

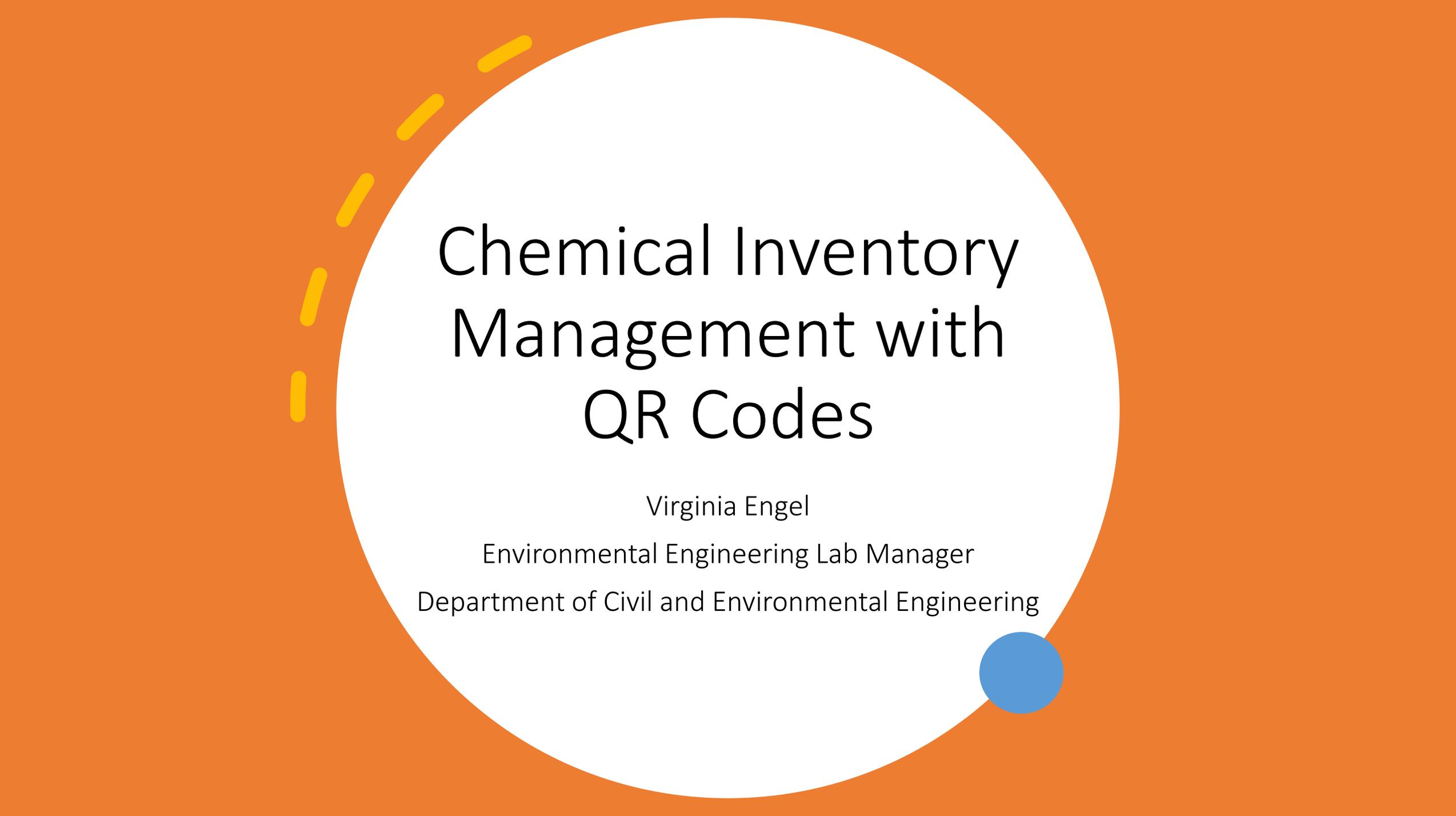
Welcome to the 2023 LAB SAFETY AWARDS & INNOVATIONS EVENT!

1:00	Welcome	<i>Katia Harb, Senior Director, Environmental Health & Safety Department (EH&S)</i>
1:05	Opening remarks	<i>Tricia Serio, Provost and Executive President for Academic Affairs, Professor of Biochemistry</i>
1:15	Chemical Inventory Management with QR Codes	<i>Virginia Engel, Lab Manager, Civil & Environmental Engineering</i>
1:25	Safety in Teaching Labs	<i>David Perkel, Chair of Biology Department</i>
1:35	Supporting Safety in Mixed Use Spaces	<i>Dian Gay, Director of Resources and Facilities, Applied Physics Laboratory</i>
1:45	Presentation of Laboratory Safety Awards	<i>Tracy Harvey, Laboratory Safety Manager, EH&S Alex Hagen, Laboratory Safety Inspection Program Manager, EH&S</i>
1:55	Closing remarks	<i>Forrest Michael, Chair of Institutional Chemical and Physical Safety Committee, Professor of Chemistry</i>

LABORATORY SAFETY AWARDS & INNOVATIONS EVENT

December 8, 2023





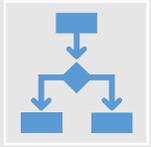
Chemical Inventory Management with QR Codes

Virginia Engel

Environmental Engineering Lab Manager

Department of Civil and Environmental Engineering

Do you...



Manage multiple inventories?

Maybe in multiple rooms and/or for multiple PIs?



Have multiple containers of some chemicals in your inventories?



If the answer to either or both of those questions is yes, you need to consider this QR code system.



Imagine this...

- You manage a large shared lab space that occupies one whole floor of your building. There are 7 distinct rooms, most of which are shared occupancy. There are 6 PIs who all have space in these labs.
- You find a 4 L bottle of methanol on a counter. There's no indication to whom or where it belongs.
- You want to put it away. Or maybe it's empty and you want to delete it from inventory.

What to do...

- You go to MyChem and search your inventories for methanol to see if you can figure it out.

Home Chemical Inventory Location Report Chemical Exchange Caution Sign Person Help Sign out

Back

Select Chemical(s) to Delete or Replace in your Inventories

Enter search criteria and click Search. From the results you can delete that chemical from its inventory or replace it with another chemical found in the chemical search using its Chemical ID.

Chemical Name: CAS: Chem ID:

Catalog: Storage Location: Barcode: Comment:

Search Clear

Replace Chem ID:

	Chem ID	Chem Name	CAS	Supplier	Catalog	Room	PI/RP	Amount	Storage	Process	Barcode	Surplus?
Replace Delete		METHANOL	67-56-1	VWR	K977	314, MORE HALL	Michael T. Brett	1.00l	Flammables			N
Replace Delete		METHANOL P&T	67-56-1	HONEYWELL, BURDICK & JACKSON	232	319, MORE HALL	Stuart Strand	1.00l	Flammables			N
Replace Delete	1940612	BDH METHANOL	67-56-1	HONEYWELL	BDH1135-4LG	319, MORE HALL	Jessica Ray	4.00l	Hood 3A			N

What to do...

- You go to MyChem and search your inventories for methanol to see if you can figure it out.
- Only to find that there are 32 entries for methanol among the 7 rooms and 6 PIs.
- Which entry corresponds to this bottle? Whose is it? In which room does it belong?

Home Chemicals Inventory Locations Report Chemical Exchange Carboxy Signs Pages Help

Select Chemical(s) to Delete or Replace in your Inventories

Enter search criteria and click Search. From the results you can delete that chemical from its inventory or replace it with another chemical found in the chemical search using its Chemical ID.

Chemical Name: CAS: Chem ID:

Catalog: Storage Location: Barcode: Comment:

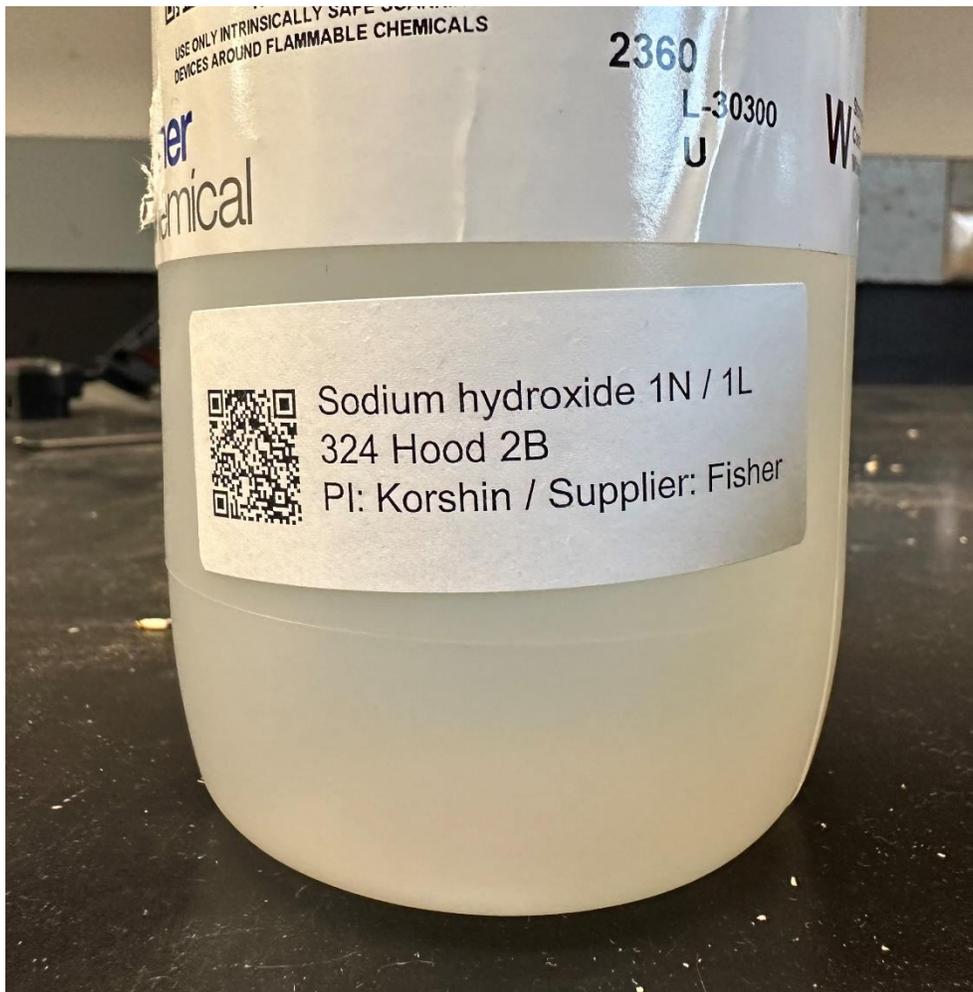
Search

Replace Chem ID:

Chem ID	Chem Name	CAS	Supplier	Catalog	Room	P/NP	Amount	Storage	Present	Barcode	Surplus?
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	VWR	1877	314, MOORE HALL	Michael T. Dorn	1.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL, PBT	27-50-1	HONEYWELL BURDICK & JACKSON	232	319, MOORE HALL	Shawn Strand	1.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	BDH METHANOL	27-50-1	HONEYWELL	BDH1155-6LS	319, MOORE HALL	Jenica Ray	4.000	Moist 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	BDH METHANOL	27-50-1	HONEYWELL	BDH1155-6LS	319, MOORE HALL	Jenica Ray	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	SDMA-ALDRICH/SDMA	175	324, MOORE HALL	Gingery Koonin	4.000	Moist 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	FGES SCIENTIFIC	A15A-1	324, MOORE HALL	Gingery Koonin	4.000	324 Moist 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	SDMA-ALDRICH/SDMA	175	324, MOORE HALL	Gingery Koonin	4.000	Moist 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	FGES SCIENTIFIC	A15A-1	319, MOORE HALL	Jenica Ray	4.000	Moist Cabinet 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	SDMA-ALDRICH/AL	1980	314, MOORE HALL	Michael T. Dorn	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	FGES SCIENTIFIC	A15A-1	319, MOORE HALL	Shawn Strand	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	FGES SCIENTIFIC	A15A-1	319, MOORE HALL	Shawn Strand	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	MALINKINDOT, IT BAKER, WACORON (ANALYTOR FERROMAN MAT)	300	319, MOORE HALL	Jenica Ray	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	MALINKINDOT, IT BAKER, WACORON (ANALYTOR FERROMAN MAT)	300	319, MOORE HALL	Jenica Ray	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	MALINKINDOT, IT BAKER, WACORON (ANALYTOR FERROMAN MAT)	300	319, MOORE HALL	Jenica Ray	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	FGES SCIENTIFIC	A15A-1	324, MOORE HALL	Michael Duda	4.000	Flammable Acid Based 9			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	BDH (VWR ANALYTICAL)	BDH0209-9LP	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	ALFA Aesar, THERMO FISHER SCIENTIFIC	4180	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	ALFA Aesar, THERMO FISHER SCIENTIFIC	4180	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	ALFA Aesar, THERMO FISHER SCIENTIFIC	4180	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	ALFA Aesar, THERMO FISHER SCIENTIFIC	4180	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL	27-50-1	THERMO FISHER SCIENTIFIC	A1058805	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL (OPTIMA LC/MS)	27-50-1	THERMO FISHER SCIENTIFIC	A105-1	324, MOORE HALL	Michael Duda	4.000	Moist 3A			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL (OPTIMA LC/MS)	27-50-1	THERMO FISHER SCIENTIFIC	A105-1	319, MOORE HALL	Jenica Ray	4.000	Flammable Cabinet			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL ACS	27-50-1	HACH CO (VWR, RADOMETER ANALYTICAL)	BDH1155-9L	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL ACS	27-50-1	HACH CO (VWR, RADOMETER ANALYTICAL)	BDH1155-9L	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL ACS	27-50-1	HACH CO (VWR, RADOMETER ANALYTICAL)	BDH1155-9L	319, MOORE HALL	Jenica Ray	4.000	Moist 3B			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL, EDR (HPLC) - 99.9%	27-50-1	SDMA-ALDRICH/AL	1980	314, MOORE HALL	Michael T. Dorn	4.000	Flammable			N
<input type="button" value="Delete"/> <input type="button" value="Replace"/>	METHANOL, HPLC	27-50-1	MILLIPORE SDMA (DOD MILLIPORE, CALBIO, NOVAPEN)	MS0475	314, MOORE HALL	Michael T. Dorn	4.000	Flammable			N

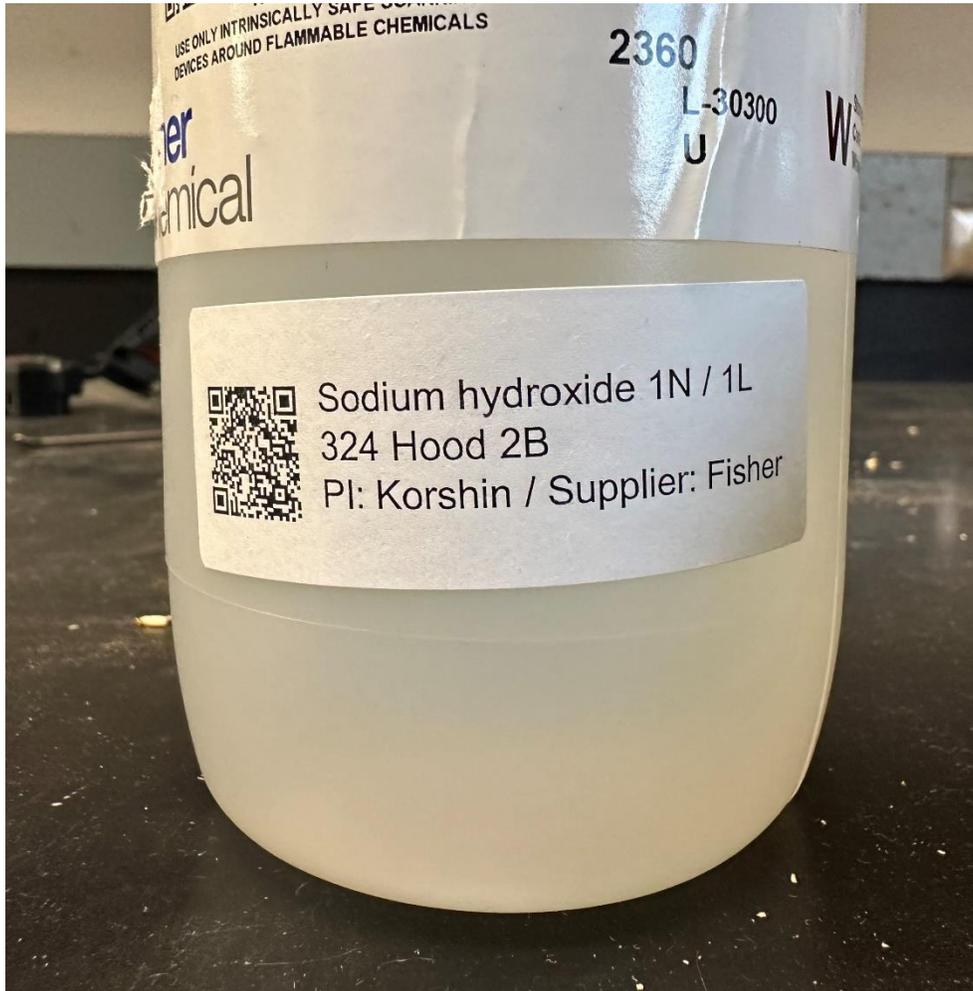
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Solution



QR code labels provide a one-to-one connection between a chemical container and its MyChem page

QR Code Benefits



Any lab user with a smartphone can access the specific MyChem page direct from the chemical container.

More extensive inventory management becomes much more manageable.



Instructions for how to implement this system:

<https://tinyurl.com/4tnvj6yp>



Must be signed into
your UW account to
access the document



Safety in Teaching Labs

From Bad To...Better

UW Biology is large

- ~1250 majors currently
- ~500 B.S. degrees granted
- Introductory series (Biology 180, 200, 220): 3 courses, offered every quarter; ~5000 students/year, dozens of TAs
- Eight lab rooms used exclusively for these courses
- Lab activities are varied
- Different instructors & TAs each quarter
- Many other laboratory courses at 300 and 400 levels

About 10 years ago

- Concerted effort to:
 - Get rid of unused chemicals
 - Align inventories with myChem database
 - Develop standard operating procedures
 - Manage and document TA training

Over time, several things happened

- Instructor turnover
- COVID-19 pandemic
- Staff turnover, especially Manager of Instructional Services
- A talented building manager was assigned responsibility for all these rooms

- Things went downhill

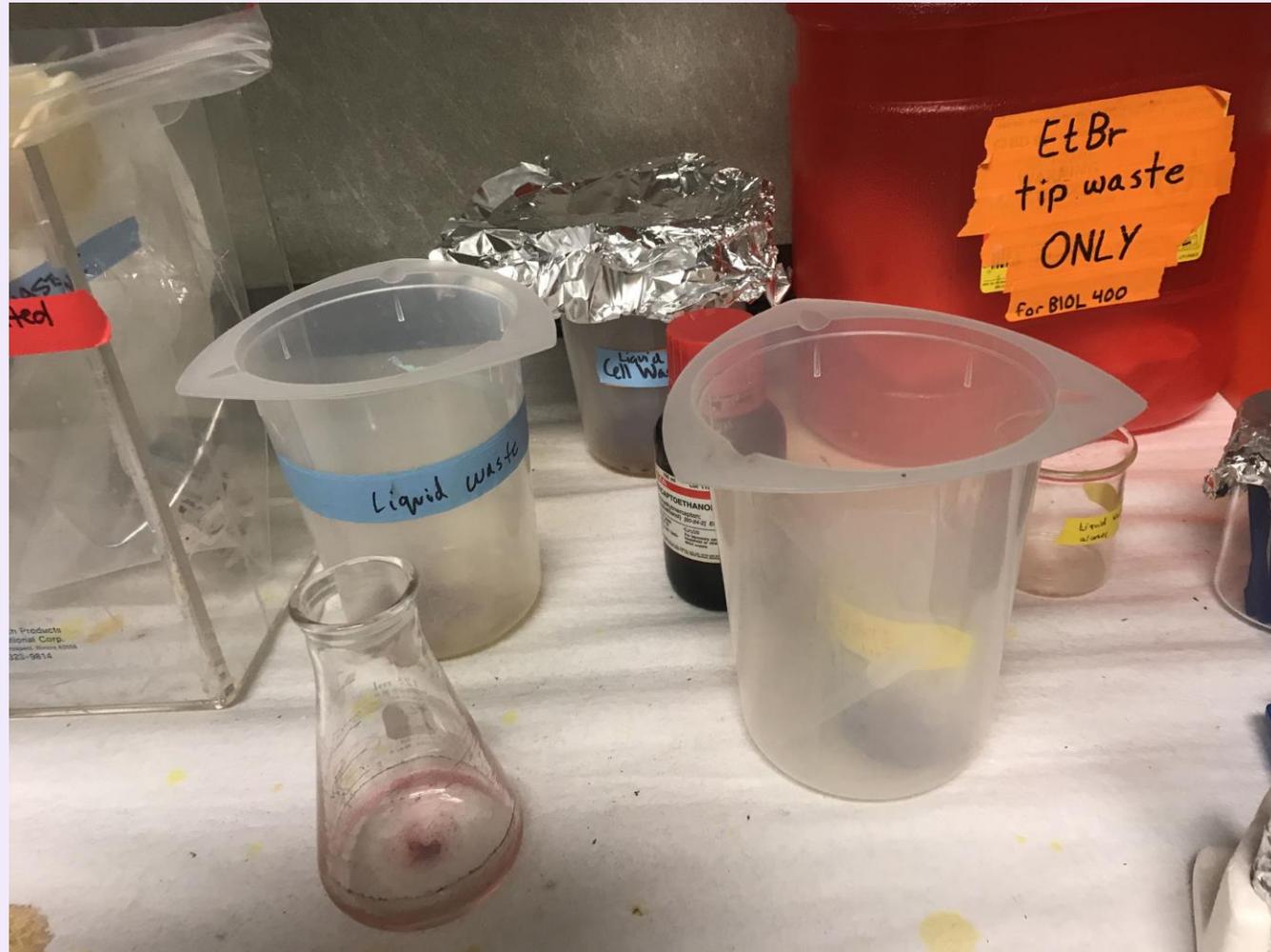
Some of the problems cited August 2022

- Mismatch between chemical inventories and myChem database
- Inadequate PPE assessments
- Inadequate documentation of personnel training
- Unlabeled chemical containers
- Open chemical containers (one was a sample of algae growing for the class)
- Some chemical containers were on the floor
- Some chemical containers were on shelves without earthquake lips
- ...

Unlabeled chemical containers



Unsafe chemical storage



Inadequate waste storage



Hired two individuals in April 2023

Jamie Grall, Teaching Associate



Hayden Davis, Graduate Student



Their initial mandate

- Address every problem cited except:
 - SOPs. These should be written by each instructor
 - Record-keeping systems
 - Plan for training instructors and TAs
- This included
 - Proper chemical labels & aligning inventories with MyChem
 - Proper chemical storage
 - Arranging chemical waste pickups
 - ...

New Manager of Instructional Services, Dr. Sara Berk, May 1, 2023



- New systems and procedures
 - Each new instructor takes responsibility for SOPs and needed training
 - Coordination from Manager of Instructional Services
 - TAs get proper training and this is documented
 - SOPs clear
 - PPE requirements clear to all
 - Clear responsibility assigned to each role: instructor, course coordinator, TAs

Checklists such as this one

Quarterly Tasks

<u>Task</u>	<u>Person responsible</u>	<u>Autumn 2023</u>	<u>Winter 2024</u>	<u>Spring 2024</u>
Update lab caution signs	Sara			
TA Lab Safety Training	Sara/course coordinators + instructors			
Update lab contact information and RPs	Sara/Ron			
Chemical Inventory in MyChem	Sara/course coordinators + instructors			

Annual Tasks

<u>Task</u>	<u>Person responsible</u>	<u>2023-2024</u>	<u>2024-2025</u>
Lab Safety Inspection	Sara/Ron		
Update emergency contact numbers	Sara		
Permanent staff lab safety training	Sara		
PPE training and hazard assessments	Sara/Course coordinators + instructors		



Final thoughts

- We've made real progress
- Lots more to do
- The people and systems are in place to sustain improvements

- How did it work?
 - Cooperative attitudes and approaches
 - Recognition that we had real work to do
 - Great work by all of the Biology forks involved
 - Constructive, concrete approach from EH&S

Thank you to:

- Tracy Harvey, Ph.D.

- Ron Killman
- Jamie Grall & Hayden Davis
- Sara Berk, Ph.D.

- EH&S team
 - Alex Hagen



Applied Physics Laboratory
UNIVERSITY of WASHINGTON

Supporting Safety in Mixed Use Spaces

Workspace Health & Safety

Mixed Use Spaces: What is it?

A little bit of everything

Not a traditional lab, machine shop or maker space but has flavors of each.

- Chemicals
- Tools/machinery
- Overhead hoist
- Soldering/electronics assembly
- Calibration
- Small fabrication
- Research equipment repair/maintenance

Mixed Use Spaces: Responsible Party

Uncertainty

New/Inherited spaces

- Can be overwhelming – unsure where to start
- Legacy documentation
- Does not know support available

Long-term assigned spaces

- Legacy management
- Inconsistent practices – square peg, round hole
- Resistance, “It’s not a lab.” “It’s not a machine shop.”

What is my space’s type?

Do I have to do everything for every type of space?

I won’t have time to do my research if I have to do everything for every type!

How do I even start?

Mixed Use Spaces: Not One or the Other

Create a Starting Line

Find commonalities in requirements

- Identify responsibilities regardless of space type

Simplify and consolidate

- Create a path linked to EH&S resources and documents

Document

- Available APL-UW support
- EH&S resources consolidated

Create community among APL-UW RPs

Provide morale support

Lab, Shop, & Maker Space Requirements

I am a responsible person, what are my duties?

As a responsible person, for a lab, shop or maker space you assume ultimate responsibility and set expectations for safety within your assigned room. This includes:

- developing written procedures,
- conduct hazard analyses and address issues found,
- identify safety training and ensure everyone working in the space has completed the training,
- identified needed and ensure use of adequate PPE,
- ensure chemicals in the lab are appropriately managed,
- and tracked, and report accidents/incidents/near misses in the UW Online Accident Reporting System.

The first step is to complete a [RACE](#).

APL-UW Health & Safety Staff are here to help!

APL-UW Support for Labs, Shops and Maker Spaces

- Lab coat, shop apron, lab towels, shop rags and accompanying laundry service
- Safety training funds to support the time and cost of required safety training
- General supply of safety equipment
- Provides updated lab manuals to all research labs
- APL-UW Communications can assist in preparing lab, shop and maker space safety floor plans

CHEMICALS

You are required to track chemicals or chemical-containing products in the UW MyChem system, store them appropriately, and dispose of chemicals via the UW Chemical Waste Disposal program.

Track

The responsible person or their assigned chemical manager/chemical

Disposal

The responsible person or their assigned chemical manager/chemical

Mixed Use Spaces: RACE

Simplifying the Process

Complete a RACE!

- Review: What happens in the space?
- Assess: What do I need to keep people safe?
- Create: How do I document?
- Educate: Train/Inform Staff.

Bottomline: Ensure safe operations

RACE: Review, Assess, Create, Educate

If you have been designated as a responsible person for a lab, machine shop or maker space, the best place to start is by completing a RACE. **REVIEW** what happens in the space. **ASSESS** what you need to keep people safe. **CREATE** manuals, SOPs and safety plans. **EDUCATE** the staff who work in the space.

Because APL-UW research spaces have diverse requirements, those responsible for these spaces should review both lab and shop/maker space information.

Review: What happens in the Space?

- [Shop Personnel Safety Training Matrix](#)
- [Laboratory Risk Assessment Tool \(Lab R.A.T.\)](#)
- [Laboratory Personnel Safety Training](#)

Assess: What do I need to keep people safe?

- [Shop Safety PPE Hazard Assessment](#)
- [Shop Survey Checklist](#)
- [Laboratory Personal Protective Equipment \(PPE\) Hazard Assessment Guide](#)
- [Laboratory Survey Checklist](#)

Create: How do I document?

- [Laboratory Safety Manual](#) (APL provides printed copies)
- [Shop/Maker Space Safety Plan Template](#)
- [Create an SOP or JHA for equipment](#) (see also EH&S and APL-UW templates)

Educate: Train/Inform Staff in Space

- [Post Caution and Warning Signs](#)
- Validate training: [Safety Training Report](#)

Once you have finished your RACE, visit the resources page for research workspace managers.

Mixed Use Spaces: RACE

Next Steps

Maximize established community - crowd sourcing

- Internal repository for template SOPs
- Community mailing list for questions, advice, etc.

New centralized staffing support

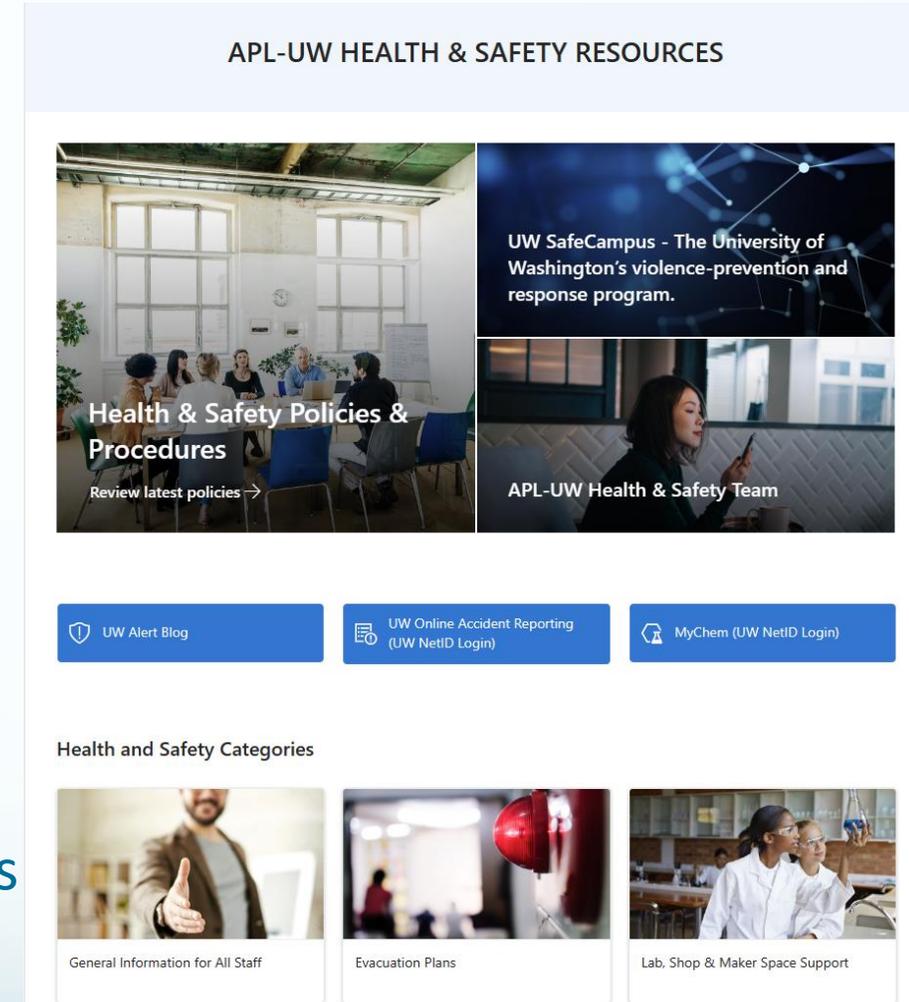
- More FTE available to review processes, validate actions

Internal Health & Safety Team

- Expand scope to test and review processes

Continued partnership with EH&S on mixed use spaces

APL-UW HEALTH & SAFETY RESOURCES



UW SafeCampus - The University of Washington's violence-prevention and response program.

Health & Safety Policies & Procedures
Review latest policies →

APL-UW Health & Safety Team

UW Alert Blog

UW Online Accident Reporting (UW NetID Login)

MyChem (UW NetID Login)

Health and Safety Categories

General Information for All Staff

Evacuation Plans

Lab, Shop & Maker Space Support



2023 LAB SAFETY AWARDS

ENVIRONMENTAL HEALTH & SAFETY
UNIVERSITY *of* WASHINGTON

2023 TOP DAWGS IN SAFETY





2023 TOP DAWGS IN SAFETY

- Burke Museum, *College of Arts & Sciences*
- Friday Harbor Labs, *College of the Environment*
- Paul G. Allen School of Computer Science & Engineering, *College of Engineering*
- Department of Pharmacy, *School of Pharmacy*
- Department of Allergy & Infectious Disease, *School of Medicine*
- Department of Radiation Oncology, *School of Medicine*
- Department of Immunology, *School of Medicine*

2023 PACK LEADERS IN SAFETY



ENVIRONMENTAL HEALTH & SAFETY

UNIVERSITY *of* WASHINGTON



2023 PACK LEADERS IN SAFETY

- Olivia Bermingham-McDonogh, *Biological Structure*
- Corie Cobb, *Mechanical Engineering*
- Glen Gullickson, *UW Bothell*
- Julie Mathieu, *Comparative Medicine*
- Julie Palumbo, *UW Tacoma*
- Alexandra Velian, *Chemistry*
- Joanne Wang, *Pharmaceutics*
- Sharon Doty, *Environmental & Forest Sciences*
- Francis Kim, *Cardiology*

2023 PARTNERS IN SAFETY



ENVIRONMENTAL HEALTH & SAFETY
UNIVERSITY *of* WASHINGTON



2023 PARTNERS IN SAFETY

- Scott Baebler, *Pediatrics*
- Eric Camp, *Chemistry*
- Donald Hamlin, *Radiation Oncology*
- Megan Littlehale, *Microbiology*
- Kim Woodrow, *BioEngineering*
- Lynn Barrett, *CERID / Allergy & Infectious Diseases*



2023 SAFETY INNOVATIONS

ENVIRONMENTAL HEALTH & SAFETY

UNIVERSITY *of* WASHINGTON

2023 LAB SAFETY AWARDS & INNOVATION EVENT



FREEZER TAGS TO TRACK DEFROST DATES AND MAINTAIN A SCHEDULE

MacCoss Lab
Genome Sciences, School of Medicine

Manufacturers recommend defrosting freezers at least once a year or more frequently if the freezer is prone to ice build-up. For labs that have more than just a couple of freezers, it can be difficult to track of Having a tag on the front of the freezer that the freezer was last defrosted is an easy way for personnel of the last defrost date and provide when the next defrost date should be

FUME HOOD CLEANING LOGS

John Morton / Ladiges Lab
Comparative Medicine, School of Medicine

Fume hoods are the primary method of exposure control in laboratories and can provide adequate protection for most processes when used correctly. Maintenance of the fume hood is key to ensuring that this piece of



VIRTUAL BUDDY SYSTEM

Alexander Lefort / Fabrication Research Lab
Computer Science & Engineering, College of Engineering

The Fabrication Research Lab maintains a virtual buddy system by using cameras in the space and combining them with the ability to remote into an on-site control computer. This allows lab members to

2023 LAB SAFETY AWARDS & INNOVATION EVENT



QR CODE TO ACCESS SAFETY DOCUMENTS IN SHARED EQUIPMENT ROOMS

Carter Beamish
Materials Science & Engineering, College of Engineering

Safety documents such as manuals, safety plans, training records, and maintenance logs need to be readily accessible in spaces where work with hazardous materials is being performed. Shared equipment rooms can sometimes be quite large, so having QR codes posted in a variety of locations around the room allows users to quickly access the necessary documents using smart phones and reduces the need for people to travel across the room to reference or input information into safety documents while performing their work.

CHEMICAL CONTAINER QR CODE STICKERS THAT LINK TO MYCHEM

Virginia Engel
Civil & Environmental Engineering, College of Engineering

In shared spaces, there can be

LAB SAFETY MASCOT

Vadim Pascua / Raftery Lab
Anesthesiology and Pain Medicine, School of Medicine

This lab has created their own safety mascot, Reggie, to serve as a constant visual reminder

FREEZER MAPS TO EASILY IDENTIFY CONTENT

Morton / Schwartz Labs
Metabolism, Endocrinology & Nutrition, School of Medicine

Sharing equipment is a great way for labs to pool resources, but it is important to have strategies in place to track users and maintain awareness of responsible parties. Having a map on the front of shared freezers that clearly illustrates the current content owners for each storage compartment by using color coding specific to research groups and the last names of the researchers makes it easy for all users to know where to store their items and who to notify if any issues arise with the freezer or materials inside.

EMERGENCY CLOTHING DRAWER

Michelle Katz / Cobb Lab
MoES, College of Engineering

In the event of an emergency, it may be necessary to remove apparel, especially if it is contaminated with hazardous chemicals. Having lab members bring in a set of emergency clothing and storing it where emergency response kits are kept encourages personnel to prioritize their own safety and reduces the chances of them hesitating to remove clothing when necessary. Keeping the clothing in clear, labeled, plastic bags keeps them organized, clean, and easily accessible.



3D-PRINTED CAPS CUSTOMIZED FOR SQUIRT BOTTLES

Wilson Deibel
Burke Museum, College of Arts & Sciences

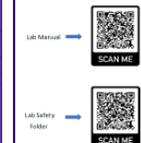
Hazardous chemicals must always be stored in closed containers. Squirrt bottles are, by design, essentially "open" containers. As they are not possible to fully close, but they also potentially drip. Work involving usage of squirt bottles to be able to aim and deliver chemicals to samples in a controlled manner. When this lab could not find any vendors selling caps for squirt bottles, they used a 3-D model to print caps in plastic filament which are resistant to chemicals used, able to attach to their bottles, and well-fitted to the nozzles.



QR CODES TO ACCESS LAB-SPECIFIC SAFETY DOCUMENTS

Levitt Lab
Neurological Surgery, School of Medicine

A lab's chemical hygiene includes the Laboratory Safety Manual as well as lab-specific safety documents. Keeping documents in electronic form is an effective way to ensure personnel are accessing file and to easily update needed. Using a QR code the lab's safety documents easily accessible increases likelihood of updates or additions to the files being promptly.



TEACHING LAB COURSE MANUALS THAT INCLUDE SAFETY INFORMATION

Alex Prybutok
Chemical Engineering, College of Engineering

Some teaching lab spaces are also used by research groups, resulting in usage by a variety of UW personnel with varying experience levels. Writing lab course manuals with location-specific safety information included in them can be labor-intensive, but it helps ensure that undergraduates working in the space for a class are aware of the hazards present and know how to conduct course activities in a safe manner.



ONLINE VESSEL USAGE REQUEST FORM THAT INCORPORATES CHEMICAL HYGIENE PLAN ELEMENTS

Eric Loss
Friday Harbor Laboratories, College of the Environment

Research involving hazardous chemicals and conducted out in the field, including on research vessels of any kind, requires a chemical hygiene plan just like work conducted in a lab on campus. The person in charge of the vessel is usually not the person in charge of the research being done, so communication about expectations and hazards present are important. Personnel at Friday Harbor have developed an online vessel usage request form that captures whether any chemicals are being brought on board and prompts the researcher to check that they have completed all the necessary elements of their chemical hygiene plan prior to boarding.



SAFETY TRAINING ASSESSMENT REPORTS SENT TO PERSONNEL

Rhonda Morales
Oceanography, College of the Environment

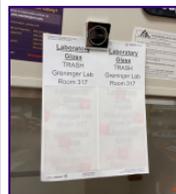
Chemical hygiene officers (CHOs) and responsible parties are tasked with ensuring that all personnel complete safety trainings. To track and notify personnel of training needs in an efficient way, this CHO tracks everyone's required safety training for multiple labs in a large spreadsheet and sends out reminders to complete trainings on a quarterly basis.



LAB-SPECIFIC STICKERS FOR LAB GLASS WASTE BOXES

Erin Goecker / Greninger Lab
Laboratory Medicine and Pathology, School of Medicine

Any uncontaminated and non-hazardous lab glass or plastic being disposed of should be placed in sturdy cardboard boxes labeled with the room number and Principal Investigator's name. Providing lab members with stickers that already list this information on them, is an easy way to ensure that all lab glass waste boxes are properly and clearly labeled as soon as they are set up for usage.



REACTION CARDS WITH SPECIFIC INCIDENT RESPONSE INFORMATION

Robert Love / Velian Lab
Chemistry, College of Arts & Sciences

Sometimes chemical reactions run for long periods of time or overnight. Since the researcher is always present in those cases, it is important to provide certain pieces of information about the reaction for everyone's safety. When a reaction is set up, one of these cards is filled out with information about the reaction. Should the reaction need to be stopped, readers will know the hazards, how to stop the reaction, and how to dispose of the contents in a safe manner.



for ensuring prompt, appropriate, and any type of incident. Using emergency response desktop backgrounds is an easy way to

TRAINING RECORD PROGRAM THAT SENDS REMINDERS

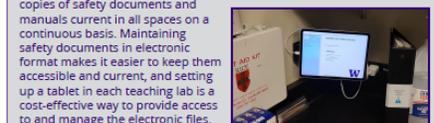
Baker Lab / Institute for Protein Design
Biochemistry, School of Medicine

Training requirements vary based on types of work being performed and materials being used, so managing training completion for large groups of personnel is challenging. This lab developed a program to notify people when trainings expire. Items on the person's list link directly to courses on the EH&S website. Reminder emails are sent out before a training expires, giving people ample time to respond. Once trainings expire, a notice is sent informing the person they need to complete the training to retain access to lab resources. The system allows for customization based on the types of work performed by an individual.

INSTALLING TABLETS IN TEACHING LABS TO PROVIDE ACCESS TO SAFETY DOCUMENTS

Sara Berk & Ron Killman
Biology, College of Arts & Sciences

A department usually has one or two people managing all of the teaching labs, which can span across multiple buildings and be used by different instructors every quarter. One of the challenges of these types of spaces is maintaining consistency of safety expectations, practices, and documentation. It can be a drain on resources to try to keep paper copies of safety documents and manuals current in all spaces on a continuous basis. Maintaining safety documents in electronic format makes it easier to keep them accessible and current, and setting up a tablet in each teaching lab is a cost-effective way to provide access to and manage the electronic files.



INCLUDING INSPECTION FINDINGS IN SAFETY ORIENTATIONS

Daniel Moralejo / Juul Lab
Pediatrics, School of Medicine

Safety orientations are a key part of familiarizing someone with the resources and hazards present in a workspace. After a lab has an inspection, it is important to inform all personnel about any practice or management changes needed for corrective action. Including this information in safety orientations helps new personnel be aware of new practices that the lab is trying to establish or maintain and shows a commitment to safety culture in the workplace.





THANK YOU!

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