Laboratory Best Practices

University of Nebraska-Lincoln
Environmental Health & Safety

UNIVERSITY OF NEBRASKA–LINCOLN

About Dan Olsen

- Grew up as a pig farmer
- Graduated from ISU in Biochemistry
- Worked for the Iowa DNR
- Started at UNL in 1990
  - Hazardous waste
  - Lab safety
  - Water quality (discharges; not drinking)
  - Air quality
  - Emergency response

UNL Background

- There are approximately:
  - 800 researchers – Principal Investigators (PIs)
  - 2,000 lab spaces

Laboratory Best Practices

- How do you get it done?
  - 'Mandatory' training such HazCom
  - Safe Operating Procedures
  - Colloquiums
  - Safety Committees
  - Inspections

Inspection Goals

- Enhance safety
  - Inspect every lab space annually
  - Establish personal rapport with PIs
  - Supply report of issues and corrective actions
- Go beyond PI only issues
  - Building Systems Maintenance
    - Fume hood certifications
    - Electrical
  - EHS
    - Door signs

Organization

- 7 primary inspectors
  - 2 Specialists
  - 5 Technicians
  - Record and data-base findings
- Senior Specialist oversight; 4 staff
  - Lead specialist by building
  - Author reports based on staff findings

Organization

- Twists
  - Radioactive material – Assistant RSO
  - Biosafety level 2 and 3 – Biosafety Officer
  - Both – Biosafety Officer
    - Radioactive materials done by rad staff
- Cross-training benefits

Inspection Program

- It covers the following areas:
  - Chemicals
  - Electrical
  - Compressed gases
  - Ventilated cabinets (i.e. fume hoods)
  - Hazardous Waste Management
  - PPE
  - Engineering Controls
  - Basic Biosafety
  - Administrative (i.e. training)

Chemical Safety: CHE01

- Entrances to areas where hazardous chemicals are stored are not identified with a laboratory door placard, or the placard and/or hazard assessment is illegible or inaccurate.


Building ID: A077
University of Nebraska - Lincoln
Agricultural Warehouse No. 1: 132
ROOM CONTACTS:
Contact 1: Osthus, Brenda Office: (402)472-4927 Alternate: (402)000-0000
Contact 2: Mensah, Lisa Office: (402)472-6513 Alternate: ( ) -
Department : Environmental Health & Safety
For Emergency Contact Information Please Contact UNLPD Dispatcher at (402)472-2222.
ENTRY RESTRICTED TO AUTHORIZED PERSONS, APPROPRIATELY TRAINED.
No Food or Drink Allowed
HAZARDS PRESENT IN ROOM(s):
For more information about the symbols displayed below, scan this QR code.
Cryogenic Materials
Refer to Lab-Specific Procedures for required Personal Protective Equipment (PPE) for handling these hazards. See Room Contacts listed above for more information or room access.
Typical minimum PPE for working with chemical, biological and/or radiological hazards consists of:
LAB COAT; HAND PROTECTION; EYE PROTECTION; CLOSED-TOE SHOES
In case of FIRE or MEDICAL EMERGENCY, dial 911.
Emergency information: http://emergency.unl.edu/
UNL EHS DOOR POSTING PROGRAM
To request an update to this door posting, contact EHS at 402-472-4925.
Last Reviewed 12/22/2014

NFPA 45, 13.1.1; 29 CFR 1910.1200(h)(2)(iii); UNL Chemical Hygiene Plan

Slide Notes

Read Slide

This checklist item comes primarily from two regulatory sources NFPA 45 and the OSHA Haz Com Standard, 29 CFR 1910.1200. Most of the OSHA Haz Com standard does not apply to laboratories. However, laboratories are not exempt from paragraph (h), which pertains to employee information and training. This paragraph basically says that employees must be informed of the chemical hazard in the work area. NFPA requires signs to alert emergency response personnel of hazards. Other regulations and standards also come into play. The bottom line is simply that the signage is an important means of communication and it greatly facilitates response actions in the event of an emergency or other situation that could cause employee harm or property damage.

This checklist item should be cited when an EHS door posting is **not** present for a lab where chemical or physical hazards listed in Section II of the Lab HA worksheet are present. Pull out your copy of the Lab HA worksheet from your binder if you are not familiar with these hazards.

Slide Notes

This is also cited when the door posting does not accurately reflect the hazards within. If the deficiency is only in the contact information, then do not cite it as a deficiency in EHS Assist; rather just make a note on your survey form, update EHS Assist, and the senior specialist will send a new door posting with the updated contact information with the report email.

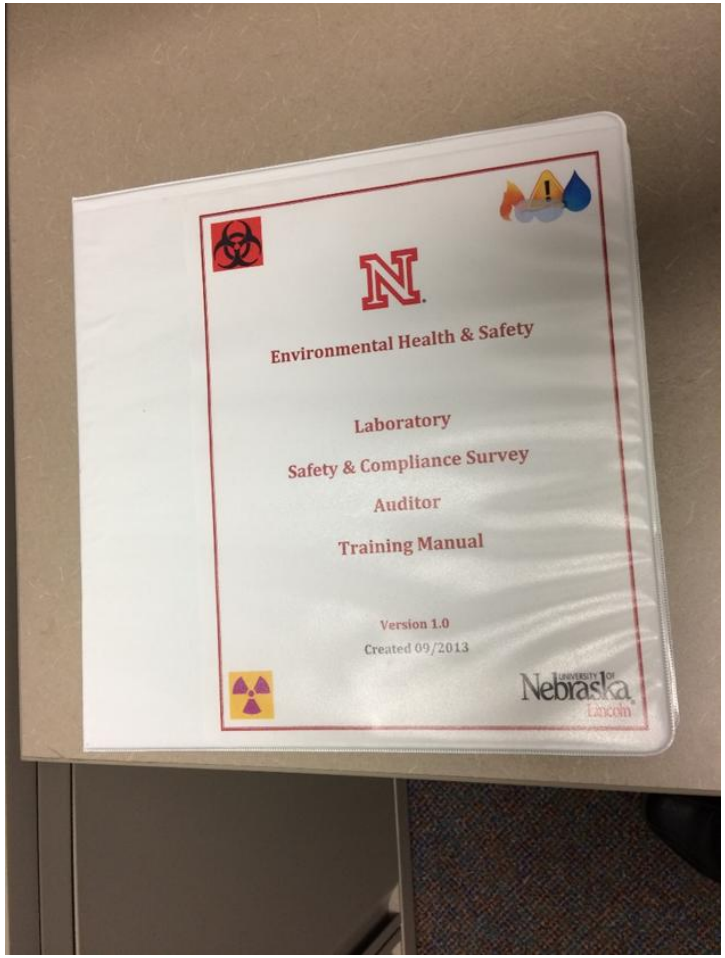
The door posting information is collected using the Laboratory Hazard Assessment worksheet. For **new PIs**, when entering the "responsible party" in EHS Assist for this violation, use "EHS Auditor" as we are the ones providing the door posting. For repeat violations where the door posting is either not posted or is incorrect, indicate "PI" as the responsible party. ***A new door posting will be sent by the Senior Specialist in the report email.***

Slide Notes

Specifically the citations are (do not read during presentation):

- **NFPA 45, 13.1.1:** Entrances to laboratory units, laboratory work areas, storage areas, and associated facilities shall be identified by signs to warn emergency response personnel of unusual or severe hazards that are not directly related to the fire hazard of contents.
- **1910.1200(h)(2)** Employees shall be informed of…Any operations in their work area where hazardous chemicals are present; and, The location and availability of the written hazard communication program…
- **1910.1200(h)(3)** Employee training shall include at least…(ii) the physical, health, simple asphyxiant, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of chemicals in the work area.

The Manual


Environmental Health & Safety
Laboratory
Safety & Compliance Survey
Auditor
Training Manual
Version 1.0
Created 09/2013
University of Nebraska Lincoln

Training

- All employees who do inspections
- Over 16 hours formal classroom
- Taught by 4 Senior Specialists

Exam

- Exam has 65 questions
- Multiple choice with a twist
- Some questions have as many as 7 possible answers
- Done intentionally
- Minimize the ability to use process of elimination and guessing.

Exam Question

- 45. Safety Data Sheets
  - –a. Are only required if there are large quantities of chemicals in the lab
  - –b. Have to be accessible to workers in the lab.
  - –c. Have to be in paper form stored in a binder.
  - –d. All of the above
  - –e. B & C only

OTJ Training

- Each tech shadows a senior on one survey
- Senior shadows the tech on the next
- Repeat for each senior

The Technicians

- Are central to inspections
- All have degrees in science
- It is an entry level position
- Often their first job in a science related field
- Accounts for about 50% of their job

Why Technicians

- Most common EHS personnel seen in labs
  - Develop rapport with PI & graduate students
- Have the most knowledge of daily lab operations
- Demonstrates EHS's competency
- EHS's eyes and ears

Improvements

- There have been significant improvements
- Fume hood certifications
- Annual testing of safety showers
- Making eyewash stations safe to use
- Replacing electrical outlet covers
- The proper operation of sprinkler systems

PI/Graduate Student Improvements

- PPE – this is a major one
- Close-toed shoes
- Pants that extend to the top of shoe
- Shirts with ‘high’ neck lines
- Lab coats
- Safety glasses
- Gloves

PI/Graduate Student Improvements

- Training
- It was a two year effort
- Consists of Injury/Illness Prevention Plan Training
- Emergency Response Training
- Chemical Safety Training only for those who use chemicals

PI/Graduate Student Improvements

- Proper fume hood use
- Some hoods have Standby and Alarm modes
- Trained lab personnel how to use
- EHS is a resourse

PI/Graduate Student Improvements

- Labeling waste containers
- Keeping waste containers closed

Conclusions

- Lab inspections can assist best practices
- It needs to be seen as institutional
- It needs to be based on laws, codes, and national standards
- EHS must work to be and advisor and resource

Questions/Comments?

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