

In this issue of the Environmental Health and Safety (EHS) Listserv, August 19, 2014:

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1. Consequences of Lack of a Safety Culture

From November 29, 2012 through May 2, 2014, the EHS Listserv featured highlights from the American Chemical Society's (ACS) report titled "*Creating Safety Cultures in Academic Institutions.*" The impetus for that report was several serious incidents in academic laboratories that resulted in death, debilitating injuries, or significant property damage and subsequent investigation by the U.S. Chemical Safety and Hazard Investigation Board (CSB). While many agencies, organizations, and individuals have offered many specific observations and recommendations for avoiding these types of incidents, the underlying theme emphasizes the importance of a strong safety culture.

In July, 2014, a U.S. House subcommittee held hearings in response to several serious incidents at the Centers for Disease Control (CDC) spanning at least 10 years which involved up to 80+ workers potentially exposed to anthrax, transfers of dangerous pathogens to laboratories that were erroneously informed that the pathogens had been inactivated, and transfers of samples that had been unknowingly contaminated with virulent pathogens. Through CDC internal investigation, Thomas Frieden, CDC Director, reported to the House subcommittee that corrective actions hinge on addressing inadequate laboratory safety and safety culture.

The UNL community can benefit in its quest to continually improve its safety culture by studying some of the common denominators that emerge when perusing the plethora of articles and reports related to these investigations. We will highlight two of those common denominators.

- As stated in the ACS report, "An important element of a strong safety culture is establishing a system for reporting and investigating incidents, identifying direct and root causes, and implementing corrective actions." One fundamental problem contributing to the CDC anthrax exposures was lack of a validated method for inactivating the pathogen and inadequate confirmatory testing before releasing the samples. This was also a fundamental problem with previous

transfers of pathogens thought to have been inactivated. The CDC failed to learn from past incidents.

Likewise, the ACS report recognized that there is a lack of reporting of laboratory incidents so that others could learn from the experience. At UNL, EHS is striving to provide the tools to assist in sharing of “lessons learned.” To that end we encourage everyone to use the “**Near Miss/Close Call Incident Reporting System**” and “**Student Injury/Illness Reporter**” tool. These are accessed through the EHS home page.

Information collected is shared with others through direct contact and the listserv so we can learn from the experiences of others. Investigations related to the information received through these reporting mechanisms will not be used to punish employees, but rather to learn from mistakes and endeavor to make the workplace safer through changing behavior(s) that led to the incidents occurring in the first place. We also encourage sharing of experiences through local safety committees, faculty and staff meetings, and other appropriate avenues.

- Dr. Frieden testified that breaches of protocol, gaps in the review system, and errors in judgment were major contributing factors to the anthrax exposures. Similarly, the same contributing factors were cited in the CSB’s review of laboratory accidents in academia.

To remedy this type of situation, the ACS recommends, in part, establishment of a hazard analysis procedure and strong safety training program, complemented by continual performance oversight by experienced individuals. Some of the resources that EHS provides to assist the UNL community include the “*Virtual Manual*” and numerous Safe Operating Procedures (SOPs) to assist in general hazard assessment (**Job Safety Assessments**) and chemical safety hazard assessments (**Chemical Hazard Assessment and Risk Minimization** and companion hazard-specific SOPs).

EHS also offers numerous on-line training programs to provide a solid foundation to which supervisors can add job-specific training. To determine what training modules may be appropriate in your work, consult the EHS **Training Needs Assessment**.

The government and public demand the utmost priority be given to safety in all laboratories operating in the United States. 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 ACS “Safety 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 safely:** 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

- House subcommittee investigation of anthrax lab incident: <http://energycommerce.house.gov/hearing/review-cdc-anthrax-lab-incident> and <http://energycommerce.house.gov/letter/letters-cdc-fda-nih-and-hhs-regarding-recent-safety-lapses-involving-select-agents>
- U.S. Chemical Safety and Hazard Investigation Board, information on laboratory safety: <http://www.csb.gov/texas-tech-university-chemistry-lab-explosion/>
- American Chemical Society, Chemical Safety Practices and Recommendations: <http://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/safetypractices.html>
- American Chemical Society, Committee on Chemical Safety: <http://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety.html>

Various web sites where incident/near-miss reports can be found:

- <http://www.resources.labsafetyinstitute.org/23.html>
- <https://www.aiha.org/get-involved/VolunteerGroups/LabHSCCommittee/Pages/Lessons-Learned.aspx>
- <https://pubs.acs.org/cen/safety/>
- <http://www.monash.edu.au/ohs/topics/hazard-alerts/>
- <http://web.princeton.edu/sites/ehs/labsafetymanual/sec11.htm>
- <http://www.chem.purdue.edu/chemsafety/NewsAndStories/NewsAndStories.htm>
- <http://risk.arizona.edu/healthandsafety/chemicalsafetybulletins/>

UNL EHS Resources

- **Training Needs Assessment for EHS-Related Topics** http://ehs.unl.edu/Training_Needs_Assessment.pdf
- **Job Safety Assessment** SOP <http://ehs.unl.edu/sop/s-JSA.pdf>
- **Chemical Hazard Assessment and Risk Minimization** SOP http://ehs.unl.edu/sop/s-chemical_haz_assessment_risk_min.pdf
- Virtual Manual: <https://scsapps.unl.edu/VirtualManual/>

2. Chancellor's University Safety Committee OPEN FORUM

The Chancellor's University Safety Committee (CUSC) will host an Open Forum meeting at Nebraska City Union **3:00 – 4:00 p.m.** on **Tuesday, September 16, 2014**. 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!

Resources

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

3. Fall Laboratory Safety Colloquium

Mark your calendars now for the next Laboratory Safety Colloquium, "**DISASTER! Protect Yourself & Your Research**," sponsored by Environmental Health & Safety and the Office of Research and Economic Development, presented by Mark Robertson, UNL Emergency Preparedness Coordinator. Natural and man-made disasters can result in loss of property, life, data, and access to critical research facilities. Plan to attend if you work in any kind of research laboratory. Learn new skills to help you pre-plan and mitigate adverse consequences, both short- and long-term.

There will be two sessions on Wednesday, **October 29, 2014**. The 10:00 a.m. – noon session will be at East Campus Union and the 3:30 – 5:30 p.m. session will be at Hamilton Hall, Room 102. Select the time most convenient. Pre-registration is NOT required. As with most other colloquia, this session is being recorded and will be available online a few weeks after the event. Plan to attend in October and in the meantime review previous colloquia relevant to your work.

Resources

- Laboratory Safety Colloquium Series
 - EHS web site <http://ehs.unl.edu/training/Colloquium>
 - Office of Research & Economic Development web site <http://research.unl.edu/laboratorysafetycolloquium/>

4. Is Your Emergency Action Plan Up-to-date?

Does your department/area/facility have an Emergency Action Plan? If so, has your Emergency Action Plan been reviewed in the past 6 - 12 months? An emergency action plan is a written document required by OSHA standard, 29 CFR 1910.38(a). The purpose of an emergency action plan is to facilitate and organize employer and employee actions during workplace emergencies. Well-developed emergency plans and proper employee training, such that employees understand their roles and responsibilities within the plan, will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies.

Putting together a comprehensive emergency action plan that deals with those issues specific to your worksite is not difficult. It involves describing how employees should respond to different types of emergencies, taking into account your specific worksite layout, structural features, and emergency systems.

The UNL Emergency Planning and Preparedness web site contains a template under the "Faculty, Staff & Depts" tab. Assistance is available upon request from Mark Robertson, UNL Emergency Preparedness Coordinator (preparedness@unl.edu). While this template is designed for developing a Building Emergency Action Plan, it can readily be modified to develop a facility or area action plan.

Once developed, emergency action plans should be reviewed at least once a year to determine whether there have been changes in personnel or the area/facility that necessitate changes to the plan.

Resources

- **Emergency Planning & Preparedness: Building Emergency Action Plan**
<http://emergency.unl.edu/Building%20Emergency%20Action%20Plan%20Template.pdf>

5. Five Potential Arc Welding Hazards to Avoid

Safety is critical for any welding operation. There are different types of welding, with electric arc welding being the most widely used type of fusion welding. Arc welding is safe when proper precautions are taken. If safety measures are ignored, there is an array of potential hazards. Organizations such as the Occupational Safety and Health Administration (OSHA) offer safety guidelines to help control, minimize, or avoid welding hazards.

In order to avoid the most common welding hazards, workers must be aware of the hazard and appropriate avoidance strategies:

- **Electric shock** is one of the most serious and immediate risks facing a welder. Electrical shock can lead to severe injury or death, either from the shock itself or from a fall caused by reaction to the shock. Never touch the electrode or metal parts of the electrode holder with skin or welding clothing. Welding operators should inspect the electrode holder for damage before beginning to weld and ensure the welding cable and electrode holder insulation is in good condition. Shock can also occur when a welder touches electrically “hot” parts inside the welder case or electric distribution system to which the welder is connected. Only qualified repair technicians should attempt to service or repair welding equipment.
- **Fumes and gases.** Welding fumes can contain potentially harmful complex metal oxide compounds from consumables, the base metal, and the base-metal coatings. Workers should use sufficient ventilation and/or exhaust to keep fumes and gases from the breathing zone.
- **Fire and Explosions.** Welding creates extreme temperatures and sparks near the arc which poses a significant fire and explosion hazard if safe practices are not followed. To prevent fires, review the EHS **Welding Safety** Safe Operating Procedures (SOPs). Inspect the work area for flammable materials and remove them from the area. Know where fire alarms, fire extinguishers, and the nearest fire exit are located. If welding within 35 feet of flammable materials, have a fire watcher nearby to keep track of sparks and remain in the work area at least 30 minutes after finishing welding to be sure there are not smoldering fires.
- **Insufficient PPE.** Personal protective equipment (PPE) helps to keep welding operators free from injury, such as burns and exposure to arc rays. The right PPE allows for freedom of movement while still providing adequate protection from welding hazards. Thanks to their fire resistance, leather and flame-resistant cotton clothing is recommended for welding environments. Long sleeves, long pants, and leather boots with ankle coverage are good choices. Helmets, with the correct selection of shade, with side shields are essential for protecting eyes and skin from arc rays.
- **Other Safety Considerations.** Welders should be aware of other safety considerations. For example, working in a confined space or in an elevated area calls for extra precautions. Welders should read and understand manufacturer instructions/safety information for the equipment in use and carefully review applicable safety data sheets. Safe work practices should be followed. Employ common sense, such as removing clutter and debris to prevent tripping/falling.

To keep up with the most recent safety practices, utilize resources from the American Welding Society (AWS), Occupational Safety and Health Administration (OSHA), welding equipment manufacturers’ recommendations/guidance/instructions,

and other available information such as Lincoln Electric's online Interactive Safety Guide.

Resources:

- OSHA Fact Sheet: Controlling Hazardous Fume and Gases during Welding https://www.osha.gov/Publications/OSHA_FS-3647_Welding.pdf
- American Welding Society <http://www.aws.org/w/a/>
- Lincoln Electric Welding Safety Guide <http://www.lincolnelectric.com/en-us/education-center/welding-safety/Pages/welding-safety-interactive-guide.aspx>
- EHS **Welding Safety** SOPs <http://ehs.unl.edu/sop/welding-safety>

6. Two NEW Targeted Trainings: BSM Electrical Workers/Other Specified, All Departments Maintenance Workers

Two new trainings have been recently developed and made available online. Both are targeted trainings, to be taken by workers of specific type or assigned to specific tasks.

- The new **Electrical Safety for BSM Workers** training is required for all UNL Facilities and Operations Building Systems Maintenance (BSM) zone workers and others who have been authorized by BSM to reset designated and specific electrical breakers.
- The new **Maintenance Operations: Chemical and General Safety** training is appropriate for all UNL building systems maintenance operations employees in any department (e.g. painters, plumbers, structural crew members, zone personnel, card access staff, electrical workers, HVAC technicians, etc.) This course is intended as a substitute for the EHS web-based **Chemical Safety** (four-unit) training. Building systems maintenance operations employees in any department must take either this targeted training module or the **Chemical Safety** (four-unit) training.

Remember to review the **Training Needs Assessment for EHS-Related Topics** to determine whether any other training is required to fulfill regulatory requirements related to your job tasks.

Resources:

- **Electrical Safety for BSM Workers** web-based training <http://ehs.unl.edu/web-based-training#ElecBSM>
- **Maintenance Operations: Chemical and General Safety** web-based training <http://ehs.unl.edu/web-based-training#MaintOp>
- **Training Needs Assessment for EHS-Related Topics** http://ehs.unl.edu/Training_Needs_Assessment.pdf

7. Past Listserv Articles EASIER to Find/Review!

The EHS web site has been improved so you can easily find/review past listserv articles on a topic of your choice. Access past listserv articles through either link: "About Us/EHS Listserv" or "Related Links/EHS Listserv." When you select "View Past Issues" you can use your browser's FIND feature to search for a specific topic of interest or of relevance to your work! Listserv articles are a great resource for your safety committee, department, area or facility. These articles can be used as regular, short safety "talks," in departmental newsletters, or as conversation-starters for your regular safety meetings/safety review. Click this URL and check out this new feature: <http://ehs.unl.edu/listserv-past-issues!>

8. Revised Safe Operating Procedures – Radiation Safety

- **Instructions for Personnel Entering Laboratories Containing Radioactive Materials** <http://ehs.unl.edu/sop/s-radothers.pdf>
Added color image of "caution radioactive material" label and updated the provided phone number along with other minor changes for clarity.
- **Radioactive Material Sewer Disposal** http://ehs.unl.edu/sop/s-RAM_Sewer_Disposal.pdf
Minor changes made to clarify the steps for the sewer disposal process.
- **Radioactive Material Spills** http://ehs.unl.edu/sop/s-RAM_spills.pdf
Corrected the name of the supplement SOP referenced to reflect the current name, **Radiation Accidents**. Changed the PPE description and updated the provided phone number along with and other minor changes for clarity.
- **Use of Diagnostic X-Ray Equipment in the Healing Arts** http://ehs.unl.edu/sop/s-diagnostic_x-ray equip.pdf
Changed the description for "Veterinary Technician credentials to include state licensure. Added additional information that is required in the x-ray log when assisting personnel are used during the procedure.

Remember...SAFETY IS AN ATTITUDE!

Environmental Health and Safety

University of Nebraska-Lincoln
3630 East Campus Loop
Lincoln, NE 68583-0824
(402) 472-4925
<http://ehs.unl.edu>