

2025 LAB SAFETY AWARDS & INNOVATION EVENT



USING LAB MANAGEMENT PLATFORM TO CONDUCT RISK ASSESSMENTS OF NEW WORK

Washington Nanofabrication Facility
College of Engineering



This open-access, nanofabrication facility established a New Materials Process using their lab management platform in CORAL, which is an open-source

electronic resource management system available for free. When new work plans are submitted through the platform, all incoming materials and novel processes are reviewed and tracked. This allows for evaluation of new hazards, checking of compatibility with existing processes, and addressing of any inter-process contamination concerns in a location available to a large user base from many sectors.

INTERACTIVE AND COLLABORATIVE RISK ASSESSMENTS

Jay Werner / Bergsman Lab
Chemical Engineering
College of Engineering



The EH&S LabRAT document was transcribed to SharePoint as a list for the Bergsman Lab by Jay Werner. The adaptation of this form as a SharePoint PowerApp allows plans for new processes to be documented collaboratively and quickly, and it saves them on the SharePoint site for future reference. The app is filled out by the originator of the new process and a colleague who can workshop the plan and challenge safety concerns. Then the two individuals execute a trial run of the process and record the results before submitting the plans for supervisor approval. By making the LabRAT form easy to fill out and collaborative, this innovation increases compliance with risk assessment documentation, ensures new processes are given careful consideration before a trial run, and reduces paperwork.

LAB MOUSE – DAILY SAFETY CHECKS FOR RISK ASSESSMENT

Julia Hancock / Rorrer Lab
Chemical Engineering,
College of Engineering



Julia Hancock developed the Lab MOUSE planning tool to assist the Julie Rorrer Lab in laboratory process risk assessments. Many of their new processes were simply extensions of existing processes and they needed a way to track risk assessment more efficiently and fluidly to accommodate the small variations of each case. The Lab MOUSE is a single-page risk assessment tool based on the EH&S lab risk assessment tool (LabRAT) document and stands for **Management of hazards, Organization of waste streams, Use of PPE, Scanning of SDS information, and Establishment of emergency protocols**. Lab members use the Lab MOUSE whenever they are designing a new sub-process, and users of the tool have noted improvement in safety protocols and comprehension of engineering controls for their work.

LABORATORY SAFETY PLANNING TOOL (Lab M.O.U.S.E.)

Hello team! Welcome to the Lab M.O.U.S.E. planning tool. This form is a brief risk assessment tool designed for making brief, daily evaluations of the safety considerations for a new experiment.

Follow these steps to ensure your work is safe!

M - Manage hazards with effective controls
O - Organize plan for waste storage and disposal
U - Use PPE listed in assessment
S - Scan SDS for handling and storage information
E - Establish an emergency protocol, including first aid and cleanup

1. Determine Hazardous Agents

Physical Hazards	Health Hazards
<input type="checkbox"/> Compressed gases	<input type="checkbox"/> Acute toxicity
<input type="checkbox"/> Explosives	<input type="checkbox"/> Carcinogens
<input type="checkbox"/> Flammables	<input type="checkbox"/> Eye damage
<input type="checkbox"/> Oxidizers	<input type="checkbox"/> Nanomaterials
<input type="checkbox"/> Peroxide formers	<input type="checkbox"/> Reproductive toxicity
<input type="checkbox"/> Pyrophorics	<input type="checkbox"/> Respiratory damage
<input type="checkbox"/> Self-heating/self-reacting	<input type="checkbox"/> Asphyxiant
<input type="checkbox"/> Water-reactive	<input type="checkbox"/> Skin corrosion/irritation
<input type="checkbox"/> Air-sensitive	<input type="checkbox"/> Specific organ toxicity
	<input type="checkbox"/> Other

2. Determine Hazardous Conditions

Is the reaction...?	Does the reaction involve...?	Other hazards?
<input type="checkbox"/> Explosive	<input type="checkbox"/> Aerosols/particulates	<input type="checkbox"/> Power tools
<input type="checkbox"/> Endothermic	<input type="checkbox"/> Heating chemicals	<input type="checkbox"/> Motor/pitch
<input type="checkbox"/> Exothermic	<input type="checkbox"/> Scaled-up reagents	<input type="checkbox"/> Loud noise
<input type="checkbox"/> Gas-producing	<input type="checkbox"/> High pressures	<input type="checkbox"/> Hot surfaces
<input type="checkbox"/> ...	<input type="checkbox"/> Vacuum	<input type="checkbox"/> Needles/sharps
		<input type="checkbox"/> ...

☐ Reaction produces hazardous side products

3. What-ifs

Write down three "what-if" scenarios and an appropriate control or response

What if...?

-
-
-

To prevent this...

-
-
-

Name: _____
Date: _____
Experiment Description: _____

4. Apply the hierarchy of controls

Elimination: Physically remove the hazard (e.g., remove a chemical from inventory)

Substitution: Replace the hazard (e.g., replace a chemical with another)

Engineering Controls: Isolate people from the hazard (e.g., remove a chemical from inventory)

Change the way people work: (e.g., have fewer people working in the lab, use less hazardous equipment)

Personal Protective Equipment: Protect the worker with PPE (e.g., wear a lab coat and safety goggles)



ONLINE SUBMISSION OF LABORATORY RISK ASSESSMENTS

Phil Cox / Pomfret Lab
Washington Clean Energy Testbeds,
College of Engineering

Through Entrepreneur-in-Residence and Investor-in-Residence programs and community-sponsored events, the Testbeds serve as an active gathering space for cleantech innovators and investors. Every year, dozens of research groups, both from UW and from private industry, use this facility. In order to more efficiently handle risk assessments for usage of hazardous chemicals in the facility, Phil Cox, the program manager, created a Google Form version of the EH&S LabRAT document and added it to their online project request process. This form allows facility management to automatically collect responses from users about work plans and keep them for review and approval in a centralized location. Submissions are reviewed by staff and used to make informed decisions about work practices to put in place and safety requirements necessary for the use of every chemical brought in.



Risk Assessment Tool

The Risk Assessment Tool is used to determine the level of risk associated with use of a particular chemical or procedure. Please fill out the form to the best of your knowledge. WCET staff will review and make changes if necessary.

corp51@uw.edu [Switch account](#)

Not shared

* Indicates required question

Procedure Name (can be the chemical name or process) *

Your answer

MENTORSHIP PROGRAM IN THE LAB

Murial Ross, Irina Kopyeva, Cole DeForest Lab
BioEngineering / Chemical Engineering,
College of Engineering



Following completion of required EH&S safety training modules and a required lab safety walkthrough with the lab safety officer(s), all new DeForest Lab undergraduate, graduate, and postdoctoral members are formally assigned an additional safety point person – a senior researcher who has been working as part of the lab for several years – who serves as the go-to person for all safety-related questions that come up while working in the lab. The mentorship program allows new students to have a designated person to ask any safety-related questions, improving overall safety practices in the lab. This helps ensure chemicals are stored properly, waste is disposed of correctly, and safety protocols are followed.

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Marjorie Wonham, Maia Kreis, Bernadette Holthuis, Peggy Combs, Megan Dethier
Friday Harbor Laboratories
College of the Environment

EMERGENCY PHONE TREES FOR FIELD COURSES

Over a hundred researchers visit Friday Harbor Laboratories (FHL) every year to conduct marine-related studies for UW and other educational institutions. The campus welcomes researchers and students year-round. In 2024, FHL staff and faculty collaborated to develop a concise and user-friendly field-safety and lab-safety packet for course instructors. The packet provides safety and emergency response guidelines for off-campus field trips and on-campus laboratory use. To support student-directed inquiry, the packet also provides a field-safety protocol for independent student group projects.



Marjorie Wonham proposed and led the efforts for creating class-specific phone trees for every field course to use in the case of an emergency. Now this standardized document with contacts for both students and instructors to use is included in the safety packet folder that goes into the field with each class.

DEDICATED FIRST AID KITS FOR FIELD COURSES

University units are responsible for ensuring the availability of quick and effective first aid and readily accessible first-aid supplies in all work areas.

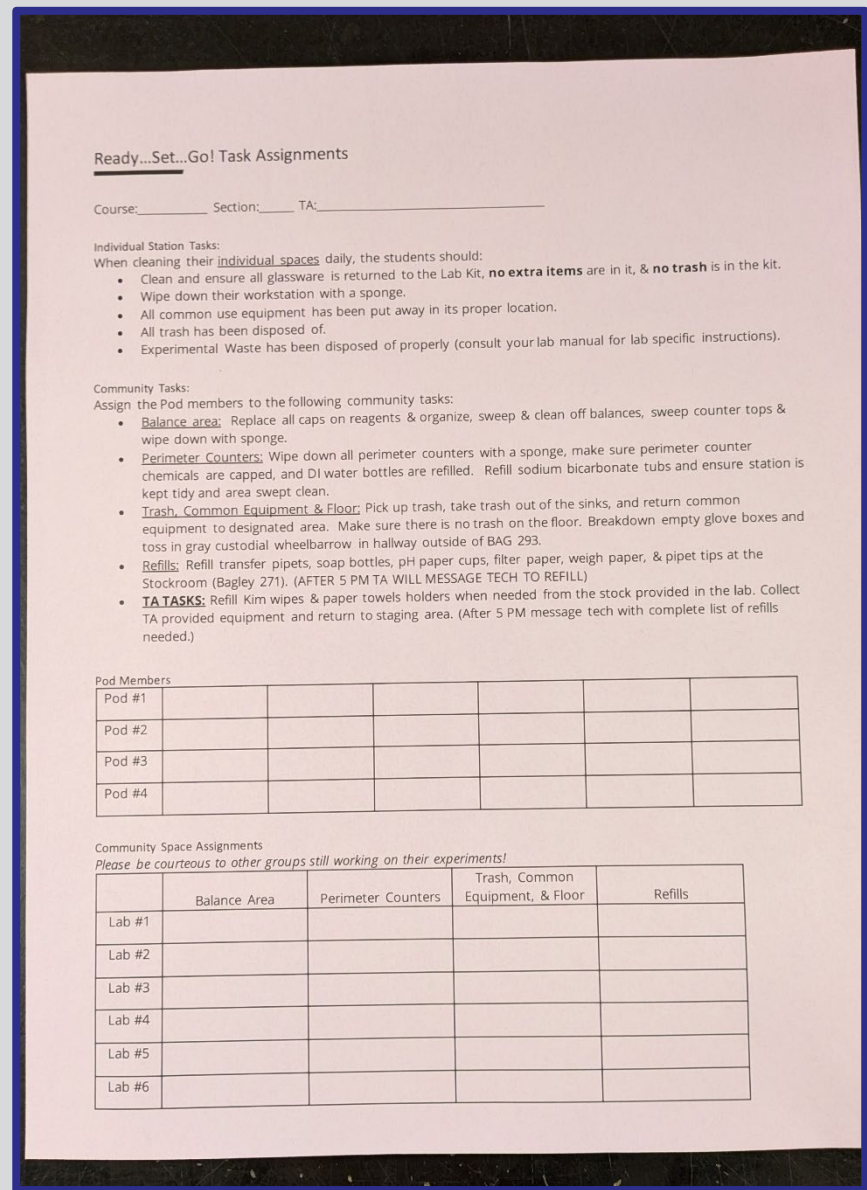
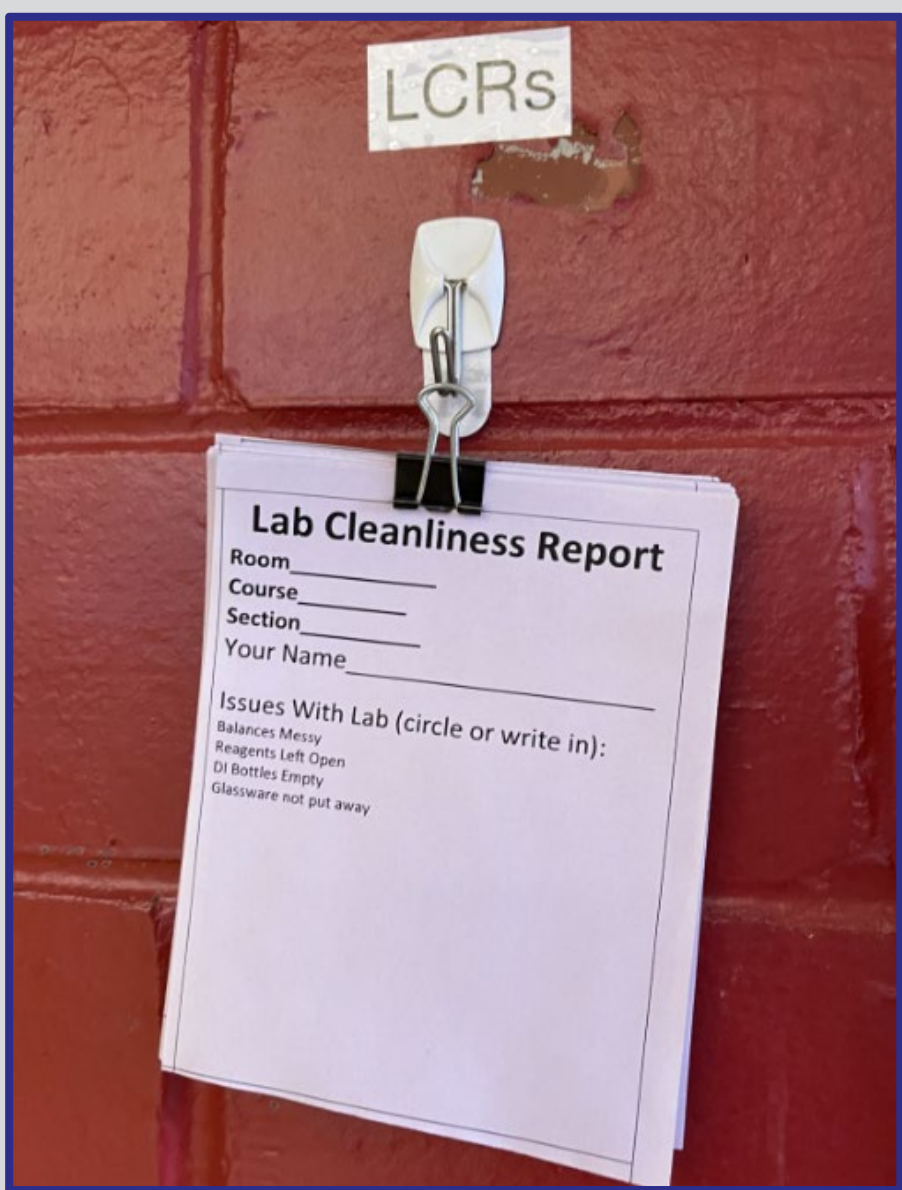
Marjorie Wonham advocated for the use of dedicated first aid kits that classes could take out into the field at FHL. She worked to identify the type of easily portable kit that would best suit the needs of FHL classes, and the campus now offers a check-out system to allow the small-group first-aid kits to be used by campus members.



LAB CLEANLINESS REPORTS FOR TEACHING LABORATORIES

Chemistry Department Scientific Instructional Technicians
Department of Chemistry, College of Arts & Sciences

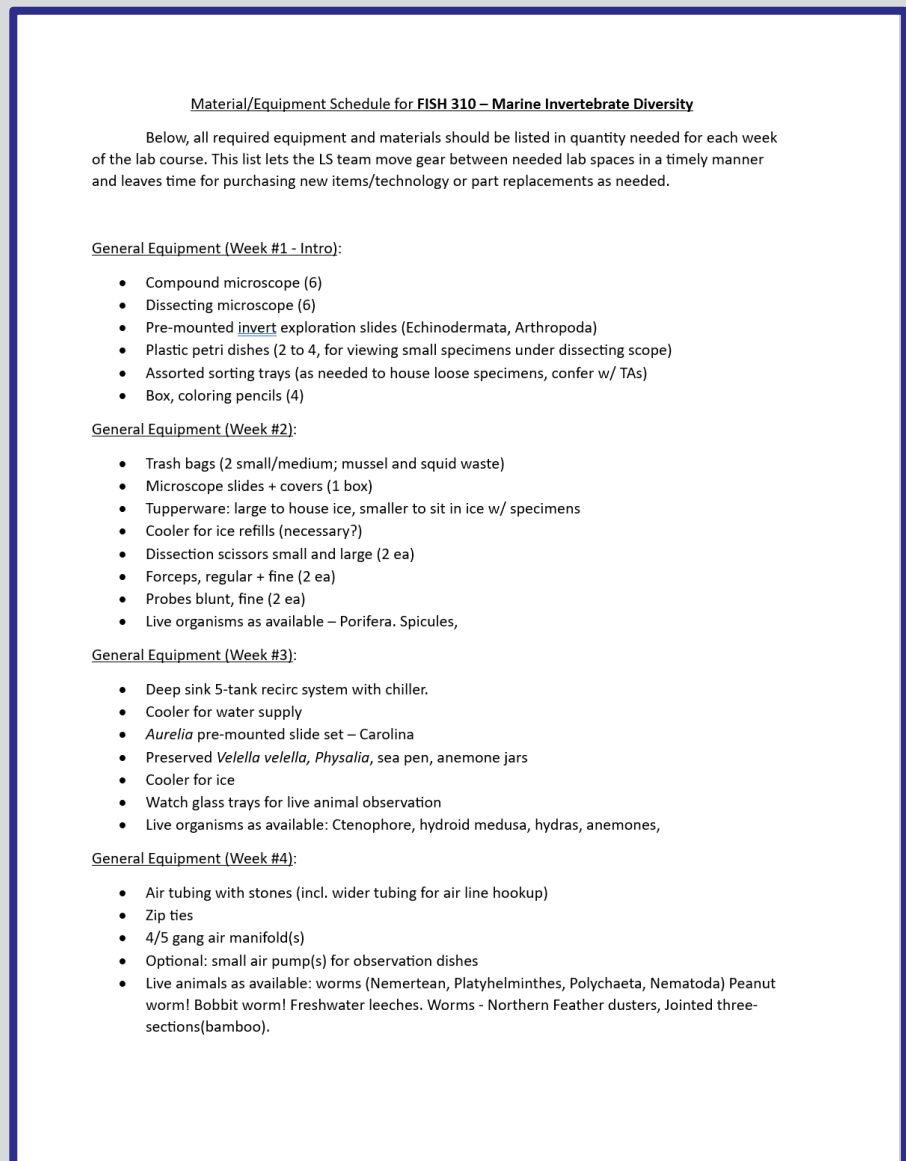
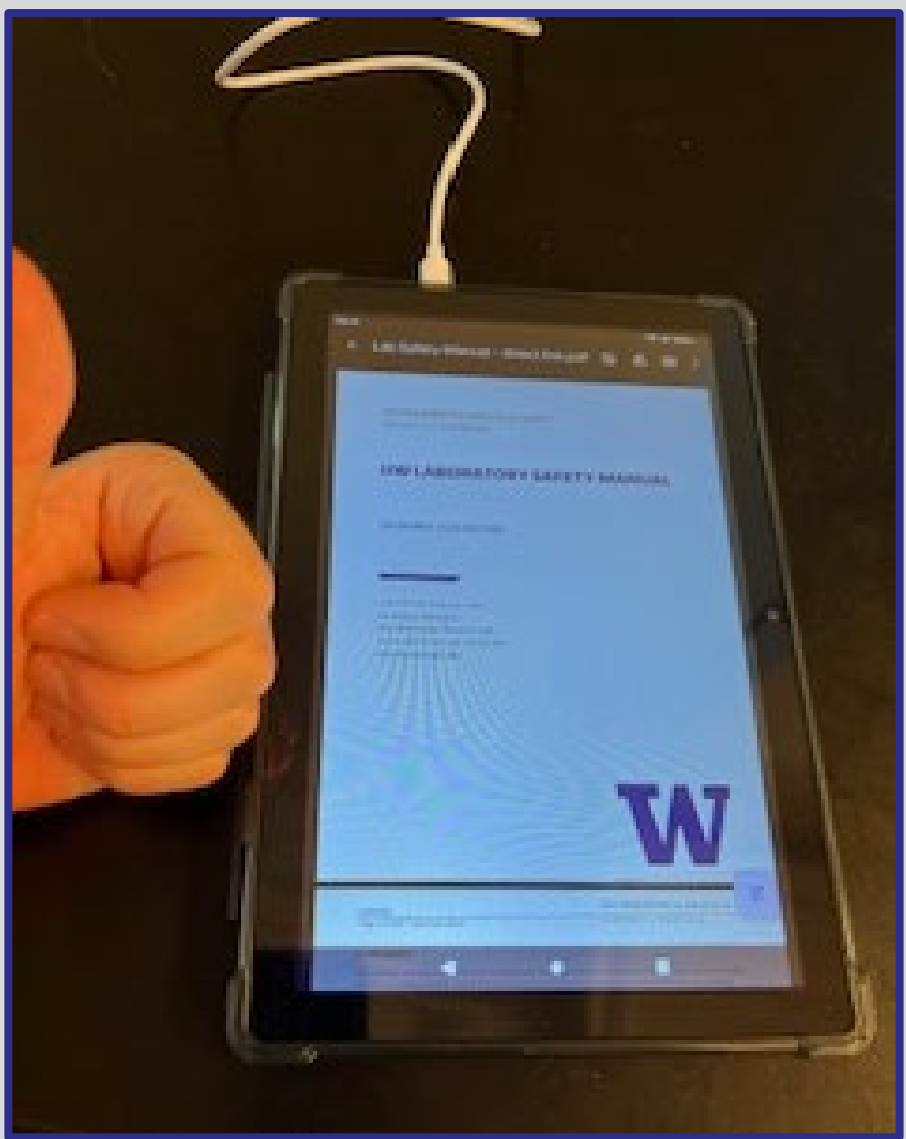
Teaching laboratories are often used by different groups and classes in the same quarter, so keeping them organized and clean can be challenging. The Department of Chemistry developed a system to communicate issues identified and encourage individuals to keep the spaces in good condition after usage. Lab Cleanliness Report slips are posted on the wall in every teaching lab room to allow teaching assistants (TAs) to note issues in the lab spaces when they enter the room. Any notes submitted are then shared with the TA who previously used the room. The department also provides Ready Set Go sheets in the labs to encourage TAs to assign clean up duties to students in their class and have routine housekeeping practices for the course.



QUARTERLY TEACHING ASSISTANT GUIDES WITH SAFETY INFORMATION

Andy Nutzhorn and Jon Wittouck
School of Aquatic and Fishery Sciences
College of the Environment

For each of the instructional lab courses offered by the School of Aquatic and Fishery Sciences, a guide is developed for the teaching assistant (TA) assigned to teach the course to support them in assuming instructional duties and through the duration of the course. The guide assumes no prior familiarity with the course nor the lab space itself. Information provided includes materials needed week by week for the course, all safety requirements and trainings, chemical labeling and waste practices, risk assessments, and SOPs that fall under the class scope. The guides are updated at least quarterly with input from the TAs, faculty instructors, and lab support personnel. Access to the TA guides is provided through tablets kept in the teaching labs.



INCORPORATING FIELD AND RESEARCH SAFETY INTO CAPSTONE COURSES

Jennifer Cabarrus and Amy Lambert
School of Interdisciplinary Arts & Sciences,
UW Bothell

The UW Bothell School of Interdisciplinary Arts and Sciences (IAS) offers a two-quarter Capstone: Research in Environmental Science course. To strengthen safety practices, IAS integrated Environmental Health & Safety (EH&S) trainings and documents into the Capstone curriculum. Key components of this were:

- developing and facilitating sessions using EH&S's Field Risk Assessment Tool (Field RAT) so each student creates a project-specific Field Safety Plan.
- applying the EH&S training matrix to identify required courses for laboratory-based projects and monitoring training completion.
- implementing EH&S Boating Safety Manual requirements, including Float Plans for any non-motorized vessel use.
- collaborating with IAS administration to fund AHA CPR/First Aid training and AED certification.

These safety measures are now mandatory prior to fieldwork or laboratory access, ensuring students are prepared for the research environments they plan to work in.



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HAZARDOUS MATERIALS
STORAGE CABINET LABELS
PRINTED FROM MYCHEM

Dylan Edmundson, Anna Fall, Anthony Dichiara Lab
School of Environmental and Forest Sciences,
College of the Environment

Most chemicals have multiple hazards, and even chemicals in the same hazard class can be incompatible with each other. It is important for lab members to know where to store the chemicals they work with. By printing cabinet storage labels directly from the MyChem database, the Anthony DiChiara Lab ensures that physical storage locations match their inventory records. This has improved hazard communication and significantly reduced the risk of incompatible chemicals being stored together.

Chemical Name:	HCBT-009		
CAS:	67-64-1	Catalog:	HC3891GAL, AC771710X00, AC771710B0A, AC7320METH, AC771710E05, AC7320D0040, 432340040, 432340050, 432345000
Storage Information			
*Status:	<input type="radio"/> Solid	<input checked="" type="radio"/> Liquid	<input type="radio"/> Liquefied Gas
*# of Containers:	<input type="text"/>		
*Amount Per Container:	<input type="text"/>		
Rx Code:	<input type="text"/>		
*Pressure:	<input type="checkbox"/> Ambient	<input type="checkbox"/> Greater than Ambient <input type="checkbox"/> Less than Ambient	
Chemical Process:			
Storage Location: IGUONE EXAMINATE-CATALYST			

MANAGEMENT OF CHEMICAL STORAGE PRACTICES USING CONTAINER LABELS

**Phil Cox / Pomfret Lab
Washington Clean Energy Testbeds,
College of Engineering**



CHEMICAL NAME
AMOUNT
PI NAME
STORAGE LOCATION

At the Washington Clean Energy Testbeds, hundreds of chemical containers are brought in and out of the laboratory facility by dozens of research groups every year. To keep track of which

chemicals are coming in and where they need to be stored, the program manager, Phil Cox, developed a chemical inventory sticky label system that creates a sticker for every container brought into the facility. The labels include a storage code indicator that instructs the user exactly where to store the chemical, eliminating confusion and preventing incompatible chemical storage mistakes. The location is also recorded in MyChem when an inventory entry is made, making it substantially easier to manage chemicals that might have multiple appropriate storage locations.

REMOTE TARGET HANDLING STATIONS FOR WORK WITH RADIOACTIVE MATERIALS

Marissa Kranz and the UWMC Cyclotron Team

The UW Medical Cyclotron Facility Target Handling System is comprised of a station that loads and ejects targets, a fully shielded hot cell in lab space outside of the cyclotron vault, and a pneumatic transfer system moving radioactive targets from the station to the hot cell for processing. Targets used to be manually removed from the beamline and chemical processing was performed in a glove box. Manual removal required waiting hours or even days until radiation levels decreased to safe levels, limiting production capacity. The Cyclotron Team led by Marissa Kranz developed a new system which automatically releases the target into a lead pig and securely caps it, enabling faster processing and shipment to clients while dramatically improving worker safety.



The team also helped develop an automated pneumatic Target Transfer System to move targets from the cyclotron to the hot cell. The hot cell now features enhanced shielding, remote manipulation tools, and other safety features, allowing staff to handle higher-activity targets safely. These advancements significantly improve worker safety and support Radiation Oncology research.

HYDROFLUORIC ACID SAFETY CHECKLIST AND SPILL KIT

Michelle Giarmarco, Edward Parker, Maureen Neitz Lab
Department of Ophthalmology
School of Medicine

The Maureen Neitz Lab sporadically uses hydrofluoric acid (HF), which is acutely toxic and can be fatal at even low concentrations or small volumes. To create awareness of the hazard and ensure safe handling, Michelle Giarmarco created a checklist of tasks for a person to complete every time they work with HF. The lab also put together a spill kit specifically for conducting work with HF so that all emergency supplies, including calcium gluconate, are readily available in the event of an incident.

- ### Before removing HF from the acid cabinet to the fume hood:
- ☐ Complete HF training from RW4545
 - ☐ Review SOP & SDS
 - ☐ Locate 4 universal chemical spill kit
 - ☐ Locate nearest eyewash and safety shower
 - ☐ Place 2.5% Calcium Gluconate gel in the hood
 - ☐ Locate or prepare 10% calcium carbonate solution for cleanup
 - ☐ Remove everything from fume hood unless you'll be using it. Line fume hood bench top with plastic-backed absorbent pad
 - ☐ Don PPE in this order:
 - 1. Lab coat + Tyvek suit + rubber splash apron + Tyvek sleeves
 - 2. Fully enclosed safety goggles and face shield
 - 3. Butyl rubber or 22mil neoprene gloves (inspect for holes) + extra nitrile if desired



BUFFER DISPOSAL GUIDE

Sam Koplik, Matthew Hirano, Georg Seelig Lab
Paul G. Allen School of Computer Science &
Engineering, College of Engineering

[illegible]

to dispose of common buffers found in molecular biology lab kits (e.g., gel extraction or PCR cleanup kits) and uploaded it to the lab's safety shared drive. This ensures everyone in the lab can find and follow the right disposal practices for buffers used in their work.

FUME SCRUBBER FOR HAZARDOUS VAPORS

Alex Gray / Brian Flinn Lab
Materials Science & Engineering
College of Engineering



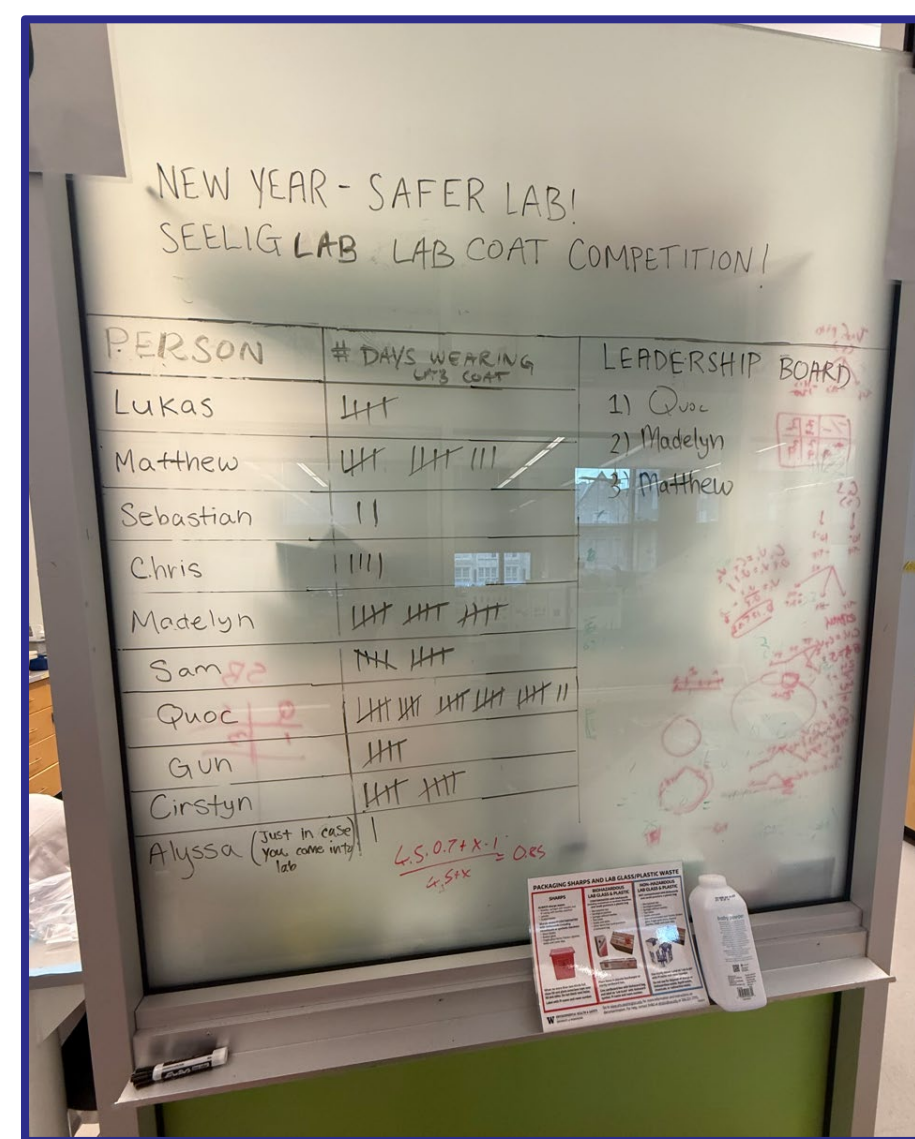
An autoclave used by researchers at Wilcox Hall for curing composite materials is in a location that does not allow it to be vented to the outside of the building. The venting process is extremely loud and produces a noticeable odor of hot plastic and epoxy during and after the cure cycle. Users identified that an activated charcoal filter could address some of these issues. Since a filter rated to take the output pressure of the autoclave and large enough to handle the volume of air involved would cost tens of thousands of dollars, Alex Gray custom built activated charcoal fume scrubbers and mufflers for the autoclave using schedule 40 PVC, paracord, filter cloth, gravel, and activated charcoal. The scrubbers have removed all noticeable odor, markedly reduced noise, and made the workspace a safer place to be in overall.

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LAB COAT-WEARING COMPETITION

Sam Koplik, Matthew Hirano, Georg Seelig Lab
Paul G. Allen School of Computer Science & Engineering, College of Engineering



Wearing personal protective equipment (PPE), including safety eyewear and lab coats, is important for protecting yourself from exposure to hazards. To encourage routine use of PPE, Georg Seelig Lab developed a contest to track which individuals wore their lab coat the most. For every day that someone wore their lab coat in the lab, a tally was added to the scoreboard. At the end of each month, a winner is declared and given bragging rights. There a leadership board for this contest ranking first, second, and third place overall. Congratulations to Quoc Tran, who won the lab coat safety competition last month!

ALL-MEMBERS LAB CLEANING SESSIONS AFTER FIELD WORK

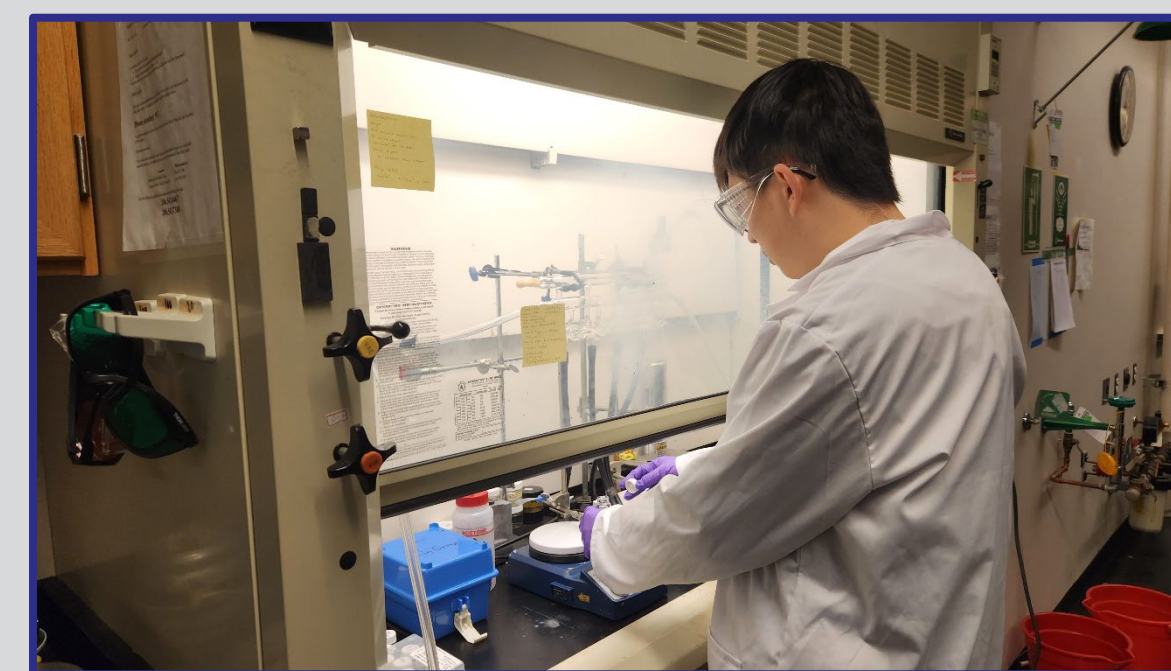
Amelia Keyser-Gibson, Soo-Hyung Kim Lab,
School of Environmental and Forest Sciences,
College of the Environment

As a primarily field- and greenhouse-based group, the Soo-Hyung Kim Lab spends a lot of time working away from their laboratory space. It can be challenging to establish housekeeping routines in research spaces used sporadically rather than daily, so this group established a practice of everyone coming together to clean and organize the laboratory spaces at a set time. This practice helps build accountability and ownership over lab organization and cleanliness, establishes the best use of space and lab safety practices collaboratively, and promotes clearing out of materials from past members or equipment not currently in active use to provide more workspace for current lab members.



TRAINING SESSIONS ON LAB-SPECIFIC WASTE PRACTICES

John Leo Velpugonda, Naresh Varnakavi, Zhaohui Xing,
Bufan Yu, Lih Lin Lab,
Electrical & Computer Engineering, College of Engineering

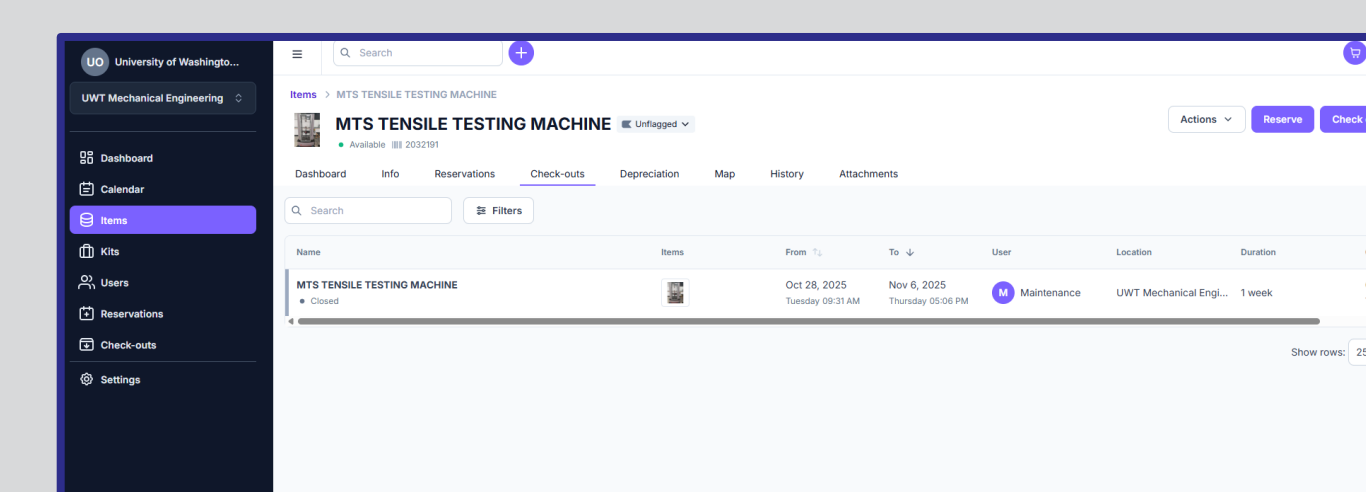
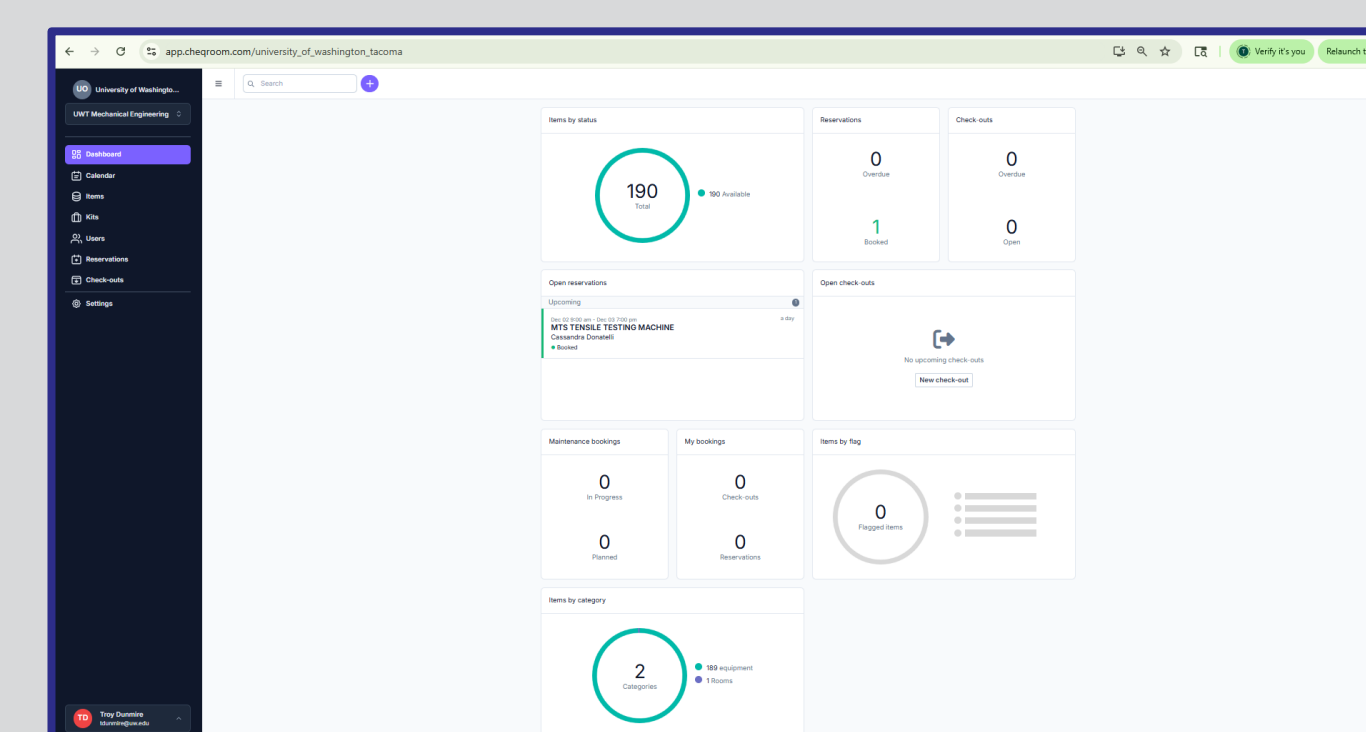


Waste practices for a lab are impacted by the types of materials in use, the volumes of waste generated, and the lab's location, and it is important for every lab member to follow practices in place. The Lih Lin Lab created their own lab-specific training for waste practices. The training is now mandatory for all lab members and covers procedures for segregation, labeling, temporary storage, and disposal of all waste types (lead, non-lead, solid, liquid) generated in the lab. The training makes expectations clear and has significantly improved consistency in waste handling practices by their lab group.

USING CHEQROOM TO TRACK AND MONITOR EQUIPMENT LOANED OUT

Troy Dunmire, Joel Larson,
School of Engineering & Technology, UW Tacoma

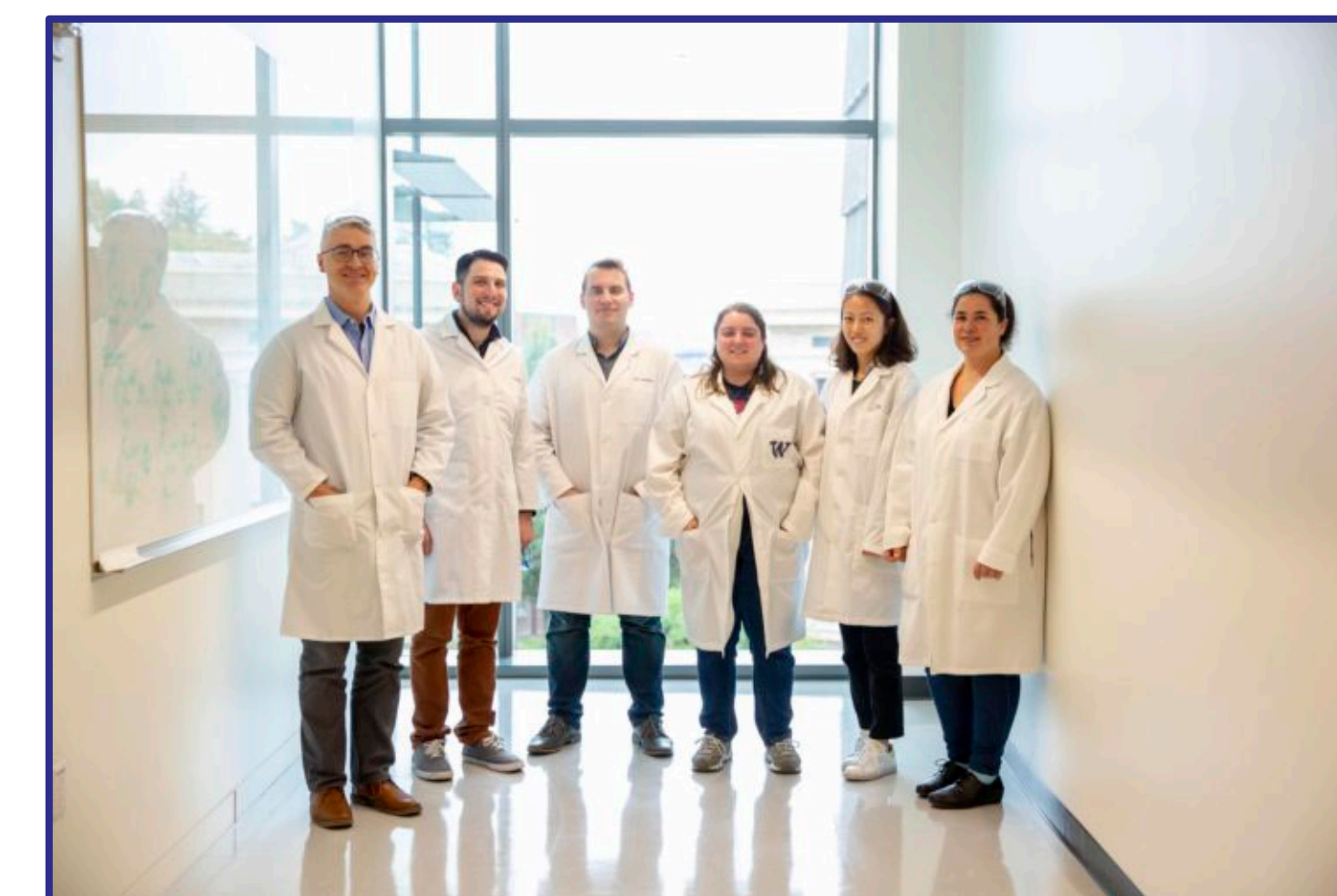
There are four programs at UW Tacoma's School of Engineering & Technology – Mechanical Engineering, Civil Engineering, Electrical Engineering, and Computer Engineering – providing use of over 700 pieces of equipment to campus members. Maintaining a safety program for that number of items can be very challenging, so the School invested in using a management program called Cheqroom. Lab managers, Troy Dunmire, Julie Palumbo, Chris Barrett, and Bob Landowski, use this program to track usage, maintenance, and repair of equipment items and to verify that individuals have completed training prior to checking out any of the items. The program provides access to instruction manuals, calendars, and training documentation. Managers can also use it to schedule depreciation and link to UW assets tags. The program is not inexpensive but has been worth the cost due to the hundreds of hours of administrative labor it has saved.



QUARTERLY SAFETY DAY

Rachel E. Gariepy, Lars Forberger, Alexey Soldatenko, Zhaojie (Andy) Feng, Sankhya Hirani, Kevin Lee, Peter Pauzauskie Lab
Materials Science & Engineering,
College of Engineering

Making discussion of safety practices and issues a routine practice has been shown to increase safety awareness, promote a sense of safety responsibility in all lab members, and strengthen safety culture. In addition to holding regular discussions of safety-related topics in group meetings, the Peter Pauzauskie Lab began scheduling a quarterly Laboratory Safety Day. On this day, all group members come together to check and update chemical inventories, review safety documents, update standard operating procedures (SOPs), and discuss plans for any new research projects. This practice of having a dedicated safety day generates awareness of safety topics and helps to give the whole team time to work on maintaining their lab's safety program.



MONTHLY AND SEMI-ANNUAL SAFETY CHECKLISTS

Sarah Speckmaier / Mark Wurfel Lab
Department of Medicine
School of Medicine

As part of a laboratory safety program, researchers are required to conduct self-inspections on at least an annual basis. Depending on the size of the lab, the number of spaces used, and the frequency with which work projects change, it can be beneficial to conduct documented self-inspections on a more frequent basis. Breaking up tasks for maintaining a safety program into monthly and biannual groups can also make maintenance more manageable, which is what Sarah Speckmaier did for the Mark Wurfel Lab by creating monthly and semi-annual safety checklists.