Supporting Scientists by Making Research Safer

Imke Schroeder, Ph.D.
UC Center for Laboratory Safety
UCLA
Founded in 2011 in response to tragic accident at UCLA

Tasked with improving the safety of researchers in laboratories

Ideally, a strong culture of safety is the goal of a pro-active safety program to support cutting-edge science and technology.

Compliance with regulatory policies and injury prevention are outcomes of the safety culture.
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
Hawaii and Sacramento Accidents

Why did the researchers not understand the risk?

Can an individual transitioning from a strong culture of safety sustain their beliefs in an environment with a weaker safety culture?
A total of 1164 lab-related injuries occurred at UCLA in 11 years.

Lab injuries account for 8% of the total UCLA injuries (~1,400/year).

Sharps, chemical exposures, ergonomic problems and animal bites account for most injuries.
Take Home Message

Use data to look for hotspots and devise interventions.

Make injury data available to researchers. It is their right to know.

Use Lessons Learned to educate researchers.
Lessons Learned

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

https://cls.ucla.edu
Incorporate Risk Assessment in Safety Training

Enable researchers to:

- Critically judge safety of experiments
- Assume responsibility for experiments
- Manage experimental changes including scale-up
- Competently respond in emergency situations

Safety Culture
Culture of Safety in the Research Environment

- Safety takes priority
- Safety is integrated into daily activities
- Researchers are engaged in safety activities
- Researchers are motivated to support safety activities
- Researchers are knowledgeable about hazards and risks
- Leadership is supportive of safety
Safety Culture

Shared values, beliefs and behaviors resulting in a commitment to safety by everyone in an organization.
Measure Safety Culture

What is the difference between safety culture and safety climate?

**Safety Culture**

- Stable, not subject to immediate change
- Part of the organizational culture
- Based on overarching policies and goals

**Safety Climate**

- How much we value safety *at this time*
- How much do leadership and worker values align
- Safety climate drives action/inaction
- Safety climate *can be influenced*
- Safety culture is the underlying belief system of safety climate
Measure Safety Climate

• Short: 10 min
• 38 questions; 5-point Likert scale, 1 open-ended question
• Bifurcated survey: Students, postdocs & staff vs PIs
• Areas:
  Safety communication (9 items)
  Safety attitude (6 items)
  Safety training (3 items)
  Safety behavior (10 items)
  Self-reported accidents and near misses (4 items)
  Demographics (5 items)
People in my lab incorporate safety measures into their experimental protocols.

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

Impact of PI Action on Trainees and Staff Safety

PI recognizing trainee/staff safety behavior

- PIs recognize safety behaviors: 88%
- PIs may/may not recognize safety behavior: 59%
- PIs do NOT recognize safety behaviors: 29%

Trainees & Staff agree:

PIs may/may not recognize safety behaviors

P<0.001
Impact of PI on Student Safety

Injuries witnessed or personally experienced by students and postdocs (n=406)

PI actions can be more important for safety than EH&S actions
Workshops on Laboratory Safety

- Bring together academic researchers, EH&S professionals, administrators, and national lab researchers
- Presentations, panel discussions, breakout sessions
- Workgroup sessions to problem-solve current safety topics and offer guidelines
- Generate new ideas
- Re-confirm existing beliefs
What can Universities do to Better Prepare Students for the Future?

Emphasizing Safety
- Standardizing safety across departments
- Research Proposals

Collaborating with Industry
- Inviting speakers
- Field visits
- Insight into industrial safety culture

Methods of Teaching Safety
- Case Studies
- Storytelling
- Leading by example

Propagating Safety Culture
- Encouraging student-led safety initiatives
- Hands-on training for lab TAs

2018 Workshop on Laboratory Safety
2021 Laboratory Safety Workshop

Date: Beginning of May 2021
Location: Virtual, Broader Participation
Organizers: UC Center for Laboratory Safety, UCLA, UCOP, Northwestern University, National Institutes of Health, American Chemical Society
Topic: **Advancing Safety in Teaching and Research**
Speaker presentations, **Student Panel**, Breakout sessions
Fun activities, Networking opportunities
UCCLS Contacts

• **Imke Schroeder**
  – Research Project Manager for UCCLS
  – Adjunct Associate Professor of Microbiology, Immunology and Molecular Genetics
  – ischroeder@ehs.ucla.edu

• **Craig Merlic**
  – Executive Director of UCCLS
  – Professor of Chemistry
  – merlic@chem.ucla.edu

• **Colin Dimock**
  – Chair of Advisory Board
  – UCLA Assistant Vice Chancellor – Environment, Health & Safety
  – DimockC@ehs.ucla.edu