Gene Block, Chancellor, UCLA (honorary chair, Task Force on Laboratory Safety)

"Laboratory safety is an issue that is personally important to me. Many of you are aware of the laboratory accident at UCLA in 2008 that resulted in the tragic death of Sheri Sangji, a young lab assistant. As challenging as that incident has been for our community, I believe we have a very clear path as a great public research university to learn from it and to lead the effort at UCLA – as well as nationally – to improve our campus laboratory safety cultures. We must seize this opportunity to individually and collectively renew our commitment to strengthening safety on our campuses...I hope you will join me in this critical effort."

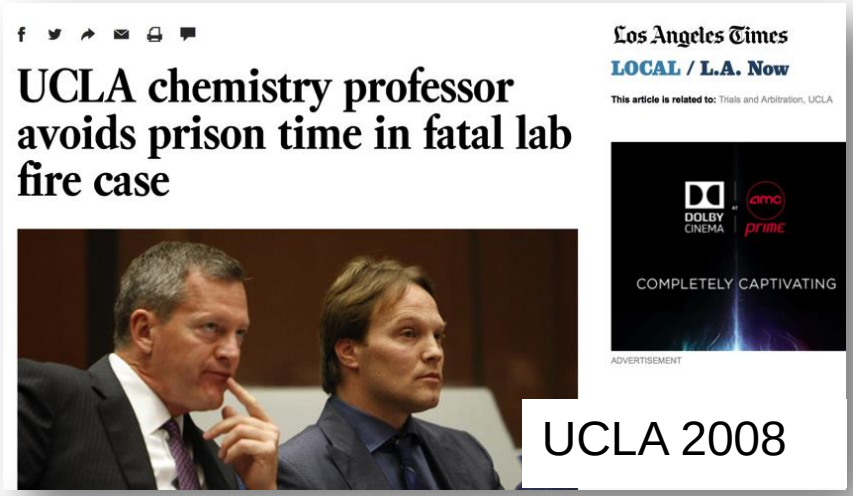
A Guide to Implementing a Safety Culture in Our Universities

Taylor Eighmy, University of Tennessee, Knoxville
Mark McLellan, Utah State University
Dawn Mason, Eastman Chemical Company
Ara Tahmassian, Harvard University

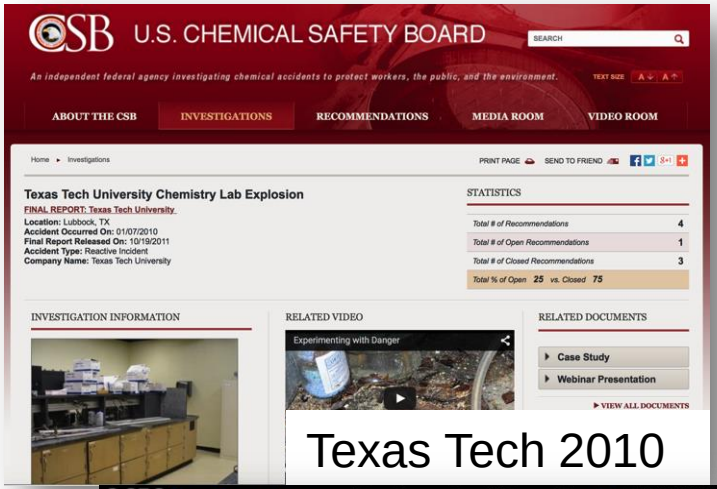
November 15, 2015

Presentation to CoR at APLU Annual Meeting

Who does safety in our labs & studios?



UCLA 2008



Texas Tech 2010

Yale 2011

VA 2012

Slide from Alice Young, Texas Tech University

… safety …

"Yale student dies in chemistry lab accident"
CBS News, Apr 2011

"A Higher Bar for Pathogens, But Adherence Is an Issue"
New York Times, May 2010

"A Pfizer Whistle-Blower Is Awarded $1.4 Million"
New York Times, Apr 2010

"U. of C. researcher dies after exposure to plague bacteria"
Chicago Tribune, Sept 2009

"HIGH-CONTAINMENT LABORATORIES: National Strategy for Oversight Is Needed"
GAO Congressional Testimony Report, Sept 2009

"Microbiology labs linked to nationwide salmonella outbreak"
MSNBC, April 2011

"Danger in School Labs: Accidents Haunt Experimental Science"
Scientific American, Aug 2010

"UW employee infected in lab where unauthorized experiments happened"
Associated Press, May 2010

"Safety Rules Can't Keep Up With Biotech Industry"
New York Times, May 2010

"Six accidents at Los Alamos National Laboratory since July have revived safety questions about operations"
Associated Press, Feb 2010

"Texas A&M to pay $1 million fine to end ban on biodefense research"
Dallas Morning Star, Feb 2009

the WHITE HOUSE PRESIDENT BARACK OBAMA

A National Biosafety and Biosecurity System in the United States

OCTOBER 29, 2015 AT 2:30 PM ET BY LISA O. MONACO, JOHN P. HOLDREN

Summary: Administration releases joint memo to agencies, plans for enhancing biosafety and biosecurity at infectious disease laboratories.

Enhancing a national biosafety and biosecurity system that protects scientists, healthcare workers, and the American public from exposure to harmful pathogens is a critical part of the Administration's efforts to conduct state-of-the-art life-sciences research and to make new lifesaving treatments, vaccines, and diagnostics widely available. Last year, we issued a joint memo to Federal departments and agencies, urging them to take both immediate and longer-term steps to address the underlying causes of laboratory incidents and to examine and strengthen biosafety and biosecurity practices. Since that time, the Administration has conducted a comprehensive review of the Federal Government's biosafety and biosecurity enterprise. Over the past year, experts from within and outside of the Federal Government reviewed the current system, discussed recent incidents, and identified best practices for the future.

COMMENT

DOUGLAS C. PIZAC/AP/PA IMAGES

Biosafety-level-3 protection at the US Army's Dugway Proving Ground, Utah.

Rethink biosafety

Tim Trevan calls on those working with organisms that are hazardous, or could be so, to take lessons from the nuclear industries, hospitals and other sectors that have established a safety culture.

Two months ago, the US Department of Defense froze operations at nine biodefence laboratories where work is done on dangerous pathogens. Inspectors had discovered live anthrax outside a containment area at the US Army's Dugway Proving Ground — a facility in Utah that tests defence systems against biological and chemical weapons.

The discovery at Dugway is the latest of several concerning finds. In June 2014, workers at a US Centers for Disease Control and Prevention (CDC) biosafety-level-3 laboratory in Atlanta, Georgia, sent anthrax samples to three other laboratories on the same campus. The samples were meant to have been sterilized but several factors meant that 41 people were potentially exposed to live bacteria[1]. Then in May this year, an investigation revealed that for several years, staff at Dugway had been improperly sterilizing anthrax samples, and that live spores may have been sent to 52 laboratories in the United States, Canada, Australia and South Korea.

These mishaps — which are by no means unique to anthrax — are worrying on two levels. First, the handling of ▶

APLU Lab Safety Task Force

- Since 2013, APLU Council on Research (CoR) has sought to proactively address the lab accident epidemic on campuses.
- Sense that academic leaders must be proactive change agents
- Concerns about risk management, federal agency action, faculty workload burden
- Formal Task Force established in 2015, involving APLU, AAU, COGR, ACS

Call to Action

- *The Task Force on Laboratory Safety calls on all universities to embrace a renewed commitment to improve the safety culture for all academic research, scholarship, and teaching. We ask that college and university presidents publicize their commitment and expectations within their institutions. We ask that all academic institutions look beyond the traditional research laboratory to embrace a commitment to improving safety in research and teaching laboratories; in shops, studios, and stages; in teaching classrooms, and in the field.*

- *The Task Force further recommends that the Association of Public and Land-grant Universities and the Association of American Universities, as the member associations of research universities, call upon all academic institutions to renew their commitment to improve the safety culture for all academic research, scholarship, and teaching. We call upon APLU and its Council on Research (CoR) to routinely recognize exemplary programs and to sponsor an annual safety culture award.*

Suggested Core Institutional Values

- Safety is everyone's responsibility. Each institution should commit to a campus environment that ensures the health and safety of their entire community (faculty, students, staff, and visitors) and empowers the community to be responsible for the safety of others. A safe campus environment for workers is a right of employment. A safe campus learning environment is a right of education.
- Good science is safe science. Scholarly excellence and responsible conduct of research includes safety as a critical component.

Suggested Core Institutional Values

- Safety training and safety education is a critical component of research and education. It is important for instilling a culture of safety in the next generation of researchers and future faculty, and it is important for our student's career development and employability.
- An improved safety culture is necessary to implement true risk reduction.
- It is best to recognize that diversity and flexibility of approaches and methods will be used by each institution to develop a strong safety culture unique to their situation.

Task Force Members

- Taylor Eighmy (Co-Chair), University of Tennessee, Knoxville
- Mark McLellan (Co-chair), Utah State University
- Gene Block (Honorary Chair), UCLA
- Kimberly Espy, University of Arizona
- Mridul Gautam, University of Nevada, Reno
- Kimberly Jeskie, Oak Ridge National Laboratory
- Dawn Mason, Eastman Chemical Company
- Jan Novakofski, University of Illinois at Urbana-Champaign

Task Force Members (continued)

- Patty Olinger, Emory University
- Joanne Polzien, Michigan Technological University
- Lesley Rigg, University of Calgary
- Ara Tahmassian, Harvard University
- Erik Talley, Cornell University
- William Tolman, University of Minnesota Twin Cities
- Nancy Wayne, University of California Los Angeles
- Alice Young, Texas Tech University

Task Force Staff

- Steve Bilbao, Utah State University
- Robert Nobles, University of Tennessee, Knoxville
- Kacy Redd, APLU

What We Did

- Actively reached out across the university and science communities to hear from over 20 organizations and 25 institutions;
- Synthesized recommendations from the National Academies, ACS, and the U.S. Chemical Safety and Hazard Investigation Board (CSB) into 20 actionable recommendations;
- Developed a national implementation strategy with recommendations and a tool box

Listening and Presenting Sessions

- May 6: NRC, ACS, CSHEMA, UCB, CDC, AAHRPP, ABSA,
- June 8: AAALAC
- June 15: COGR, FASEB, FDP, AAU
- June 18: NIH
- June 31: CoR Summer Meeting
- August 3: URIMA
- August 5 & 14: NACUA
- August 14: NACUBO
- August 17: ACS Chemical Safety Committee Meeting
- September 3: FDP Faculty Lunch Forum
- September 9: CSHEMA regional meeting
- September 22: CUR
- September 28: NPA
- October 14: ABSA annual conference
- October 22: COGR meeting
- November 4: CCAS meeting
- November 11: NACUA CLE conference
- November 15: APLU Annual Meeting

Implementation Guide

- Includes 20 recommendations for creating a culture of academic and research safety drawn from:
  - National Academies' *Safe Science: Promoting a Culture of Safety in Academic Chemical Research;*
  - the American Chemical Society's *Creating Safety Cultures in Academic Institutions;*
  - OSHA's *Safety and Health Management Systems e-Tool*; and
  - the US Chemical Safety and Hazard Investigation Board's case study on *Texas Tech University: Laboratory Explosion*.
- Tools and resources for implementation
  - Core institutional values that are foundational to a culture of safety
  - Suggested roles and responsibilities
  - Resources for implementing each of the 20 recommendations

Promoting a Culture of Safety: Perspectives from Industry

In the fields of observation, chance favors the prepared mind.

- Louis Pasteur

Implementation Guide

- Includes 20 recommendations for creating a culture of academic and research safety drawn from:
  - National Academies' *Safe Science: Promoting a Culture of Safety in Academic Chemical Research;*
  - the American Chemical Society's *Creating Safety Cultures in Academic Institutions;*
  - OSHA's *Safety and Health Management Systems e-Tool*; and
  - the US Chemical Safety and Hazard Investigation Board's case study on *Texas Tech University: Laboratory Explosion*.

Rec 1: The President/Chancellor renews commitment to improve the safety culture for all academic research, scholarship, and teaching.

From Safe Science: Promoting a Culture of Safety in Academic Chemical Research (NASEM, 2014):

Rec 1. The president and other institutional leaders must actively demonstrate that safety is a core value of the institution and show an ongoing commitment to it.

From Creating Safety Cultures in Academic Institutions (ACS, 2012):

Rec 2. Encourage every leader to become a proponent of safety and safety education, and to demonstrate this care for safety in their actions with other staff members and students.

From Creating a Safety Culture (OSHA, 1989):

Obtain Top Management "Buy-in". This is the very first step that needs to be accomplished. Top managers must be on board. If they are not, safety and health will compete against core business issues such as production and profitability, a battle that will almost always be lost. They need to understand the need for change and be willing to support it. Showing the costs to the organization in terms of dollars (direct and indirect costs of incidents) that are being lost, and the organizational costs (fear, lack of trust, feeling of being used, etc.) can be compelling reasons for looking at needing to do something different. Because losses due to incidents are bottom line costs to the organization, controlling these will more than pay for the needed changes. In addition, when successful, you will also go a long way in eliminating organizational barriers such as fear, lack of trust, etc. Issues that typically get in the way of everything that the organization wants to do.

Rec 2: The President/Chancellor designates a campus-lead and leadership team to begin the process. Consider appropriate committees to help implement a culture of safety, including a safety committee of faculty, Environmental Health and Safety (EH&S) officers, and other representatives that can provide formative feedback to researchers, educators, and staff.

From Creating Safety Cultures in Academic Institutions (ACS, 2012)

Rec 13. Establish a series of safety councils and safety committees from the highest level of management to the departmental level or lower. Each of these committees reports, in turn, to a committee that is higher in the hierarchy of the institution.

From Creating a Safety Culture (OSHA, 1989):

Establish a Steering Committee comprised of management, employees, union (if one exists), and safety staff. The purpose of this group is to facilitate, support, and direct the change processes. This will provide overall guidance and direction and avoid duplication of efforts. To be effective, the group must have the authority to get things done.

Recommendations

1. The President/Chancellor renews commitment to improve the safety culture for all academic research, scholarship, and teaching.
2. The President/Chancellor designates a campus-lead and leadership team to begin the process. Consider appropriate committees to help implement a culture of safety, including a safety committee of faculty, Environmental Health and Safety (EH&S) officers, and other representatives that can provide formative feedback to researchers, educators, and staff.
3. The campus-lead and leadership team conducts campus dialogues with stakeholders to develop a shared vision of safety that aligns with the institutional mission and to develop an action plan.
4. The campus-lead and leadership team develops effective safety policies, procedures, and management system, and identifies the resources necessary for implementation. They establish a recognition and reward system and integrate these into tenure and promotion, hiring, and annual performance reviews.
5. The institution develops a risk assessment process for laboratory safety that is integral to all activities conducted in laboratory or field operations. There are appropriate resources to assist the faculty with risk assessment.

Recommendations

6. The campus-lead and leadership team clearly articulates the roles and responsibilities of all stakeholders.
7. The institution establishes a unified administrative reporting model that connects responsibility for developing and implementing academic safety policies under one administrative pillar in the institution, and that includes faculty, EH&S officers, and administrative leaders.
8. The campus-lead, leadership team, and faculty embed safety communication in laboratories, classes, departments and in the wider campus.
9. The campus-lead, leadership team, and faculty work to create a trusting and safe culture rather than a punitive culture. They encourage open dialogue and celebrate reporting and learning from near misses.
10. The institution empowers undergraduate students, graduate students, post docs, and staff to voice safety questions and concerns to their faculty supervisors, offices of EH&S, and/or safety committee.

Recommendations

11. The institution works to strengthen collegial and collaborative relationships between faculty and the staff in the offices of EH&S.
12. The institution works to enhance effective working relationships with first responders.
13. The institution implements routine hazard analyses, including them as integral components of undergraduate and graduate education; thesis, dissertation, and funding proposals; and experimental design for all experiments.
14. The institution implements a process to report incidents and near misses so that the campus community can learn from these incidents.
15. The institution provides laboratory safety training for students, faculty, EH&S staff, and department heads.

Recommendations

16. The institution ensures undergraduate and graduate science & engineering curricula include an emphasis on safe practices.
17. The institution conducts self-assessment and benchmarking using measures that can provide feedback on whether they are moving to a safer culture.
18. The institution develops a continuous improvement system that provides feedback, reassessment, and on-going training and learning opportunities.
19. The institution develops a system of accountability including peer to peer accountability.
20. The institution promotes academic and industrial/government partnerships that allow academic researchers to learn from strong and well-developed safety cultures in industrial and government laboratories.

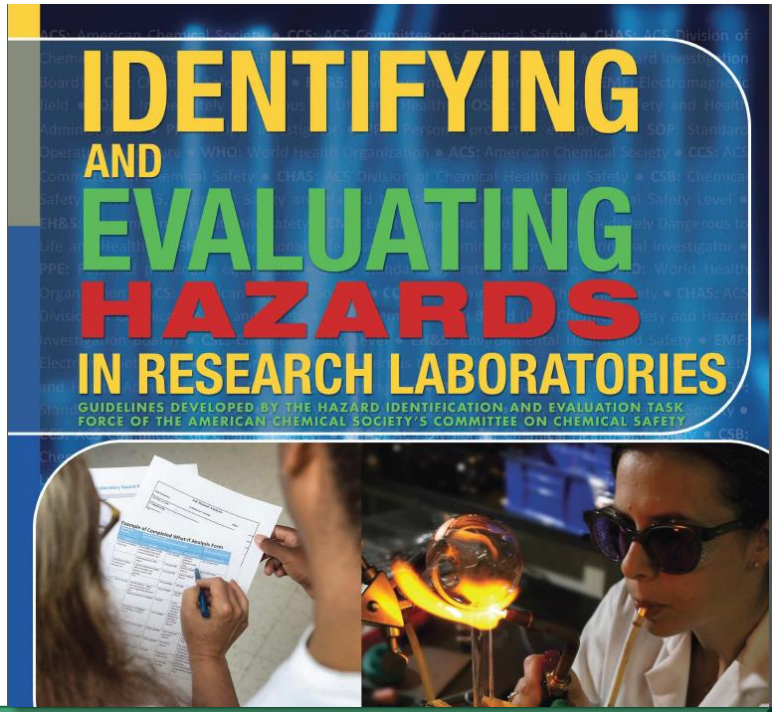
A Tool Box

- Path and rate of change around cultural adoption is unique to each institution. One size does not fit all.
- Each institutions can best select the tools that best work for them.
- Tools in the Tool Box are expected to evolve.
- The most useful Tools will focus on cultural change rather than compliance.
- Accreditation is not a component of the Tool Box.

Tool Sets to support …

- Institution-wide dynamics and resources
- Data, hazard identification, & hazard analysis
- Training, learning, & application
- Continuous improvement
- Access to key resources
- Tools drawn from
  - Peer academic institutions
  - Industrial partners
  - National labs
- Draft toolbox can be accessed here:

http://ittybittyurl.com/XyC



http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/identifying-and-evaluating-hazards-in-research-laboratories.pdf

Proposed Remaining Schedule

- Finalize draft report for sharing at the APLU Annual Meeting with presidents and vice presidents of research (November)
- Approval of the implementation guide and call to action presented to CoR Executive Committee in January 2016
- Approval of the implementation guide by the APLU Board in spring 2016.
- Letter and report from APLU, AAU, Chancellor Block to APLU and AAU institutions (2016)

Thank you to the following organizations and institutions

Organizations

APLU's Council on Research (CoR); Association of American Universities (AAU); American Chemical Society (ACS); Council On Governmental Relations (COGR); Council of Graduate Schools (CGS); National Academies of Sciences, Engineering, and Medicine (NASEM); U.S. Chemical Safety and Hazard Investigation Board (UCB); Oak Ridge National Lab; Eastman Chemical Co; Centers for Disease Control and Prevention (CDC); American Biological Safety Association (ABSA); Association for the Accreditation of Human Research Protection Programs (AAHRPP); Campus Safety, Health, and Environmental Management Association (CSHEMA); Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC); Federation of American Societies for Experimental Biology (FASEB); Federal Demonstration Partnership (FDP); University Risk Management and Insurance Association (URMIA); National Association of College and University Attorneys (NACUA); National Association of College and University Business Officers (NACUBO); National Postdoctoral Association (NPA); Council on Undergraduate Research (CUR); and Council of Colleges of Arts and Sciences (CCAS).

Institutions

Duke University, University of South Florida (FDP), University of Pittsburgh, University of California, University of Nebraska Lincoln, The University of Utah, The University of Texas Health Science, Auburn University, University of Notre Dame, University of Arizona, Texas A&M University System, University of Maryland, University of Tennessee, Knoxville, Utah State University, University of California Los Angeles, University of Arizona, University of Nevada, Reno, University of Illinois at Urbana-Champaign, Emory University, Michigan Technological University, University of Calgary, Harvard University, Cornell University, University of Minnesota Twin Cities, and Texas Tech University

Q&A

- Suggestions for Tool Box?
  - Innovative ways that you funded safety initiatives (i.e. capital campaigns)?
  - Do you include safety statements or safety records in hiring, promotion, or tenure?
  - What metrics, if any, does your institution routinely collect that help you assess the safety on your campus