory. Choose from the menu in the “Action” tab:



10. OR, if you only want to search for a particular, chemical, just go straight to the Part “2” in green circle (main window) and type the name of the chemical into the “Search For” text box.



Attachment B – Hazardous Waste Satellite Accumulation Area Quick Reference

(This can be used as your Satellite Accumulation Area Sign)

GO TO NEXT PAGE

Satellite Accumulation Area/Point (SAA)/(SAP) Requirements per COMAR 26.13.03.05(3)	
Waste Location	Away from floor drains & <u>within line of sight and under the control of the operator generating the waste.</u>
Container Management	<ul style="list-style-type: none"> • Containers must be in good condition, compatible with the contents inside, and remain closed • Replace/repair damaged containers
Labeling Requirements	<ul style="list-style-type: none"> • “Hazardous Waste” and the Chemical Name. Also label Area where waste is stored “Satellite Accumulation Point/Area” (This Table May be used as your sign)
Segregation	<ul style="list-style-type: none"> • Separate and store by hazardous materials by characteristics
Storage Amounts and Time Limits	<ul style="list-style-type: none"> • Up to 55 gallons of hazardous waste OR • 1 quart of P-Listed hazardous waste
Empty Containers	<ul style="list-style-type: none"> • Empty containers can be disposed of as solid waste. • Containers formerly holding P-Listed must be disposed of as Hazardous Waste.
Waste Turn-In	<p>Use Waste turn-in Form (Contact Tom Bowen for the form, 410-605-7000 x54848).</p> <p>For Waste Pick Up, Email Form to Safety Department :</p> <ul style="list-style-type: none"> ➤ Jen Dallaire , GEMS 410-642-2411 x25227 ➤ Sarah Jones, IH 410-605-7000 x 53697 or ➤ Rob Johnson, IH 410-642-2411 x26499
Drain Disposal	<ul style="list-style-type: none"> • Do not dispose of any hazardous waste down the drain