UVM Lab Safety Officers

Autumn Meeting
8 November 2017
Agenda

• News & Updates
• Recent incidents & events
• Back to Basics
  • Safe Lab Operations in McKay Lab (Bonnie Cantrell)
  • EHS Survey results (Sonia Godoy-Tundidor)
  • Lab Specific Training (Vikki Carhart)
• Protecting Your Research from Disaster
  • Torrey Fire response (Jeff R)
  • Torrey fire investigation (John L)
  • Protecting Research (Amy Daley)
• Q&A
Campus Lab Facilities

- Cook
- Discovery
- Innovation
- Votey
- Ifshin
- Central Campus Residence
- 655 Spear St
Operational Updates

The UVM Biowaste Shed Located at the HSRF loading dock

CatCard Access to Biowaste Shed at HSRF

1. Complete the online training for Biowaste Management Procedures.
2. Complete a Key Request form and obtain a signature from your department chair, director, or dean.
3. Submit the completed form to LockShop@uvm.edu

Please refer to the key policy for more information.
# Biosafety Training

**Basic Biosafety Training**

As of November 2017, several biosafety trainings are now issued through the Collaborative Institutional Training Initiative (CITI) trainings. See below.

Anyone working in a lab designated as BSL-2 must complete the BSL-2 Basic Course AND the classroom training entitled: "Biosafety for BSL-2 Laboratories."

Anyone at risk of coming in contact with blood, tissues, human cell lines or other potentially infectious material must complete "OSHA Bloodborne Pathogens" training annually.

Instructions for logging into CITI trainings can be found [here](#). When adding a course to your profile, the trainings will be listed under "IBC - Biosafety."

<table>
<thead>
<tr>
<th>Training</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITI BSL-1 Basic Course (on-line)</td>
<td>All lab personnel working at BSL-1 containment. Complete before working in a BSL-1 lab.</td>
<td>Take every 3 yrs or as directed by Biosafety Officer</td>
</tr>
<tr>
<td>CITI BSL-2 Basic Course (on-line)</td>
<td>All lab personnel working at BSL-2 containment. Complete before working in a BSL-2 lab, AND before attending the BSL-2 classroom training</td>
<td></td>
</tr>
<tr>
<td>Safe Use of Biosafety Cabinets (online)</td>
<td>All lab personnel using risk group 2 biological agents at BSL-2 containment.</td>
<td>before working in lab every 3 yrs or as directed by Biosafety Officer</td>
</tr>
<tr>
<td>Biowaste Management Procedures (on-line)</td>
<td>All lab personnel using biological agents.</td>
<td>before working in lab every 3 yrs or as directed by Biosafety Officer</td>
</tr>
<tr>
<td>Biosafety for BSL-2 Laboratories (classroom sign-up) (See schedule below)</td>
<td>Anyone working in a BSL2 designated lab, using risk group 2 or 3 agents, such as any human derived materials (e.g., cell lines, tissues and organs) and biotoxins</td>
<td>before working in lab every 3 yrs or as directed by Biosafety Officer</td>
</tr>
<tr>
<td>CITI OSHA Bloodborne Pathogens (online)</td>
<td>Workers at risk for contact with human blood, tissues, human cell lines or other potentially infectious material (OPIM)</td>
<td>before working in lab annually, as required by OSHA standard</td>
</tr>
</tbody>
</table>
Safety in Laboratories

CITI Online Training

As of November 2017, some of the online biosafety trainings provided by Risk Management & Safety have been replaced with Collaborative Institutional Training Initiative (CITI) Program trainings.

New CITI trainings:
- CITI BSL-1 Basic Course (required for personnel working in a BSL-1 lab)
- CITI BSL-2 Basic Course (required for personnel working in a BSL-2 lab)
- CITI OSHA Bloodborne Pathogens (required annually for workers at risk for contact with human blood, tissues, human cell lines, or other potentially infectious materials)

Instructions for Logging Into CITI:
1. Open your browser and go to the CITI Login Page (open in a new window).
2. Click “Log In” which is located at the top right of the CITI page.
3. Then, click “Log In Through My Institution”, scroll down to click on “University of Vermont” and use your UVM NetID and password to sign in.
4. Make sure you have an active UVM NetID in order to log in. If you haven’t updated your password in the past year, you may need to go to UVM’s Account Management page to change your NetID password or read a forgotten password.
5. If you haven’t associated your UVM account with CITI, you will be prompted to choose whether you already have a CITI Program account or if you don’t have a CITI Program account and need to create one. If you have set up a CITI account in the past, choose the first option and follow the instructions to link your UVM account. Otherwise, choose the second option and select “Click here to create a new CITI Program account.” If you do not receive these prompts, then proceed to step 5.
6. From the Main Menu, select “University of Vermont Courses.” Then, select “Add a Course.”
7. Check “BSL - Biosafety” and click next. Then, choose the appropriate options and click “Next” until you are finished adding courses. The course(s) will now be added to your UVM course list! Click on the newly added course within “University of Vermont Courses” to begin the training.
8. Complete the Integrity Assurance Statement and then begin working through the course modules. Note: You only need to take the modules listed under “Required Modules” to complete the course and that supplemental modules may be available to you as a member of the UVM research community.

Important: If you are working in a BSL-2 lab, you must complete the CITI BSL-2 Basic Course AND the classroom BSL-2 training provided by EH&S.

For anyone listed on an active IBC or IACUC protocol, more information is available on the Research Protections page.

You can check your CITI training records by finding your name in the dropdown menu.

Biosafety Research Training  Last Updated on November 07, 2017 at 6:00 AM

The records below indicate the following course completions from The University of Vermont’s IBC CITI Program course listing:

- BSL-1 Basic Course
- BSL-2 Basic Course
- Animal Biosafety
- Select Agents/DURC
- Nanotechnology
- OSHA Bloodborne Pathogens

If you have any questions about the IBC CITI courses, please view our CITI resource page for login/course instructions and additional FAQs.

Note: If "[No NetID Associated]" appears beside your completion, it is likely that you didn’t log in through UVM when signing into CITI. Please visit our resource page or contact us for instructions on how to associate your UVM NetID with your CITI training.

Biosafety Certification Date

If your name is not in this dropdown, contact RPO Office 856-5040.

Research Protections Office
Institutional Biosafety Committee
University of Vermont
213 Waterman Bldg, 85 So. Prospect St.
Burlington, VT 05405
August 2015, the Federal EPA made an unannounced inspection of ESF.

September 30, 2016, the EPA issued a complaint alleging that the University violated certain federal hazardous waste management regulations relating to staff training, alleged mixing of incompatible chemicals, and the labeling of waste containers.

UVM did not agree with certain allegations made by the EPA and responded to the EPA complaint providing documentation and information:
- Not all of the EPA’s training findings were accurate
- Storage and documentation findings were less significant than alleged in the complaint.
- UVM also showed that the allegation of incompatible chemicals was based solely on the chemical names and did not account for changes in chemical properties that occur during controlled laboratory procedures.

As a result of the University’s response and settlement negotiations, the University agreed to pay a substantially reduced fine of $20,000 to resolve the matter.
DEC Inspection Wrap Up
(Dec 2016 – March 2017)

1. Lab Personnel who had not completed required training.
2. Waste tags not filled out adequately (date and/or contents).
3. Waste > 6 months old.
5. Failure to label and close fluorescent lamps.
New Federal Hazardous Waste Regulation

U.S. Environmental Protection Agency

Top EPA Nominees Approved By Senate Committee

President Trump's nominees to head the Agency's air, water, chemical, and legal offices were approved by the U.S. Senate Environment and Public Works Committee.

Read the news release
Vermont Toxic Materials Use Legislation

• S.103 An act relating to the regulation of toxic substances and hazardous materials
• This act proposes amendments to Vermont’s existing regulations on
  – Toxics use reduction,
  – Hazardous waste minimization,
  – Pollution prevention, and
  – Chemicals of high concern to children.
• Passed house and voted onto full Senate this spring
• We’ll watch it in 2018
• http://legislature.vermont.gov/bill/status/2018/S.103
Service Animals in Laboratories

Policy
https://www.uvm.edu/policies/facil/serviceanimal.pdf
Most Common Lab Audit Deficiencies

1. Have all appropriate online and classroom safety training courses been completed?
2. Has the lab self-inspection been conducted?
3. Are all chemical containers labeled with English name, hazards, date opened, and responsible party?
4. Is the eyewash flush log visible and current?
5. Are UVM Waste Accumulation labels or tags completely filled out when any chemical waste is present in the container?
6. Are reports of hazard assessments available? e.g. chemical use and planning form or other specific assessments
7. Has the Laboratory Online Inventory (HCOC) been updated within the last 6 months with any new employees, critical equipment needs, and new chemicals?
8. Is secondary containment used for storing liquid chemicals?
9. Is the information in the UVM lab registry current for this space? e.g. PI, LSO, contact information, etc.
# UVM Lab Incidents

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Incident Type</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hills</td>
<td>Jan-17</td>
<td>Student Injury</td>
<td>Injured by falling window</td>
</tr>
<tr>
<td>Off Campus</td>
<td>Feb-17</td>
<td>Student injury</td>
<td>Assault by patient in clinical setting</td>
</tr>
<tr>
<td>Cook</td>
<td>Feb-17</td>
<td>Student Injury</td>
<td>Minor acid exposure</td>
</tr>
<tr>
<td>Dewey</td>
<td>Mar-17</td>
<td>HazMat Exposure</td>
<td>Pentobarbital solution splash to face/eye</td>
</tr>
<tr>
<td>Votey</td>
<td>Apr-17</td>
<td>Indoor Air Quality, Property Loss (&gt;$10K)</td>
<td>Sewer backup</td>
</tr>
<tr>
<td>Cook</td>
<td>Apr-17</td>
<td>Student Injury</td>
<td>Minor hazmat exposure</td>
</tr>
<tr>
<td>Terrill</td>
<td>Apr-17</td>
<td>Indoor Air Quality</td>
<td>Lab gas valve was left on causing natural gas odor</td>
</tr>
<tr>
<td>Cook</td>
<td>Apr-17</td>
<td>Student Injury</td>
<td>Minor cut - glassware</td>
</tr>
<tr>
<td>Farm</td>
<td>May-17</td>
<td>Employee exposure</td>
<td>Potential infection - research organism</td>
</tr>
<tr>
<td>Cook</td>
<td>May-17</td>
<td>External Response (Fire, Police, Rescue)</td>
<td>High room temperature caused fire alarm &amp; bld evac - won't happen again in Cook</td>
</tr>
<tr>
<td>Discovery</td>
<td>May-17</td>
<td>Property Loss (&gt;$10K)</td>
<td>Water tube popped off condenser in fume hood overnight causing water damage to 11 rooms</td>
</tr>
<tr>
<td>Cook</td>
<td>May-17</td>
<td>HazMat Release, Indoor Air Quality</td>
<td>Amine use while HVAC was off</td>
</tr>
<tr>
<td>Rubenstein</td>
<td>May-17</td>
<td>HazMat Release</td>
<td>4mL mercuric nitrate solution on bench &amp; floor</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jun-17</td>
<td>Fire/Life Safety</td>
<td>Chemical reaction fire in fume hood</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jun-17</td>
<td>Student Injury</td>
<td>Needlestick</td>
</tr>
<tr>
<td>Off Campus</td>
<td>Jun-17</td>
<td>Student Injury</td>
<td>Minor cut - pocketknife</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jun-17</td>
<td>HazMat Exposure</td>
<td>Concern about potential for HF exposure due to storage</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jun-17</td>
<td>HazMat Release</td>
<td>25 mL of protease inhibitor on floor</td>
</tr>
<tr>
<td>Hills</td>
<td>Jul-17</td>
<td>Fire/Life Safety</td>
<td>Compressed gas cylinder fell to floor - Air gas refused to deliver to room until storage conditions were improved.</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jul-17</td>
<td>Fire/Life Safety, HazMat Release</td>
<td>Lab reaction caught fire in fume hood</td>
</tr>
<tr>
<td>Discovery</td>
<td>Jul-17</td>
<td>HazMat Release</td>
<td>2.5 kg HCl spilled on floor in a large shared lab</td>
</tr>
<tr>
<td>Given</td>
<td>Jul-17</td>
<td>Indoor Air Quality</td>
<td>B-ME in BSC</td>
</tr>
<tr>
<td>BRC Farm Bern</td>
<td>Jul-17</td>
<td>Fire/Life Safety</td>
<td>Equipment cleanout</td>
</tr>
<tr>
<td>Given</td>
<td>Jul-17</td>
<td>Employee exposure</td>
<td>Bleach/Biological while washing labware</td>
</tr>
<tr>
<td>Given</td>
<td>Jul-17</td>
<td>HazMat Release</td>
<td>Trizol (phenol) poured into a vaoporizer</td>
</tr>
<tr>
<td>Torrey - Rook/Attic</td>
<td>Aug-17</td>
<td>External Response Fire/Life Safety</td>
<td>Structure fire - threatened Pringle Herbarium &amp; Natural History collection</td>
</tr>
<tr>
<td>Given</td>
<td>Aug-17</td>
<td>HazMat Release</td>
<td>Hazardous waste handling - 55-gallon drum punctured 1.5 gallons</td>
</tr>
<tr>
<td>Bioresearch</td>
<td>Aug-17</td>
<td>Employee injury</td>
<td>Needlestick during lab cleanout</td>
</tr>
<tr>
<td>Votey</td>
<td>Sep-17</td>
<td>Indoor Air Quality</td>
<td>Odors - construction related</td>
</tr>
<tr>
<td>Discovery</td>
<td>Sep-17</td>
<td>Student Injury</td>
<td>Minor cut - glassware</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student injury</td>
<td>Minor cut - aluminum</td>
</tr>
<tr>
<td>Votey</td>
<td>Oct-17</td>
<td>Evacuation</td>
<td>Indoor Air Quality</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student Injury</td>
<td>Minor acid exposure</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>External Response Fire/Life Safety, HazMat Exposure</td>
<td>Building boiler exhaust re-entrained in air supply - high CO</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student Injury</td>
<td>Minor cut - glassware</td>
</tr>
<tr>
<td>Rubenstein</td>
<td>Oct-17</td>
<td>HazMat Release</td>
<td>Ethanol from preserved specimen - spilled when contractor moved it. Researcher not present</td>
</tr>
<tr>
<td>Jeffords sidewalk/road</td>
<td>Oct-17</td>
<td>HazMat Release</td>
<td>UVM Farm program - vehicle leak</td>
</tr>
<tr>
<td>Stafford</td>
<td>Oct-17</td>
<td>HazMat Exposure</td>
<td>Coumassie Blue spill</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>HazMat Exposure</td>
<td>Magnesium &amp; methanol explosion &amp; safety shower activation (flood)</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Evacuation</td>
<td>HVAC shut down</td>
</tr>
<tr>
<td>HSIF</td>
<td>Oct-17</td>
<td>Employee injury</td>
<td>Needlestick</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student injury</td>
<td>Acid burn</td>
</tr>
<tr>
<td>Delehanty</td>
<td>Oct-17</td>
<td>HazMat Release</td>
<td>Broken mercury thermometer in oven</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>HazMat Release</td>
<td>50 mL oxali chloride on bench &amp; floor</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student injury</td>
<td>Minor acid exposure</td>
</tr>
<tr>
<td>Discovery</td>
<td>Oct-17</td>
<td>Student injury</td>
<td>Minor cut - metal</td>
</tr>
</tbody>
</table>
Safety in the McKay Lab

Bonnie Cantrell
PhD Student
Department of Animal and Veterinary Sciences
Facilitation of the Bovine Epigenome in the Limbic System: An Atlas of the Bovine Brain

Bonnie Cantrell, Nathan Jelsbel, Robert C. Switzer III, Eugene O'Keefe, Steven Zinth, Sharon Abom, Jane O'Neil, Rick Funkston, Robert Whidden, Stephanie McKay

Department of Animal and Veterinary Sciences, University of Vermont, Burlington, VT 05405; Department of Psychological Sciences, University of Vermont, Burlington, VT 05405; Department of Veterinary Science, University of Vermont, Burlington, VT 05405; Department of Animal Science, University of Connecticut, Storrs, CT 06269; Mixed-Animal Research and Extension Center, University of Nebraska, South Platte, NE 69151; Department of Animal Sciences and Industry, Kansas State University, Manhattan, KS 66506

IMPACT
- Understanding the bovine brain can foster research in economically important traits such as dairy, beef efficiency, milk and growth rates and differences in susceptibility to bovine Spongiform Encephalopathy.
- Due to large variation in brain structures amongst related species, a major limitation to research in the bovine brain is a lack of information in these areas.
- Many economically important traits are regulated within the limbic system of the brain and therefore, our initial focus was to develop a detailed limbic brain atlas using the bovine model.
- A functional representation of the bovine limbic brain builds a reliable foundation for future genomic research regarding economically important traits and diseases.

MATERIALS AND METHODS
- A two year old Holstein steer was slaughtered at New England Meat Processing Co., Market Springs, New Hampshire using traditional slaughter methods. The head was transported to University of Connecticut.
- Two liters of formalin were injected into the neck to fix the brain and the brain was removed.
- The brain was transported to the University of Vermont after perfusion and immediately removed from the skull with the dura mater intact.
- The brain was expanded and stained to a tube for 10 days and then examined under a microscope.
- The brain was then injected with 10 days of 1% sodium paraformaldehyde solution. After expansion, each lobe was removed from each section for the reconstruction of a 3D brain atlas.
- The brain was then scanned using the MicroBrain System from Brain Imaging Technologies, Provo, UT for 3D reconstruction of the brain atlas.
- The brain atlas was used for further study of the cortical organization of the brain in the cattle.

ACKNOWLEDGEMENTS
- This project could not have been completed without the support of the National Institute of Food and Agriculture.
- This project was supported by USDA-NRCS under Grant no. 2010-06825-20436 from the USDA National Institute of Food and Agriculture.
- Registration for E. Cortell to attend the ISFAN Workshop was supported by the National Science Foundation award ESI-1459002.

FUTURE DIRECTIONS
- These images and 30-dimensional visualization will be used to accurately dissect the anatomy, test numbers of the cortical zones, and categorize other brain regions.
- Future studies will involve histological studies of the bovine brain to determine the differential expression of specific genes.
- DNA will be extracted for whole genome biolistic sequencing to determine single base pair differences of methylation for potential measure of trophic material.

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Mckay lab

• Genetics Research
• Beetles, Moose, Bobcat, Horses, Cattle
Lab Approach to Safety

• First lab meeting of the year discusses basics of lab safety
• Contact information and schedules for all lab members is posted in the lab
• Lab supplies ordering done on Quartzy
• Zones in the lab for different hazards
<table>
<thead>
<tr>
<th>Step</th>
<th>February</th>
<th>March</th>
<th>April</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash/Recycling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restock/Laundry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab Safety Notebook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biohazard Bins/Benchtops</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Definition of chores**

- **Trash/Recycling**: Take out trash as needed throughout the week. Trash needs to be tied at least once a week.
- **Restock/Laundry**: Check that all solutions, (ddH2O, TE buffer, TAE buffer, SDS, etc) are stocked and check the level of all chemicals; note any that need to be reordered. Also make sure eppendorf and PCR tube containers are full. Make sure you are refilling the containers with autoclaved tubes; Laundry needs to be done at least once a month.
- **Biohazard Bins**: At the end of the week make sure that all the tabletop biohazard bins have been tied into the big biohazard bin by the 4ᴼC fridge. If the big bin is full please dispose of it properly (see Stephanie for details).

**NOTE**: You should restock chemicals as you empty them. This chore is to take a weekly stock of everything.

**NOTE**: You should empty the benchtop biohazard bins each day before you leave. This chore is to ensure that it has been done and to keep the big biohazard usable for everyone.

**NOTE**: You should wipe down your benchtop everyday after you are done using it. This chore to for a "deep clean" once a week for ALL surfaces.
My Approach To Training

- Orientation/Training Checklist for New Laboratory Workers
- Learning Goal Training Sheets
- Incorporate Safety into my Training
Learning Goal Sheet

Name: ______________________  Date: ______________________

Learning goal: ____________________________________________
__________________________________________________________
__________________________________________________________

List 3 things that you learned:

1. ________________________________________________________
2. ________________________________________________________
3. ________________________________________________________

List 3 things that you don’t understand:

1. ________________________________________________________
2. ________________________________________________________
3. ________________________________________________________

List 3 things you would like to know more about:

1. ________________________________________________________
2. ________________________________________________________
3. ________________________________________________________

Comments:

_____________________________________________________________________________________________
List 3 things that you learned:

3. Dump bio-hazard waste everytime after running trials

2. Write down samples that look out of ordinary. Don't try to remember them

3. Change gloves whenever you change activity (pipetting vs cleaning, etc)

List 3 things that you don't understand:

1. Reaction b/w PCI & CHCl3

2. How is contamination limited in Nanodrop?

List 3 things you would like to know more about:

1. Limiting sample contamination from end (breathing, skin cells)

3. Working with Syber Green vs Ethidium Bromide
Training Example

• Student pipettes various types of solutions that are nonhazardous
• Student wears standard PPE
• Teach task, but watch for safety concerns
• I ask questions that require the student to think for themselves about safety
Check for Safety Before Things Go Wrong

**Moderate Concern**
- Discuss what happened
  - Personal Opinion vs Safety Concern
- Dr. McKay addresses the problem with the student at their next weekly meeting

**Immediate Concern**
- Address the problem
- Discuss safety concerns/standard operating procedures immediately
- Dr. McKay is notified immediately
Questions?
Completing and documenting inspections and trainings

DOCUMENTATION
2017 Laboratory Safety Monthly Self-Inspections

The self-inspection is an integral part of UVM’s Laboratory Safety Plan and follows UVM’s Policy for Laboratory Health & Safety www.uvm.edu/safety/policy.

LAB INFORMATION

Building: Delahunty  
Room(s): 401  
Laboratory Supervisor: Dr. Smith  
Laboratory Safety Officer: Jane Adams

Directions:

1) In January, complete LAB INFORMATION above.
2) Once per calendar month, compare operations in your lab(s) with each item in the checklist.
   • If your lab is in compliance with the item, check it off for that month.
   • If your lab is not in compliance, remediate the situation immediately. If that is not possible, note the discrepancy in the NOTES section below, and update that note when the issue is resolved.
   • If a checklist item does not apply to your lab operations, check NA (Not Applicable).
   • Record the date of the oldest container of chemical waste in Section 5.
3) At least every six months, update the online lab registry as described in Section 1, and record those dates.
4) Once per year, complete the ANNUAL TASKS below.
5) Keep this checklist handy and obvious in your lab or lab safety notebook.
6) If your lab is going to be dormant for a few months (field work, sabbatical, leave, etc.) contact your Lab Safety Coordinator to arrange for temporary reduction in inspection requirements.

NOTES

<table>
<thead>
<tr>
<th>DATE</th>
<th>DISCREPANCY</th>
<th>RESOLUTION (with date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/5/17</td>
<td>waste &gt; 6 months old</td>
<td>tagged for pickup 1/17</td>
</tr>
</tbody>
</table>

ANNUAL TASKS

www.uvm.edu/safety/lab/

Date Completed | Please complete these items annually:
7/1/17 | 1) Annual Refresher training (required for every lab worker unless new this year)
8/1/17 | 2) Defrost freezers and refrigerators – control the defrost water
        | 3) Label samples for archival storage if appropriate
        | 4) Review lab chemicals and relabel or purge as appropriate.

1) Lab Registration & Notebook

1) Complete the online Lab Registry at least every 6 months and include all lab rooms, current lab workers and chemical inventory.
   www.uvm.edu/safety/lab/register-your-laboratory
2) Record the most recent registry update (semi-annually)
   www.uvm.edu/safety/lab/safety-documentation

2) Emergency Preparedness

www.uvm.edu/safety/lab/prepare-for-emergencies

Remember to review building specific safety features and lab specific protocols with new lab workers.
1) An emergency contact person has been designated and contact information is posted on the door.
2) Doorways, aisles, and egress pathways are unobstructed.
3) Eyewashes, drench hoses, and emergency showers are unobstructed and flushed monthly or weekly as appropriate.
4) Chemical Spill Kit is full, visible, and lab workers have been trained in its use.
5) Biological spill cleanup material (absorbents, appropriate disinfectant, PPE) is readily available.
6) Each sprinkler head has at least 18” clearance.
7) Each fire extinguisher is unobstructed.

3) Physical Safety

www.uvm.edu/safety/lab/identify-the-hazards

1) There are no visible trip or slip hazards.
2) Food and drinks are absent from the lab.
3) Electrical panels are unobstructed (36 inch clearance at all times).
4) Extension cords and multi-plugs are not used, unless UL listed with surge suppression.
5) Lab doors are kept closed.
6) Work surfaces are free of spill residues, stains, contamination, debris, and clutter.
7) Ladders and step stools are in good condition and adequately weight-rated.
8) Sharps, razor blades, and utility knife blades are disposed in rigid, puncture-resistant, labeled containers or sharps containers as appropriate.
9) “Uncontaminated Waste” boxes have a plastic liner, are not overfilled, and when full are placed in an appropriate dumpster.

4) Environmental Sustainability

www.uvm.edu/safety/lab/sustainability

1) Fume hood sash is kept closed when not in use.
2) Lab equipment, biosafety cabinets, and lights are turned off when possible.
3) Spent fluorescent light bulbs are properly disposed as chemical waste.

Problems with building systems should be promptly reported to the Physical Plant Department using the FAMILS work order system. Critical needs should be reported by phone to Service Operations at 656-2560; select 1 to speak to an operator.
5) Chemical Safety

Preparing for Chemical Work
www.uvm.edu/safety/lab/chemical-safety

Review current assessments (CUPS/SOPs) with new lab personnel. Assess hazards of new protocols and procedures. Update SOPs or CUPS as needed.

1) Chemical Use Planning Forms (CUPFs), or appropriate hazard assessments, are complete & current.
2) All lab workers have reviewed lab CUPFs or assessments.
3) All lab workers (including new and temporary) have completed UVM's required Safety training.

Controlling Hazards of Chemical Work
www.uvm.edu/safety/lab/evaluate-and-control-the-hazards

1) Chemical containers are labeled with full chemical names, hazards, date, and initials.
2) Chemical containers are in good condition and securely closed.
3) Chemicals are segregated and stored according to hazard.
4) All hazardous liquids are stored below eye level in secondary containers.
5) Chemicals are not stored on the floor or in fume hoods.
6) Fire code limits regarding the amount of flammables in storage are observed.
7) Flammable liquids are not stored in a household-style refrigerator/freezer.
8) Compressed gas cylinders are properly restrained (e.g., a chain or strap on upper 1/3 of the cylinder or other approved device) and with valve cover or regulator in place.
9) The chemical fume hood "tell tale" indicates air is being drawn through the hood's sash opening at the proper speed.
10) Appropriate PPE (clean lab coats or other protective clothing, closed-toe shoes, protective eyewear, gloves, etc.) is worn when working with hazardous chemicals.
11) Respirators are properly stored and used to meet the requirements of Respiratory Protection Program (even for voluntary use). www.uvm.edu/safety/lab/respirators

Chemical Waste Management
www.uvm.edu/safety/lab/chemical-waste

1) There are no outdated or expired chemicals in storage.
2) Sink disposal of any chemical solution has prior approval, and the approval is filed in the Lab Safety Notebook.
3) Trash is free of all laboratory chemicals and items contaminated with hazardous materials.
4) Waste containers are in good condition, compatible with the contents, and securely closed.
5) Liquid waste chemicals are stored in secondary containers with compatible chemicals.

6) Yellow waste accumulation labels and/or white waste disposal tags must be completely filled out, dated, legible, visible, and affixed to each container of waste. Waste must be picked up from the lab within 6 months of the start date. Enter tag information online to initiate waste pick up.
Write the date of the oldest waste container each month or NA if no waste.

6) BIOSAFETY for Biosafety Level 2 Laboratories

Preparing to Do BSL2 Work
www.uvm.edu/safety/lab/biosafety

1) IBC approved protocols are in use for work involving rDNA, infectious materials, synthetic nucleic acids, and biohazards.
2) A written Standard Operating Procedure for work involving infectious agents or biological toxins is available and routinely followed.
3) Biosafety cabinets have current annual certification.
4) Centrifuge rotor integrity and interlock are verified.
5) Storage of select agents or select agent toxins is within regulatory limits.

Training
1) Bloodborne Pathogen (BBP) training is completed and documented annually if using human blood, primary cell lines, tissues, or other potentially infectious materials (OPIM).
2) On-campus transportation of potentially infectious material is according to UVM protocol.

Biosafety Controls
1) Biosafety (BSL 2) door sign is posted at laboratory entrances and on equipment used with biohazardous materials.
2) Appropriate PPE (clean lab coats or other protective clothing, closed-toe shoes, protective eyewear, gloves, etc.) is worn when working with biohazardous materials.
3) Equipment and work surfaces are decontaminated upon completion of work.
4) Freezers are labeled and inventoried as required.

Biowaste Management
www.uvm.edu/safety/lab/biowaste-management

1) No biohazardous waste or pipettes are in the regular trash.
2) Aspiration traps with filters and appropriate disinfectant are in place.
3) All containers of biowaste are identified with a biohazard label.
4) Biowaste bags are red or red-orange and are stored on the floor.
5) Needles and other "sharps" are collected in sharps containers.
6) Biowaste containers are not overfilled and are kept covered with a cleanable lid.
7) Biowaste boxes are kept under 50 pounds and regularly delivered to the biowaste shed at HSRF, or other appropriate location.

In Case of Urgent Hazardous Materials Incident or Critical Service Need

Call Service Operations Support (SOS) at 656-2560 and select 1 to reach an operator. Ask them to page Risk Management & Safety, Physical Plant, and/or other appropriate personnel. This phone is answered 24 hours a day, 7 days a week.

SOS: (802) 656-2560, select 1
Lab-Specific Training Documentation

Each lab should document any lab-specific training that is completed by a lab worker. The type of lab-specific training may include:
- Hazardous materials used in the lab
- Lab-specific procedures or protocols (e.g. SOPs, IBC or IACUC Protocols)
- Safe operation of lab equipment

<table>
<thead>
<tr>
<th>Date</th>
<th>Trainer</th>
<th>Training Outline / Description of contents of training</th>
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<td>Bob Jones</td>
<td>Autoclave Use: Hazards/Risks, Steps to run autoclave, personal protective equipment use, how to load the autoclave, safe removal of materials, testing the autoclave</td>
<td>Ima Hazard, Justin Thyme</td>
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http://www.uvm.edu/safety/lab/safety-documentation