

Improving research safety: Activities of the University of California Center for Laboratory Safety

Imke Schroeder, Ph.D.

UC Center for Laboratory Safety

Microbiology, Immunology & Genetics, UCLA

UC Center for Laboratory Safety

- Imke Schroeder

Research Project Manager for UCCLS

Adjunct Associate Professor of Microbiology, Immunology and Molecular Genetics, UCLA

ischroeder@ehs.ucla.edu



- Craig Merlic

Executive Director of UCCLS

Professor of Chemistry, UCLA

merlic@chem.ucla.edu



- Sarah Zinn

Postdoctoral Scholar for UCCLS

szinn@ucla.edu



- Alisha Klatt

Instructional Designer for Safety Training Consortium - UCCLS

aklatt@ehs.ucla.edu



UC Center for Laboratory Safety Activities



Created in 2011 following the death of Sheri Sangji at UCLA

Mission: **Conduct research to provide evidence-based best safety practices in the laboratory**

Safety
Program
Reviews

Accident
Analysis
Lessons Learned

Safety
Culture
Surveys

Safety
Training
Consortium

Lab Safety
Workshops

Student
Support



Impact on: Safety Culture, Compliance, Accidents, Injuries & Illnesses



Accident Investigations

University of Hawaii, Manoa



- Explosion of hydrogen/oxygen tank in Hawaii Natural Energy Institute lab
- Postdoc suffers serious injuries including loss of arm
- Reports released to public

California State University, Sacramento



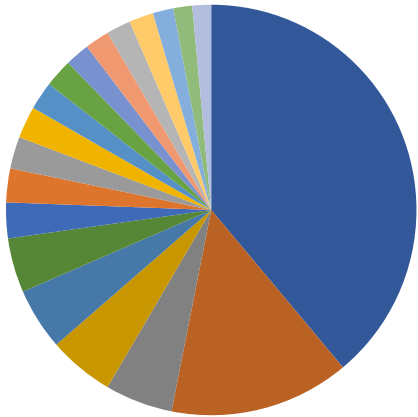
- Spill in chemistry instructional lab
- Serious exposures of departmental staff during spill cleanup
- Reports were privileged

Insufficient: Risk assessment
System support

Why do researchers not recognize the risk in the lab?

What can we do to prevent incidents?

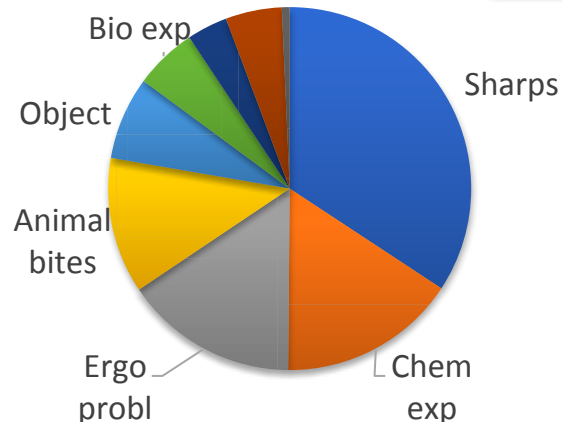
Analyses of Lab Injuries at UCLA



Injuries by department: 19/62
Departments had more than 10
accidents in 7 years
Two departments experienced the
majority of the lab accidents

Use injury data to guide
safety program

Use incident and
inspection data to guide
safety program



Injuries by type: Sharps,
chemical exposures, ergonomic
problems and animal bites
account for most injuries

Research on Laboratory Safety - Surveys

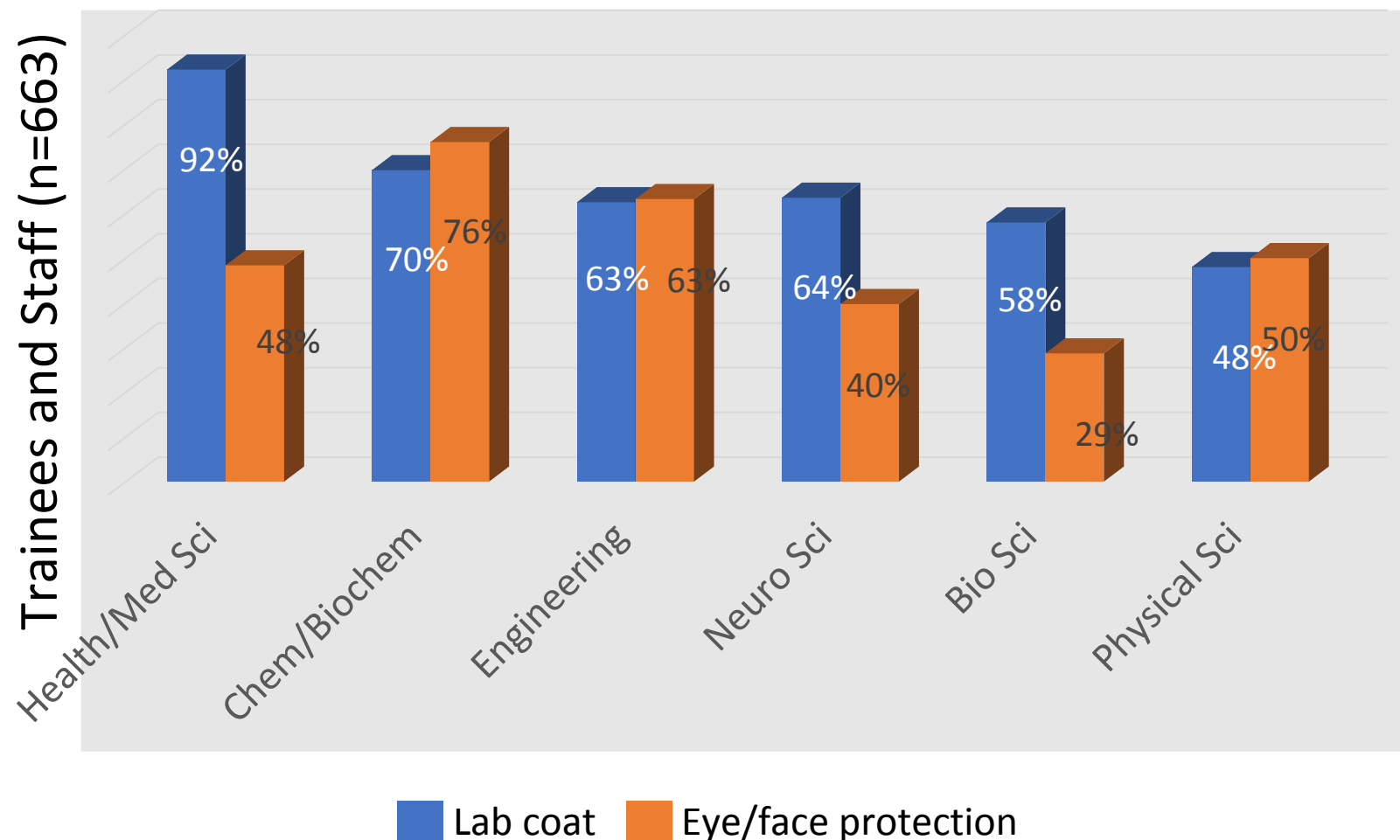
Objectives:

- Examine researchers' safety behavior, attitude, communication
- Identify factors that influence the safety culture in research labs
- Identify factors that correlate with injuries

Safety culture survey 2018
4 universities, ~1000 participants



Survey: Researchers' safety behavior



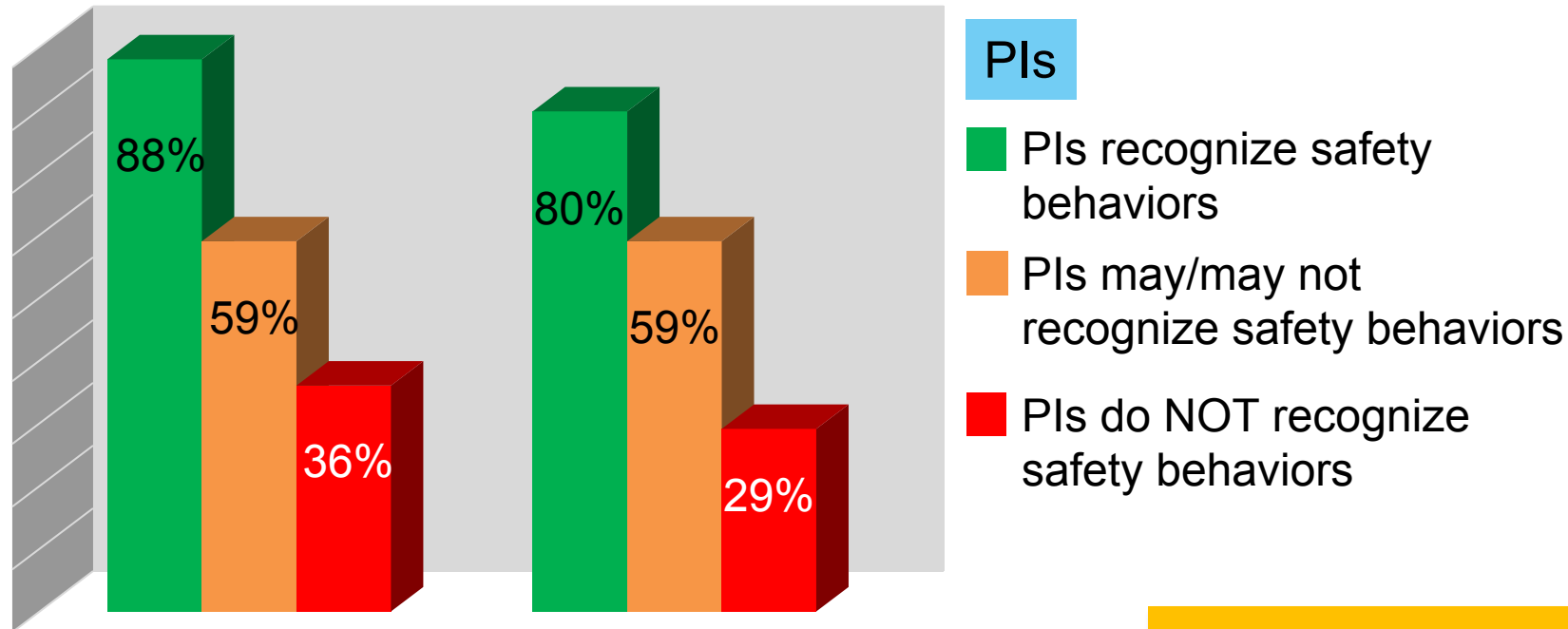
When working with hazardous materials, I wear the following PPE

Chem/Biochem trainees and staff have best overall PPE compliance but Med Health Sci has best lab coat compliance

P<0.001

Survey: What affects safety culture?

Safety recognition by PIs correlates with safe lab practices and positive attitudes



Trainees &
Staff agree:

People in my lab incorporate safety measures into their experimental protocols.

Time devoted to compliance with lab safety regulations is appropriate and valuable.

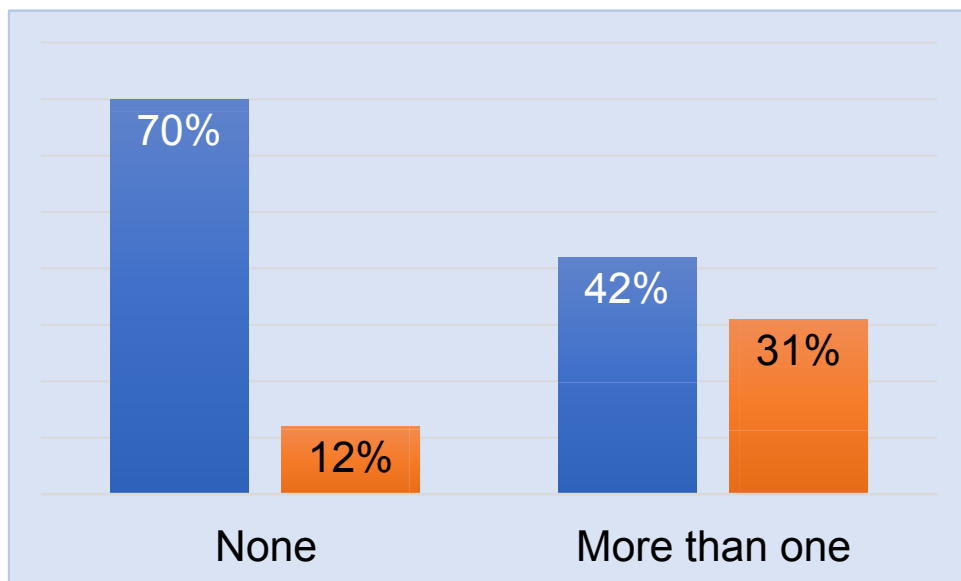
PIs significantly influence the safety culture of research labs

$P < 0.001$

Survey: Risk Assessment Correlates with Minor Injuries

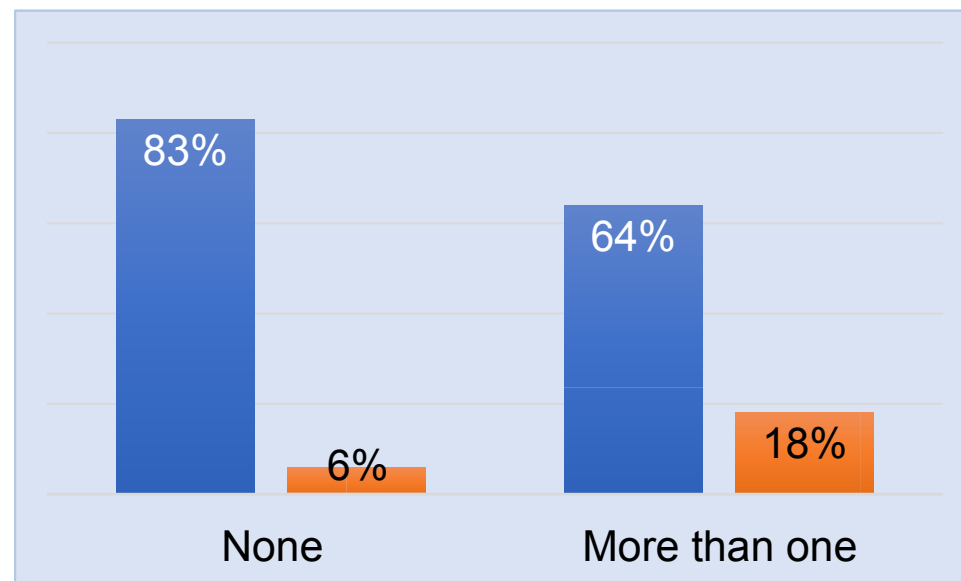
My PI discusses with me how to conduct experiments safely

Trainees & staff responses



Trainee and staff injuries

People in my lab incorporate safety measures into the protocols for their experiments



Trainee and staff injuries

Agree Disagree

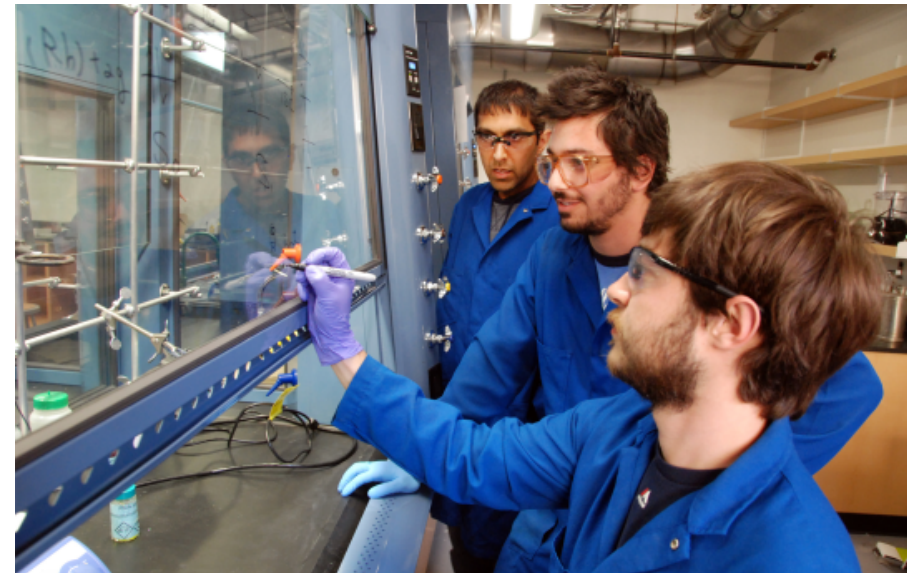
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Take Home Message

- Safety behavior differs in different research areas
- PIs significantly influence the safety culture of their research labs
- Risk assessment contributes to injury prevention

What can we do?

- Lessons Learned
- Safety Training
- Support Student Activities
- Workshops



Lessons Learned



Cases from U.S. Universities: Use Lessons Learned to improve safety in your lab.



Lessons Learned—Lithium Aluminum Hydride Fires

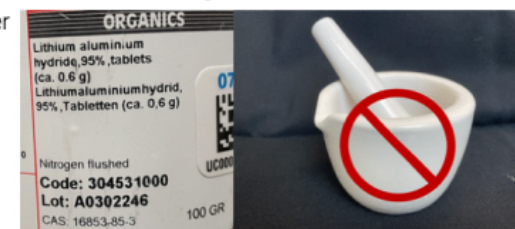
Craig A. Merlic*, Carl J. Ferber, and Imke Schröder

✓ Cite this: *ACS Chem. Health Saf.* 2022, 29, 4, 362–365

Publication Date: July 1, 2022

<https://doi.org/10.1021/acs.chas.2c00035>

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Lessons Learned—Fluoride Exposure

Glen S. Svenningsen, Benjamin R. Williams, Michael B. Blayney, Elizabeth Czornyj, Imke Schröder, and Craig A. Merlic*

ACS Chemical Health & Safety 2020, 27, 1, 40-42 (Letter)

Publication Date (Web): January 10, 2020



Lessons Learned—Aluminum Waste Container Rupture

Craig A. Merlic* and Imke Schröder

ACS Chemical Health & Safety 2021, 28, 1, 34-37

Publication Date (Web): November 20, 2020

DOI: 10.1021/acs.chas.0c00079



eMailing Safety Tips

Safety Tip – Wear Safety Glasses



The image shows a section of an abrasive wheel impaled into safety glasses. This type of abrasive wheel is commonly used for cutting and grinding metal.

This is a good reminder to ALWAYS wear safety glasses while cutting, drilling, and grinding, especially when using power tools.

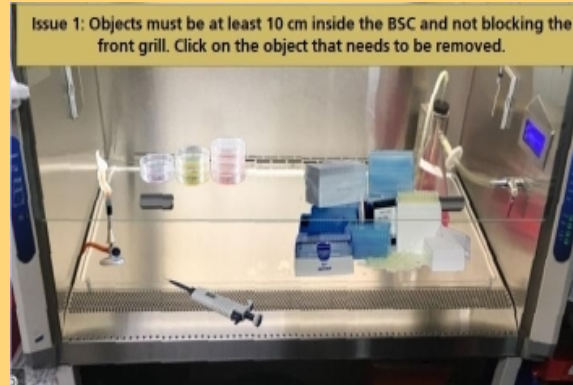
Created by the UC Center for Laboratory Safety
<https://www.cls.ucla.edu>

Safety Training - Safety Training Consortium

Non-profit organization consisting of 50 + research institutions
Create and share online safety training for researchers



Fundamentals
of Laboratory
Safety



Biosafety



Radiation
Safety



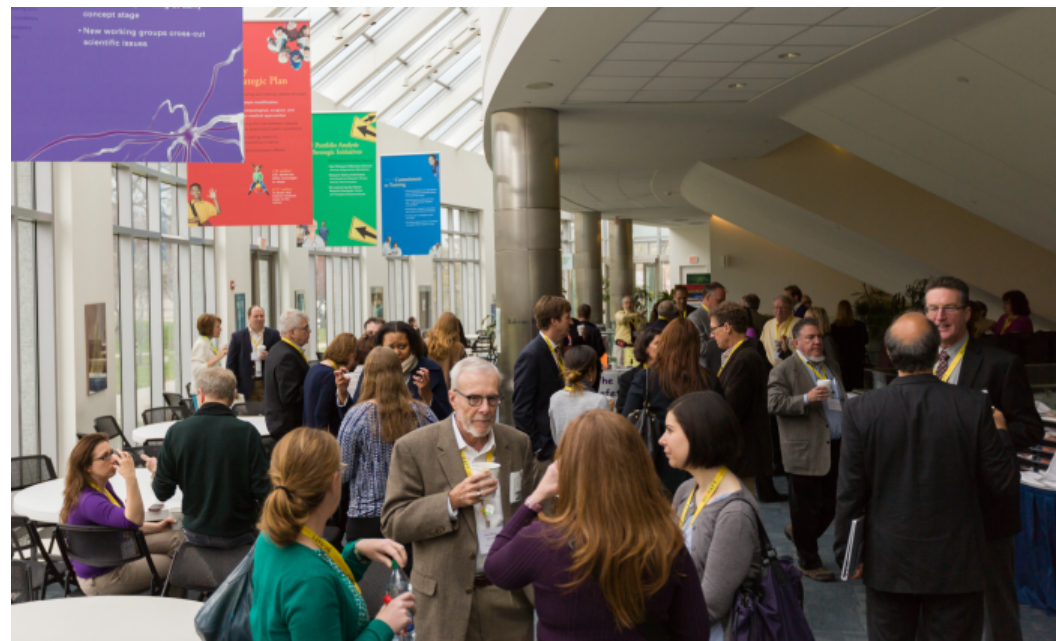
Laser
Safety

Specialty Courses:

- PI responsibility
- Researchers' Risk Assessment
- Aerosol Transmissible Disease
- Pyrophorics and Water-Reactives
-

Workshops on Laboratory Safety

- Brings together academic researchers, EH&S professionals, administrators, and national lab researchers
- Presentations, panel discussions
- Workgroup sessions to problem-solve current safety topics and offer guidelines
- **Generates new ideas**



2023 Workshop
planned for Sept 10-12
at UCLA



Organizing committee:
Representatives from
UCCLS, UCOP, NIH OID, ACS,
Harvard U., Northwestern U., UCLA

Conclusion

- Use data to look for hotspots and devise interventions
- Make injury data available to researchers
- Use Lessons Learned to educate researchers
- Support students in safety activities

Collaborate with us!





Thank You



Email: ischroeder@ehs.ucla.edu

www.cls.ucla.edu