

Risk, safety, & troublesome territoriality: Bridging interdisciplinary divides

JOHN PALMER UC SAN DIEGO (*RETIRED*)



Situation / Background

- My Background [& my take on the problem]
- The situation(s)
 - Multifaceted & ever-changing environment
 - EHS staffing variability [significant change over recent years]
 - The "customer"/client base is extensive & challenging
 - Senior Leadership
 - Faculty/PIs/Supervisors
 - Staff [research, teaching, support, campus, external]
 - Students [u-grad, grad, p-doc, visitors, ...]
 - Externals [first responders, contractors, press, ...]

History (digressions)



Hull House (@ UIC)

- *Alice B Hamilton
 - 2002, ACS designated the Jane Addams Hull-House Museum (UIC)a:
 - National Historic Chemical Landmark (NHCL)
- Chemical "Disciplines"
 - Analytical, Inorganic, Organic, Physical, ...
 Engineering, ... Biochemical, ...
- Science "Divisions"
 - Biology, Chemistry, Physics, Medicine,...
 Engineering ...

- Safety (Chemical Safety)
 - Chemistry (Ubiquitous)
 - Industrial / Commercial (*Military*)
 - Regulated [but powerful]
 - Environmental
 - Toxicity / Health Hazards
 - WRTK / Lab Standard (1910.1450)
- Eventually other aspects of chemical/science (lab)research became recognized...
 - Physical (flammability, ...)

Let's digress... again





Safety Culture – where from...?

From C&EN: *CCS report 2012

- At the Council meeting during the fall 2011 ACS national meeting in Denver, Nancy B. Jackson, who was ACS president at the time, held an open discussion on how the society can best cultivate a culture of safety in U.S. universities and colleges. More than 40 Councilors expressed opinions and ideas. At San Diego's meeting the Committee on Chemical Safety (CCS) began reviewing these comments to identify ideas that could become active projects to help strengthen safety cultures. You can share your ideas with CCS at safety@acs.org.
- In October 2011, the U.S. Chemical Safety Board released its report on a university laboratory incident (Texas Tech).
- CCS -- Safety Culture Task Force report entitled "Creating Safety Cultures in Academic Institutions."



2011 ACS President Nancy B. Jackson





Culture of Safety

- Reaching the Academic Community
 - CSB (US Chemical Safety Board)
 - Texas Tech explosion 2010
 - ACS (American Chemical Society)
 - CCS Committee on Chemical Safety
 - CHAS Division of Chemical Health & Safety
 - National Academy of Science / NRC
 - Promoting a Culture of Safety...
 - Report plus 5 cut-out responsibility summaries
 - APLU (Assoc. of Public Land Grant Universities)

Safety Culture @ the highest levels of academic guidance



Safety Culture... Broadening the scope of "safety" in academia and in research and teaching labs...



Culture of Safety

NRC Recommendations

1. Institution leaders must actively demonstrate that safety is a core value.

2. Leaders should include fostering a positive safety culture in criteria for faculty promotion, tenure, and salary decisions.

3. Leaders should consider what research can be done safely, given resources available.

4. Institutions should have comprehensive risk-management plans for lab safety.

5. Department chairs and principal investigators (PIs) should use engagement strategies and institutional support to promote a strong safety culture.

 Department chairs should promote robust safety collaborations among PIs, researchers, and safety professionals.

7. ACS and other organizations should establish and maintain an incident and nearmiss reporting system.

8. Researchers should incorporate hazard analysis into lab notebooks and research processes.

9. Department chairs and PIs should **develop lab-centric activities** to complement other safety training.



SAFE SCIENCE

Promoting a Culture of Safety in Academic Chemical Research



NRC Recommendations

1. Institution leaders must actively demonstrate that safety is a core value.

2. Leaders should include fostering a positive safety culture in criteria for faculty promotion, tenure, and salary decisions.

3. Leaders should **consider what research can be done safely,** given resources available.

4. Institutions should have comprehensive risk-management plans for lab safety.

 Department chairs and principal investigators (PIs) should use engagement strategies and institutional support to promote a strong safety culture.

 Department chairs should promote robust safety collaborations among PIs, researchers, and safety professionals.

7. ACS and other organizations should establish and maintain an incident and nearmiss reporting system.

8. Researchers should incorporate hazard analysis into lab notebooks and research processes.

9. Department chairs and PIs should **develop lab-centric activities** to complement other safety training.

Interest in promoting safety in academic research laboratories has grown in recent years, following high profile incidents in which researchers were injured of killed. Many colleges and universities are interested in going beyond compliance with regulations to fosterin a safety culture: affirming a constant, institution-wide ommitment to safety and integrating safety as an essential element in the daily work of researchers. A report from the National Research Council, Safe Science: Promoting a Culture of Safety in Academic Chemical Research, identifies steps that everyone interest in promoting safety in academic research laboratories has grown in recent years, following highinvolved in research and other activities using chemi profile incidents in which researchers were injured or killed. Many colleges and universities want to go

Actions for University Senior Leaders

beyond complying with regulations to fostering a

safety culture: affirming a constant, institution-wide

commitment to safety and integrating safety as an

essential element in the daily work of researchers.

A report from the National Research Council, Safe

Science: Promoting a Culture of Safety in Academic

involved in research and other activities using chemi-

to university leadership-should take to create and

As principal investigators, you have enormous influ-

ence over the culture in the laboratories, which you

of safety that will be implemented. The principal

lead. In many ways, you set the tone for the standard

investigator and the entire institution are responsible

for promoting safety and providing the resources and

practices that lead to safe laboratories demand that

and leadership among your research team (or group),

anyone who enters a laboratory, from inexperienced

they are entering an environment that requires special

precautions. They are aware of the hazards posed by

the materials they and others in the lab are working

with, and they are prepared to take immediate and

events. At a minimum, laboratory safety includes:

their co-workers, especially in the case of unexpected

· awareness of the physical and chemical proper-

ties and health hazards of laboratory reagents

availability and use of proper apparatus and infra-

special practices necessary to reduce risks,

use of proper personal protective equipment.

and equipment being used, gained by conducting

structure needed to carry out the procedure safely,

knowledge of and ability to execute any additional

Promoting a Culture of Safety in J

appropriate measures to protect themselves and

students to senior investigators, understands that

you, as Pis, encourage participation, commitment,

ELEMENTS OF A STRONG LABORATORY

An ideal laboratory safety culture ensures that

training needed to work safely. Day-to-day actions and

Chemical Research, identifies steps that everyone

cals-from researchers to principal investigators

promote this approach to safety.

whose safety is at stake.

hazard analysis,

SAFETY CULTURE

cals-from researchers to principal investigators to university leadership-should take to create and promote this approach to safety. Overall responsibility for creating a safe environ

SAFE SCIENCE

and encouraging a strong, positive safety culture rest: with an institution's senior leaders, who play a crucial role in these efforts, Presidents, chancellors, provosts, and other leaders at universities and colleges should emonstrate that safety is a core value of the institutio ensure that the institution's research plans align with the resources available for safety, and establish policie and deploy resources in ways that enable safety.

PROMOTING A CULTURE OF SAFETY

A robust safety culture is a core element in the respon sible conduct of research. Good science practices integrate safety directly within the research process fostering a productive and secure work environment

WHAT IS SAFETY CULTURE?

Safety culture refers to an organization's shared values assumptions, and beliefs specific to workplace safety or more simply, the relative importance of safety with the organization.

A strong safety culture arises not because of a set of rules but because of a constant commitment to safet throughout an organization. Such a culture supports the free exchange of safety information, emphasizes earning and improvement, and assigns greater impor tance to solving problems than to placing blame. High importance is assigned to safety at all times, not just when it is convenient or does not threaten perso or institutional productivity goals.

Promoting a Culture of Saf

SAFE SCIENCE Actions for Principal Investigators and Department Chairs

On

En

· access to a well-organized workspace that facilitates unrestricted movement about the labo-

SAFE SCIENCE **Actions for Laboratory Researchers**

National Academies - Safe Science: Promoting a

Culture of Safety in Academic Chemical

Research

interest in promoting safety in academic research laboratories has grown in recent years, following high-profile incidents in which researchers were injured or killed. Many colleges and universities want to go beyond complying with regulations to fostering a safety culture: affirming a constant, institution-wide commitment to safety and integrating safety as an essential element in the daily work of researchers.

A report from the National Research Council, Safe Science: Promoting a Culture of Safety in Academic Chemical Research, identifies steps that everyone involved in research and other activities using chemicals-from researchers to principal investigators to university leadership-should take to create and promote this approach to safety. As researchers, you have enormous influence over the

culture in the laboratories where you work. Some of the strongest laboratory safety cultures are those in which researchers have taken the lead in establishing that culture. The entire institution is responsible for promoting safety and providing you with the resources and training you need to work safely. But the day-to-day actions and practices that lead to safe laboratories demand the participation, commitment and leadership of those who actually do the research. whose safety is at stake.

ELEMENTS OF A STRONG LABORATORY SAFETY CULTURE

An ideal laboratory safety culture ensures that anyone who enters a laboratory, from inexperienced students to senior investigators, understands that they are entering an environment that requires special precautions. They are aware of the hazards posed by the materials they and others in the lab are working with, and they are prepared to take immediate an appropriate measures to protect themselves and

their co-workers, especially in the case of unexpected events. At a minimum, laboratory safety includes: · awareness of the physical and chemical proper-

- ties and health hazards of laboratory reagents and equipment being used, gained by conducting hazard analysis,
- availability and use of proper apparatus and
- infrastructure needed to carry out the procedure safely,
- knowledge of and ability to execute any additional special practices necessary to reduce risks.
 - Promoting a Culture of Safety in Academic Chemical Research

access to a well-organized workspace that investigator reate and facilitates unrestricted movement about the laboratory and appropriate segregation of materials and processes, and sonnel obv tant role in familiarity with emergency procedures, including titutions. The the use of safety showers, fire extinguishers, and

use of proper personal protective equipment,

eve stations. A strong, positive safety culture encourages all laboratory workers to place the highest priority on these practices. Safe equipment, systems, and procedures are not enough if the culture of the organization does not encourage and support working safely. One of the major barriers to the development of safety culture in academic laboratories is the attitude that safety practices inhibit research productivity. But the occurrence of a serious incident in a laboratory, in addition to being a tragedy in itself, stops researchcertainly a dramatic impact on research progress, as

anyone who has experienced or witnessed such an IE?

investigator are responsible for providing a safe work environment and encouraging a culture that promotes safety. For example, the university and principal investigator should ensure that you have: · comprehensive, lab-specific safety training before

- you start work in the lab. · opportunities for guidance and mentoring
- about safety issues, along with other research

- related issues.

CULTURE

- Incident can attest. It is part of the academic culture for researchers to work long hours, late at night, and often alone. These practices may reflect a pressure to produce results, influenced by power dynamics that are antithetical
- to the advancement of a strong safety culture. No amount of productivity justifies carrying out hazardous
- Safety is a core element of responsible research, not an impediment to it. Good science is safe science. fostering a productive and secure work environment.
- Like publishing papers and acquiring grants, conducting research safely is key to the success of a research group, and it must be held in high academic esteem.

- ACTIONS TO CREATE A STRONG SAFETY
- The university, the department, and the principal

ent to safety e supports oter Imp

hared values loce safety of fety within of a set of

SAFE SCIENCE

procedures alone and with inadequate sleep.

blame. High s, not jus personal o

Interest in promoting safety in academic research appropriate measures to protect themselves and laboratories has grown in recent years, following high their co-workers, especially in the case of unexpected events. At a minimum, laboratory safety includes: re injured vant to go awareness of the physical and chemical proper

ncil, Safe

codemk

vervone

ising chemi

een EliiS and

in a strong

TORY

that

ands that

quires spec

ds posed by

stering a ties and health hazards of laboratory reagents and equipment being used, gained through fety as an hazard analysis. earchers.

Actions for Environmental Health

availability and use of proper apparatus and infrastructure needed to carry out the procedure safely,

 knowledge of any additional special practices necessary to reduce risks,

SAFE SCIENCE

interest in promoting safety in academic research

and Safety Staff

- use of proper personal protective equipment, access to a well-organized workspace that
- facilitates unrestricted movement about the labo ratory and appropriate segregation of materials
- and processes, and familiarity with emergency procedures, including the use of safety showers, fire extinguishers, and
- eye stations. A positive safety culture encourages all laboratory vorkers to place the highest priority on these prac-
- tices. It is not enough to provide safe equipment, systems, and procedures if the culture of the organization does not encourage and support safe working. One of the major barriers to the development of
- safety culture in academic laboratories is the attitude among some researchers that safety practices inhibit research productivity. But the occurrence of a serious incident in a laboratory, in addition to being a tragedy
- re working diate and In itself, stops research-certainly one of the most dramatic possible impacts on research progress.
 - Safety is a core element of good research rather than an impediment to it. Laboratory safety is needed not only to protect the health of the students and researchers involved but also to provide a positive
 - example to younger scientists that laboratory research can be done safely and at the same time efficiently. Like publishing papers and acquiring grants, conducting research safely is key to the success of a research
 - group, and it must be held in high academic esteem.
 - A STRONG SAFETY CULTURE
 - Currently, there is often confusion about the role of EHS in laboratory safety. Some faculty and researchers
 - see EHS as having primary responsibility for safety. Others see EHS as a regulatory entity, acting in place of
 - external inspectors. Still others believe EHS's primary

e of Safety in Academic Chemical Research

Vice Presidents for Research they are entering an environment that requires special cautions. They are aware of the hazards posed by materials they and others in the lab are working h, and they are prepared to take immediate and ropriate measures to protect themselves and ir co-workers, especially in the case of unexpected nts. At a minimum, laboratory safety includes: awareness of the physical and chemical proper-

Actions for Deans and

ties and health hazards of laboratory reagents and equipment being used, gained by conducting hazard analysis,

availability and use of proper apparatus and infrastructure needed to carry out the procedure safely knowledge of and ability to execute any additional special practices necessary to reduce risks. use of proper personal protective equipment, access to a well-organized workspace that facilitates unrestricted movement about the labo ratory and appropriate segregation of materials

the use of safety showers, fire extinguishers, and eve stations.

trong, positive safety culture encourages all labo pry workers to place the highest priority on these ctices. It is not enough to provide safe equipment, tems, and procedures if the culture of the organizah does not encourage and support working safely.

e of the barriers to the development of safety ture in academic laboratories is the attitude that ety practices inhibit research productivity. But the urrence of a serious incident in a laboratory, in lition to being a tragedy in itself, stops research and ertainly one of the most dramatic possible impacts

research progress, as anyone who has experienced vitnessed such an incident can attest. ety is a core element of research, not an impedint to it. Laboratory safety is needed not only to

tect the health of the students and researchers plved but also to provide a positive example to inger scientists that laboratory research can be se safely and efficiently. Like publishing papers and uiring grants, conducting research safely is key to success of a research group, and it must be held in hacademic esteem

and processes, and

familiarity with emergency procedures, including



APLU -- Culture of Safety

Core Institutional Values Foundational to a Culture of Safety

- Safety is everyone's responsibility. Each institution should commit to providing a campus environment that supports the health and safety practices of its community (faculty, students, staff, and visitors) and empowers the community to be responsible for the safety of others. A safe campus environment is a right of employment for all categories of employees. A safe campus learning environment is a right of all involved in education and research.
- 2. Good science is safe science. Safety is a critical component of scholarly excellence and responsible conduct of research.

- 3. Safety training and safety education are essential elements of research and education. They instill a culture of safety in the next generation of researchers and future faculty, and they are important for our students' career development and employability.
- 4. An improved culture of safety is necessary to truly reduce risk throughout the academic enterprise.
- 5. It is best to recognize that diverse methods and flexible approaches will be used by each institution to develop a strong culture of safety, unique to its situation.



A guide to implementing a **SAFETY CULTURE** in our universities

APLU Council on Research Task Force on Laboratory

SPECIAL REPORT

How dangerous is chemistry?

The death of a French professor in a laboratory explosion in March was a shocking reminder that research can be a risky business. **Mark Peplow** and **Emma Marris** investigate whether chemistry deserves its reckless reputation.

Something that felt like an earthquake hit the French town of Mulhouse on 24 March. The explosion at the National Institution of Higher Learning in Chemistry (ENSCMu) killed Dominique Burget, a 41year-old photochemist. It also sent ripples of concern around the world.

Although official investigations are expected to last until the end of the year, it appears that residues of the flammable gas ethene in a pressure vessel were responsible. Burget was working in the lab above the explosion and had nothing to do with the experiment, which also severely injured a changed a lot in the past 10 to 15 years."

Swathes of occupational-health legislation in the 1970s, which established, for example, the US government's Occupational Safety and Health Administration (OSHA) and the UK Health and Safety Executive (HSE), have spurred the change in culture.

One of the most important factors is that risk assessment is now built into scientists' routines. Each chemical used comes with a list of potential risks and appropriate safety precautions, although unpredicted toxicity can affect even the most careful chemist, as Karen Wetterhahn found to her cost in 1996 (see



when I got a job with a small company in Philadelphia," he recalls. "I took over my job a couple of days after they buried my predeces-

• University of California, Irvine







LAB-SAFETY CHALLENGES IN THE ERA OF MULTI-DISCIPLINE RESEARCH

SAFETY CULTURE EXPANDED

Where to begin?



"OLD Chinese Saying, "A Wise man will learn form his mistakes, ... A Genius will learn form someone else's."



Risk is Risk... (Responsibility is something "else")

Research & teaching laboratories are 'statistically' a fairly low risk environment

- Yet: Academic labs appear to be significantly more 'risky' than commercial/corporate research labs
- Data on laboratory accidents/injuries is sparse
- Risks in academic situations are sometimes less 'appreciated/recognized'
- Support for safety lacking in academic settings
 Staffing, Engineering, PPE, Informational Tools
 - Leadership & supervisors not always well advised as to responsibilities and roles...

"Way Back?" Lab Safety Evolution(s)

Advice/direction from:

- National Academy of Science
- OSHA
- Professionals...



UPDATED EDITION

Prudent Practices in the Laboratory

> Handling and Management of Chemical Hazards

> > NATIONAL RESEARCH COUNCIL OF THE NATIONAL ACADEMIES

"Diverse Dangers" Lab Safety Evolution(s)

Challenges are varied:

- Chemical
- Physical...
- Biological
- Radiological
 - Ionizing
 - RF
 - Lasers
 - Magnets
 - ...
- Facility
 - Engineering



A. KEITH FURR

CRC

HANDBOOKOF

STH

EDITION



Berkeley EH&S

November 2015

Lab Safety Evolution(s)

Continued Examples:

 EHS Staff Training Resources









...



Culture of Safety



The Issues... They are "Simple?"

- Laboratories:
 - Represent a plethora of issues
 - Mixed "hazards" chemical, biological, physical...
- Risks are (must be) 'recognized'
 - Inventories, Labelling, Placards
 - Categorized
 - Education / Training
 - SOP's (Risk Analysis... R A M P...)
 - Willingness to change

Hazards – "Biological" ... etc

- Pathogens
 - Bacteria, viruses, prions, fungi, (allergens)
- Animals (Research)
 - Primates, rodents, insects, fish, etc.
- Environmental agents

• Mixed "Discipline" Research (& Teaching...)

"EH&S Research Safety" in the Interdisciplinary Environment

Excuse 1. I only know what I know...

Excuse 2. I like a less complicated job

Excuse 3. I feel like I can't help

Excuse 4. They ignore me

Excuse 5. No institutional "backup"



Tools & Resources

° ACS

- CCS, CHAS, CHED, CHAL? Etc..
- $^\circ$ CSHEMA, AIHA, NAS ...
- \circ UC (UCLA CLS), RSS, ...
- SciShield (BioRaft), ...
- ° R-1 EHS Websites...

Education & Training (Mentorships) • SOFT SKILLS Communication Leadership • Ethics • Metrics EH&S "Academy"

Resources from... ACS...CCS...Div-CHAS...





US-CSB (Chemical Safety Board) request to ACS led to our taskforce report...



Guides, pamphlets, compilations, publications, etc.

Web/Videos



ACS, CSHEMA, UC and various other academic, private and professional sources...



RAMP...



< The ACS Center for Lab Safety

What Is RAMP?

Education & Training Safety Basics Hazards Get Involved

In laboratories, experimental hazards can result from a variety of agents, conditions, and/or activities. The fact that a chemical may have an inherent hazard does not mean that it cannot be used in the laboratory as long as the hazard is recognized!

Laboratory hazards and risks can be managed using RAMP:

Recognize hazards,
Assess risks,
Minimize risks, and
Prepare for emergencies



- American
 Chemical
 Society
 (ACS)
 - <u>https://institute.acs.org/lab</u>
 <u>-safety/safety-basics-and-</u>
 <u>ramp/what-is-ramp.html</u>

А RECOGNIZE ASSESS MINIMIZE PREPARE **Risks of the Risks from** Hazards for Emergencies Hazards Hazards Hazard — any source of potential damage or harm to a person's health. Know and practice the procedures for handling common emergencie Risk - the probability of harm Identify methods and safe pracsuch as spills, cuts, burns, expoor damage from a hazard. tices to minimize the risks from sures, and fires. Use labels on bottles and contain exposures to chemicals and from Assess the risks presented by the ers to identify the most important · Discuss emergency procedures with physical hazards. most important hazards. hazards of the contents. Use Safety students, both in a general way and Understand the nature and limit: Data Sheets (SDSs) to identify Use SDSs and the GHS Hazard with regard to each experiment. tions of personal protective equi ment, chemical hoods, and other Globally Harmonized System (GHS) Categories and Statements to · Ensure that all safety equipment, hazards of the chemicals you will be determine the relative risk of the such as eyewash, fire extinguisher safety equipment. using. These include physical, health hazards. first aid kit, and safety shower, is and environmental hazards. The Locate online and printed mater · Check to be sure all glassware and present and in working order. main hazard categories are flamma als to identify safe practices, and equipment are in good shape and working condition. bles, explosives, corrosives, oxidizen consult with more experienced irritants, and toxicants. chemists. Understand the nature of the hazard · Wear personal protective equip-(its chemistry and/or toxicological/ ment such as splash goggles, lab biological effects). coats or aprons, and appropriate gloves. The dress code in a lab Identify the most important physical should be such that there should b hazards from equipment, conditions, no exposed skin below chest level. and procedures. These include electrical and mechanical hazards and high Use appropriate waste containers or low temperature or pressure. when discarding chemicals.



College Lab Safety Videos



Watch the new ACS College Lab Safety Videos

High School Lab Safety Videos



Safety Mindset Video Playlist 🗹



COREN SERVING THE CHEMICAL, LIFE SCIENCES, AND LABORATORY WORLDS Search			
Home » Safety Letters SAFETY LETTERS Advertisements Advertisements			
chemical involved in the letter. Click on the title to access the full text of the letter or <i>C&EN</i> article.			
REGARDING	TITLE	ISSUE	
(Perfluoroethyl)lithium	Safe generation of (perfluoroethyl)lithium	10/6/97	
1,5-Diamino-1 <i>H</i> -tetrazole	Preparation of 1,5-Diamino-1H-tetrazole	7/25/05	
2-Methoxyprop-2-yl hydroperoxide	Prepared in laboratory precisely according to literature procedure of R. Benedikt, unexpecte exploded.	<u>the</u> 10/6/08 edly	ACS Continuing Education Presents
2-(tert-butylsulfonyl)iodosylbenzene	Letters: Chemical Safety: Synthesis Procedur	<u>e.</u> 1/10/11	Laboratory
2,4,6-trinitrobenzene-1,3-diol	Prepared in laboratory precisely according to literature procedure of R. Benedikt, unexpecte exploded.	<u>the</u> 10/6/08 edly	REGISTER
2,4,6-trinitrobenzene-1,3,5-triol	Potential hazard with 2-methoxyprop-2-yl hydroperoxide	8/9/93	Learn best
3-[Ethoxy(thiocarbonyl)thio]quinoline	<u>3-[Ethoxy(thiocarbonyl)thio]quinoline explosi</u>	<u>on</u> 7/9/01	practices to minimize personal



SAFETY m

All Consumer Safety

Drug Safety

Industrial Safety Lab Safety



Reactions: Remembering Karen Wetterhahn



LAB SAFETY

Opinion: What I learned from my lab accident

Researchers should feel empowered to improve safety culture before accidents happen



Online Seminar: Safe & Robust...

By Mettler Toledo — Join industry experts in discussing practical methods of applying process analytics to overcome... **ADVERTISEMENT**

and the lot of the lot of the lot of the lot of the lot of

Reports on high quality research across food science, technology, Explore ACS Chemical Safety on YouTube

Safety Webinars

ACS Webinars connect you with subject experts and global thought leaders in chemical sciences, management, and business on relevant professional issues. Learn from the best and brightest minds in chemistry!

• How to Improve Your Lab's Safety: Answering Your Questions

Experts: Debbie M. Decker, Joseph Pickel, Ralph Stuart

- Creating a Lab Safety Culture for Industrial Chemists, Educators, and Grad Students Experts: Peter K. Dorhout, Dawn Mason, Dominick Casadonte, Kali Serrano
- Reshaping Chemical Lab Safety: Creating a Dynamic and Adaptive Safety Environment Experts: Ralph Stuart, Samuella Sigmann
- Creating a 21st Century Chemical Research Laboratory: Hazard Assessments and Fundamentals Experts: Ralph Stuart, Kendra Leahy Denlinger

The UC Center for Laboratory Safety

Mission V Resources V Training V Lessons Learned V Articles V Events V Contact Us Q



The UC Center for Laboratory Safety

The UC Center for Laboratory Safety (UCCLS) was created to improve laboratory safety by conducting research to provide evidence-based best safety practices in the laboratory.

COVID-19 INFORMATION



University of California COVID-19 Information

RECENT PUBLICATIONS



Lessons Learned—Aluminum Waste Container Rupture

LATEST LESSONS LEARNED



<u>Trimethylaluminum Ignites When Syringe for Transfer Separates</u>



pubs.acs.org/acschas

Commentary

Proceedings of the 2018 Laboratory Safety Workshop: Hazard and Risk Management in the Laboratory

Read Online

Imke Schröder, Elizabeth Czornyj, Michael B. Blayney, Nancy L. Wayne, and Craig A. Merlic*



Metrics & More



ines for options on how to legitimately share published articles.

Article Recommendations

s Supporting Information

ABSTRACT: Identifying hazards and assessing associated risks can be a considerable challenge for researchers in universities and colleges. Neglecting risk management is generally one of the factors leading to sometimes catastrophic incidents in research laboratories. The 2018 Workshop on Laboratory Safety on Hazard Identification and Risk Assessment, held in Chicago, IL, on May 6 to 8, 2018, provided a venue for brainstorming and discussing practical means of implementing risk management in the academic research environment. In addition to specific recommendations from keynote speakers, output from workgroups focused on seven aspects of hazard and risk management is presented. The output includes actionable ideas to improve research safety for constituents such as university leaders, principal investigators, EH&S professionals, and research staff and students. Researchers and Environment Health and Safety professionals from academic institutions as well as National Laboratories, industry, and some government organizations contributed their insights through hands-on workgroup sessions, panel discussions, and speaker presentations. The workshop videos and presentations are available online.

INTRODUCTION

The 2018 Workshop on Laboratory Safety was the fourth biannual workshop of this kind organized by the University of California Center for Laboratory Safety (UCCLS). Like the 2016 Workshop, this workshop was organized in partnership with the National Institutes of Health (NIH) Division of to develop approaches to meet that challenge by developing recommendations that can be applied across disciplines and to researchers with diverse levels of expertise.

The specific objectives of the workshop were as follows:

1. Analyze the needs for teaching, implementing, and managing hazard identification for students, staff, and



Faculty - Graduate Program - Undergraduate Program - Research - Safety - Outreach News Seminars Administration -

HOME / Safety / UCSD Lab Safety Videos

Safety

Lessons Learned

Lab Safety Videos

EHS - My Research Safety

Videos

- SPLASH-ZONE
- To Be (Safe) or Not To Be
- A Day In the Lab
- Flash Chromatography 101

Chem/Biochem - Lab Safety Videos



Technology Suite Tools



Laboratory Hazard Assessment Tool (LHAT)



About Risk and Safety Solutions



- Incubation: 2008 at the University of California as a systemwide technology team
- **Mission:** Solving real business problems in Research Safety, EH&S and Risk Management through quality technology solutions
- **Vision:** Deliver an integrated technology platform to our clients that facilitates cost avoidance and reduction while enhancing safety and compliance.
- Focus: Higher education, healthcare, and public health
- Agility: Feedback centric with continuous development model
- Approach : Solutions built based on value-add features to our end users
- Collaborative: Believe in the value of partnering with our clients











 Procession

 Procession







Title Subtitle

ACS Division of Chemical Health and Safety

Connecting Chemistry & Safety











ACS CHEMICAL SAFETY RESOURCES

CHAS WEB SITE CONTENTS -

ABOUT US -

Division of Chemical Health and Safety: a technical division that pursues research into all elements of chemical and laboratory safety, including technical and management aspects. <u>The Division hosts</u> <u>technical symposia at national and regional meetings</u> and hosts educational workshops at national and regional meetings.

CHAS WORKSHOPS 2022 -

Committee on Chemical Safety: a committee of the Society that provides technical and educational leadership within the Society with regard to safety issues. The Committee produces <u>a variety of</u> <u>peer reviewed documents</u> which provide guidance with regard to technical and management issues related to chemical safety in the laboratory, particularly in the educational setting. The CCS also supports the ACS Safety Program Manager in developing the <u>ACS</u> <u>safety web page</u> and <u>e-mail question line.</u>

Division of Chemical Education Safety Committee: established in 2015, <u>the DCHED safety committee</u> reviews safety guidance documents published by the division and provides outreach to chemistry educators around safety issues

ACS Chemical Health & Safety: ACS Publications <u>peer review jour-</u> <u>nal</u> focused on communicating the safe practice of chemistry across disciplines, at every age, and in every organization.

THE ART AND STATE OF SAFETY JOURNAL CLUB



ACS > About ACS > Governance > Committees > Committee on Chemical Safety

Committee on Chemical Safety

Roster Advisory Panel

Subcommittees Publications & Resources

Safety Summit

What We Do

Welcome to the Committee on Chemical Safety (CCS). This section highlights the Committee's activities and provides administrative resources for its members.

Our primary activities include:

- Publication of standards, tools, and other materials for use in classrooms, laboratories, and the workplace
- Development of safety policy statements for the ACS Board of Directors
- Providing advice and assistance to other ACS committees and members
- Presentation and sponsorship of symposia

Mission

CCS provides collaborative leadership and resources to advance chemical safety.

Vision

A scientific community that embraces safety in all activities of the chemistry enterprise.

Goals

• Goal 1: Foster collaborative partnerships to advance safe chemistry.





INDUSTRIES | SOLUTIONS | CHEMTRACKER | COMMUNITY HUB | WEBINARS | LET'S TALK

Sign in

Product Support

Demo Request

New SciShield Name. Same BioRAFT Protection.

After nearly 20 years, we have changed the name of our software from BioRAFT to SciShield.

The name SciShield embodies our mission to protect our scientists and scientific organizations across the world from the burdens and risks of working in and operating scientific laboratories.

Our software is used by scientists of every discipline and supports organizations across the spectrum. Built by scientists, our system improves safety, ensures regulatory compliance, and drives operational efficiency, all with sustainability in mind.

We are proud to support you and your mission with SciShield.

Take a fresh look at how SciShield can support you and your mission.

BIC)RAFT

Company

Customer Stories

is now

SciShield

LAB-SAFETY RESOURCES IN THE ERA OF MUTI-DISCIPLINE RESEARCH

SAFETY CULTURE EXPANDED



Training

to be a better coworker

EH&S Professional Education program

James Caesar Janette de La Rosa Ducut, Ed.D.

CSHEMA 2018 | Baltimore, MD

SMEs

Generalists



Program



Online



WORKSHOP | Communication





Customer Complaints Roleplay



AGENDA

EH&S Academy

History

EH&S Academy (3 day) EH&S Professional (online + 1 day)

Workshop

Technical & Leadership skills (examples)

Results

Attendees Certifications | Testimonials

Summary

Website | Questions

HISTORY

The University of California adopted the EH&S Academy from the University of Texas Health Science Center in 2005.

Robert Emery, DrPH, CHP, CIH, CSP, CBSP, CHMM, CPP, ARM University of Texas Health Science Center EH&S Academy website

EH&S Academy XXII

Monday, September 24, 2018 - Friday, September 28, 2018

About the Course

The Environmental Health & Safety Academy is a unique week-long course designed to provide you with the general skills needed to identify, evaluate and control workplace hazards, particularly those found in academic settings. This is the twenty first time the course has been offered.

Who Should Attend

The course is developed especially for health and safety professionals, particularly individuals charged with maintaining the health and safety of their faculty, staff, students, and visitors. This course is helpful to anyone new to the health and safety field regardless of the industry. Experienced health and safety professionals new to the academic or government sector will find this course incredibly helpful.

Course Dates, Time & Location

Course Dates

Mon 09/24/2018 - Fri 09/28/2018

Mon-Thurs 8:00am - 5:00pm Friday 8:00am -12:00pm noon The University of Texas

Location

UTHealth Operations Center Building (OCB) 1851 Crosspoint Ave. Rio Grande Room 2.200 (2nd floor) Houston, TX 77054 <u>Click here for directions</u>

WORKSHOP | Topics

Dr. Robert Emery provides an overview of the CSHEMA core competencies: Influence, Program management, and Communication

EH&S Academy (and similar immersive environments)

Reason 2. Give SME's podium time

Reason 3. Provide broad background context

Reason 4. Suggest communication strategies

Reason 5. Give objective 'Metrics' examples

÷

Safety "Culture"

Three Components of "Safety Culture"

Communication

Cooperation

Compliance

Resolution and Resources

A view "Safety Culture" development.

Safety must be pervasive

Safety must be supported

Safety must be remembered

The END...?"

• THANK YOU - Questions?

- John Palmer, UC San Diego Retired / PWLSC consulting

PAPER ID: 3754630
 PAPER TITLE: Risk, safety, and troublesome territoriality: Bridging interdisciplinary divides

DIVISION: Division of Chemical Health and Safety SESSION: Safety Across the Chemical Disciplines SESSION TIME: 8:00 AM - 11:40 AM

PRESENTATION FORMAT: Oral - Hybrid DAY & TIME OF PRESENTATION: Sunday, August 21, 2022 from 10:20 AM - 10:45 AM ROOM & LOCATION: Dusable / CC 21 - Hyatt Regency McCormick Place

Links

Safety Culture @ the highest levels of academic guidance

ACS Safety Culture Taskforce...

https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report.pdf

Safe Science (NAS: National Academy of Science)

https://nap.nationalacademies.org/download/18706

Guide to Safety Culture (APLU: Association of Public and Land-grant Universities)

<u>https://www.aplu.org/library/safety-culture/file</u>

ACS Safety in Academic Chemistry Laboratories

https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/safety-in-academic-chemistry-laboratories-students.pdf

