

In this issue of the Environmental Health and Safety (EHS) Listserv, March 16, 2015:

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1. CUSC Open Forum March 17 & Safety Colloquium April 15

The Chancellor's University Safety Committee (CUSC) will host the spring **CUSC Open Forum** meeting at Nebraska East Union 3:00 – 4:00 p.m. on Tuesday, March 17, 2015. The campus community is encouraged to attend to share concerns or just observe the workings of the CUSC.

The CUSC is a UNL committee established to assist the Chancellor by making recommendations of methods to reduce safety hazards at UNL. The campus community may contact the CUSC Chair at any time with safety concerns or questions and attend bimonthly meetings.

The CUSC charter, as well as links to CUSC Chair, upcoming agenda and meeting dates/locations, previous meeting minutes, the current year's goal and more, are available online. Plan to attend the upcoming Open Forum meeting!

“Safety Culture: Perspectives and Practices,” the Spring Safety Colloquium co-sponsored by EHS and the Office of Research and Economic Development, will be held on April 15, 2015, at Nebraska City Union. This colloquium will feature Sean Kaufman, respected educator, consultant and behavioral solutions expert. Sean has worked with the United States Centers for Disease Control, Emory University, National Institutes of Health, World Health Organization, and many other organizations nationally and internationally. This colloquium will be applicable to everyone, especially to laboratory researchers, PIs, safety committee chairs, department heads and deans.

This colloquium includes a complimentary lunch. Please RSVP (<http://research.unl.edu/events/event2.php?eventID=1400>) by April 10. Due to limited seating, we anticipate that a wait list may be used. Accordingly, we would appreciate you letting us know if your plans to attend happen to change. This colloquium will be live-streamed through the EHS web site the day of event for those who cannot attend in person as well as recorded for future viewing.

Resources

- Chancellor's University Safety Committee <http://ehs.unl.edu/chancellors-university-safety-committee-cusc#cusc>
- EHS Safety Colloquium Series site <http://ehs.unl.edu/training/Colloquium>

2. Promoting an Academic Safety Culture, Recommendation #7

Recently the National Research Council (NRC), the principal operating arm of the National Academy of Sciences and the National Academy of Engineering, completed work on a publication titled “**Safe Science: Promoting a Culture of Safety in Academic Chemical Research.**” The recommendations within this report apply beyond chemical laboratories/research.

The shift away from mere compliance and toward promoting a strong, positive safety culture has already yielded benefits in other industries. The hope is that the NRC recommendations help move academic institutions toward the adoption of a culture of safety that goes beyond inspections, standard operating procedures, and safety plans, all with the ultimate goal of protecting the lives and health of the campus community.

Recommendations from this report will be reviewed one-by-one in each successive issue of the EHS listserv. The seventh recommendation is:

Organizations should incorporate non-punitive incident and near-miss reporting as part of their safety cultures. Department chairs and university leadership should incorporate the use of this system into their safety planning. Principal investigators should require their students to utilize this system.

To conduct analyses that will help identify and mitigate hazards the collection of data is necessary. Traditionally, safety performance has been measured using lagging or after-the-fact indicators, such as numbers of accidents and lost-time injuries. To change behavior and culture before an incident occurs, organizations may take advantage of *leading indicators*: before-the-fact data that can help identify risks and vulnerabilities ahead of time.

One key approach to identify hazards before they cause harm is to report and collect data on near-misses. At UNL, this is done by using the online EHS *Near-Miss/Close Call* and *Student Injury/Illness* reporting tools. Incident and near-miss data are important sources of information for driving improved safety performance and for monitoring progress. EHS uses this information to share lessons learned with the broader campus community. We encourage all faculty, staff, and students to use these tools toward the shared goal of eliminating hazards.

Safety is a priority at UNL. Make sure it is a priority in your individual work location, laboratory or otherwise. To this end, consider adopting the following as your personal ethic:

- **Value safety:** Safety is an integral part of what one does, its automatic, and it does not change its priorities- it is never questioned and never compromised.
- **Work safety:** One continues to learn about safety, learns to recognize hazards, assesses the risks of hazards, manages the risks of hazards, and prepares to handle emergencies.
- **Prevent at-risk behavior:** One does not cut corners or bypass safety measures and shares this information with others, as needed.
- **Promote safety:** One encourages and acknowledges others for working safely.
- **Accept responsibility for safety:** One takes steps to work safely, setting a positive example for others, and being accountable for safety.

Resources

- NRC free download/read online: “**Safe Science: Promoting a Culture of Safety in Academic Chemical Research (2014)**”
http://www.nap.edu/catalog.php?record_id=18706&utm_expid=4418042-5.krRTDpXJQISoXLpdo-1Ynw.0&utm_referrer=http%3A%2F%2Fwww8.nationalacademies.org%2Fonpinews%2Fnewsitem.aspx%3FRecordID%3D18706
- American Chemical Society, Safety Practices and Recommendations (Publications):
<http://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/safetypractices.html>
- American Chemical Society, pages 3-6, “**Increasing Safety Awareness: An Academic Imperative**”:
<http://www.acs.org/content/dam/acsorg/about/governance/committees/training/cptnewsletter/committee-on-professional-training-summer-2014.pdf>
- American Chemical Society “**Identifying and Evaluating Hazards in Research Laboratories**”
<http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/identifying-and-evaluating-hazards-in-research-laboratories-draft.pdf>
- EHS Near-Miss/Close Call Reporter
<https://scsapps.unl.edu/EHSNearMissReporter/?newpreview>
- EHS Student Injury/Illness Reporter
<https://scsapps.unl.edu/studentinjuryillnessReporter/?newpreview>
- EHS Virtual Manual: <https://scsapps.unl.edu/VirtualManual/>

3. Lessons from Chemical Waste Explosion at Texas Tech

On February 2, 2015, a glass waste collection bottle exploded in a Texas Tech University teaching laboratory, injuring three undergraduate students and a graduate teaching assistant. The lab procedures had been revised to remove a nitric acid wash step, but the revision was not made to the written instructions and was only communicated to students verbally. As a result, at least one person followed the nitric acid wash step and placed the used nitric acid in a waste collection bottle which also contained organic solvents. Nitric acid, an oxidizer, is incompatible with

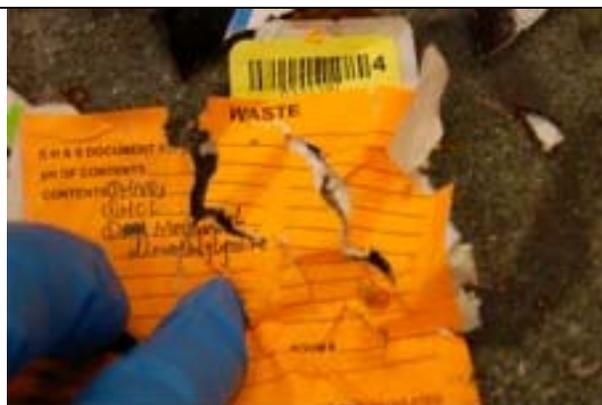
organics. As these materials reacted in the sealed bottle, pressure built to the point that the bottle integrity failed.

Lessons learned included the following:

- Pressure-relief closures and more robust materials of construction for waste containers may have prevented the container from failing.
- Faculty, instructors and TA's should communicate unique safety concerns at the beginning of teaching labs prior to any experiments. The safety concerns should reflect the hazards posed by that experiment.
- Written procedures should be regularly reviewed and promptly revised as changes are made. Procedures should eliminate as many hazards as possible.



Area in fume hood where waste was stored.



Waste label indicating incompatible mixture.

Resources

- Texas Tech University, "Failure to segregate waste streams mixes nitric acid and organic solvent, causes waste bottle to explode from pressure buildup; written procedures – February 2015," <http://www.depts.ttu.edu/vpr/integrity/lessons-learned/February-2015.php>
- Safety Zone by C&EN, "Waste Explosion at Texas Tech," Feb. 26, 2015 <http://cenblog.org/the-safety-zone/2015/02/waste-explosion-at-texas-tech/>
- www.youtube.com, "Ethanol Plus Nitric Acid – Spontaneous Reaction" video <https://www.youtube.com/watch?v=uFwiZYfEsuY>

4. Safety Shorts

This new series features links to 1-3 short safety resource(s) each month. Regardless of format - video, PDF, other - these short features cover various topics

and are intended as resources for safety committees, as well as individual laboratories/work areas.

Three resources are provided this month.

- The first resource is an example of an interesting way to actively engage students and faculty in reinforcing the culture of safety. The Chemistry department at the University of Texas, Austin, fashioned a “Safety Madness” tournament after the March Madness NCAA Division I Basketball Tournament. Work groups developed and submitted best practices documents, conducted peer safety inspections, and quizzed team members on the best practices documents that they submitted. Points earned for correct answers were used to select the winning teams. Cash prizes were awarded to students of the winning team, but feedback from the students indicated that the cash award was not the driving incentive. Rather they found it more appealing to be able to claim the win on their resume for the information of future prospective employers.

The next two resources that we offer this month are relevant for anyone using chemicals:

- One resource is on “Safety in the Academic Chemistry Laboratory-Eye Protection.” This PDF with voiceover, developed as part of an American Chemical Society program, provides information on safety goggles.
- The second is a video produced by Chemistry at University of California-San Diego. It is narrated by an injured worker and titled “Why I wear a lab coat.”

NOTE: Resources are provided for informational purposes only. Publication does not in any way endorse a particular company or product or affect current UNL policies and procedures.

Resources

- The Safety Zone by C&EN (blog), “Safety Madness at UT Austin,” March 4, 2015 <http://cenblog.org/the-safety-zone/2015/03/safety-madness-at-ut-austin/>
- ACSWSO, “Safety in the Academic Chemistry Laboratory-Eye Protection (goggles)” <https://www.youtube.com/watch?v=X5K-6VYUJY>
- CHEM UCSD, “Why I wear a lab coat” <https://www.youtube.com/watch?v=a6DrCdjedas>

5. Be Wise & Safeguard Your Eyes.

March is Workplace Eye Health and Safety Month. The National Institute for Occupational Safety and Health (NIOSH – part of the Centers for Disease Control or

CDC) reports that about 2000 people sustain job-related eye injuries that require medical treatment every day. 10-20% of these injuries cause temporary or permanent vision loss. The eyes may be at risk of injury from a number of circumstances - flying or dropping particles, dusts, or projectiles; chemical splashes; and exposure to UV radiation (e.g., germicidal lamps, welding/cutting, lasers, etc.). It is estimated that 90% of workplace eye injuries could have been less severe or prevented altogether by the worker wearing appropriate eye protection.

What is the best defense against an eye injury? There are four things you can do to help prevent an eye injury:

- **Know the eye hazards of your work.** The appropriate ensemble of face and eye protection must consider multiple and simultaneous hazards that may be present.
- **Minimize eye hazards through appropriate controls before starting work.** Use machine guarding, work screens, chemical fume hoods, or other engineering controls to minimize eye hazards.
- **Use the proper eye protection.** Refer to the numerous resources listed below.
- **WEAR the eye protection.** PPE does not protect your eyes when sitting on the bench!

Resources:

- Centers for Disease Control “Workplace Safety & Health Topics – EYE SAFETY”
<http://www.cdc.gov/niosh/topics/eye/>
- Occupational Safety & Health (OSHA) **Eye Protection eTool** “Selecting Personal Protective Equipment for the Workplace”
<https://www.osha.gov/SLTC/etools/eyeandface/ppe/selection.html>
- EHS SOP **Personal Protective Equipment – Eyes and Face**
http://ehs.unl.edu/sop/s-PPE_eyes-face.pdf
- NIOSH Eye Safety Checklist
<http://www.cdc.gov/niosh/topics/eye/pdfs/EyeSafetyChecklist.pdf>
- EHS SOP **Ultraviolet Radiation** http://ehs.unl.edu/sop/s-ultraviolet_rad.pdf
- EHS SOP **Welding Lens Shade & Personal Protective Equipment (PPE) Selection** http://ehs.unl.edu/sop/s-welding_lens_and_ppe.pdf
- EHS SOP **Laser Classification and General Safety Control Measures for Lasers Used in Research**
- EHS Laboratory Colloquium: Choosing (Laser) Eyewear: Questions for Optical Density Calculations http://ehs.unl.edu/training/colloquium/2009-02_Handout.pdf

6. Revised Safe Operating Procedures

- **Door Posting for Potentially Hazardous Locations** http://ehs.unl.edu/sop/s-door_posting.pdf

Revised door postings to remove specific personal protective equipment listing and replace with “Refer to Room-Specific Procedures for required Personal Protective Equipment (PPE) to handle these hazards.”

Remember...SAFETY IS AN ATTITUDE!

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