

**In this issue of the Environmental Health and Safety (EHS) Listserv, July 31, 2012:**

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## **1. NEW Chemical Safety Training - Globally Harmonized System**

**Chemical Safety** training is required for all University of Nebraska-Lincoln (UNL) employees who may be exposed to hazardous chemicals. There are a multitude of potentially hazardous chemicals in use at UNL. Hazardous chemicals can be encountered in many types of work settings, including laboratories, greenhouses, landscaping operations, utility plants, mechanical rooms, art studios, custodial operations, kitchen/dining services, and shop areas (e.g., woodworking, welding, plumbing, electrical, etc.).

Environmental Health and Safety recently revamped the **Chemical Safety** training module in response to a March 2012 revision of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (and other affected standards) to align with the United Nations (UN) Globally Harmonized System of Classification (GHS) and labeling of chemicals.

The revised **Chemical Safety** training is divided into four units, all of which must be completed to fulfill the requirement for chemical safety training as mandated by the following OSHA Standards: 29 CFR 1910.1200, Hazard Communication and 29 CFR 1910.1450, Occupational Exposures to Chemicals in Laboratories. The purpose of these OSHA Standards is to reduce the incidence and severity of chemical source injuries and illnesses by ensuring that affected employees receive sufficient information to anticipate, recognize, evaluate and control chemical hazards through appropriate protective measures. The EHS **Chemical Safety** training module covers:

- Unit 1: General Requirements of OSHA's Standards, Safety Data Sheets, Labels, and Door Postings
- Unit 2: Physical Hazards of Chemicals
- Unit 3: Health Hazards of Chemicals
- Unit 4: Hazard Mitigation

A person completing the ENTIRE training module (all four Units) will attain the knowledge necessary to correctly use chemical label and SDS information to ascertain hazards of the chemicals to which they may be exposed and implement appropriate control strategies.

There are a number of differences between the former and revised hazard communication standard. Here are a few:

- Chemical labels must contain certain minimal information, including the name of the product, applicable signal words, hazard statements, pictograms, and precautionary statements. Under the revised standard, signal words, hazard statements, pictograms, and precautionary statements have been standardized.
- Manufacturers are required to communicate more detailed hazard information in the form of a “Safety Data Sheet” (SDS). Under OSHA’s revised Standard, SDSs now must conform to a certain structure and order of information presentation. The SDS replaces the Material Safety Data Sheet (MSDS) which did not require standard headings or present information in a standard order.
- Only two signal words are authorized—“Danger” or “Warning.” The intent of the signal word is to communicate the relative degree of severity of a hazard. “Danger” is used for more severe hazards, while “Warning” is used for less severe hazards. Manufacturers are required to include signal words on chemical labels.
- A hazard statement is intended to describe the nature of the hazard(s) of a chemical and sometimes the degree of hazard. Examples of hazard statements include “Causes serious eye damage” and “Catches fire spontaneously if exposed to air.”
- Labels must contain a standardized pictogram. There are nine pictograms designated under the standard. All pictograms have red borders with white backgrounds and black graphics. A single pictogram may have different meanings. For example, the exclamation mark pictogram may be indicating one or more of the following hazard categories: acutely toxic (harmful), irritant, dermal sensitizer, narcotic effect, or respiratory tract irritation. The pictogram must be used in conjunction with other label information to know exactly what hazard(s) it is communicating.
- Precautionary statements describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling. Examples of precautionary statements include “Do not allow contact with air” and “Protect from sunlight.” Manufacturers are required to include precautionary statements on chemical labels.

The revised OSHA Standards will be phased in with full compliance required by June 2016. However, many of the Safety Data Sheets currently being received with UNL department chemical purchases reflect the Globally Harmonized System.

Potentially hazardous locations at UNL are currently placarded with ANSI (American National Standards Institute) icons and wording corresponding to applicable physical and health hazards. Over time, UNL door postings will be migrated so that chemical hazards, both physical and health hazards, are represented by the GHS pictograms specified under the revised OSHA Standards.

It is recommended that employees who may be exposed to hazardous chemicals in the course of their employment take the new **Chemical Safety** training in order to become familiar with new GHS chemical labeling and SDSs, signal words, hazard statements, pictograms, and precautionary statements for chemicals they work with, as well as general chemical safety rules and guidance on conducting chemical hazard risk assessments.

Resources:

- EHS web-based **Chemical Safety** training module, Units 1 through 4  
<http://ehs.unl.edu/training/online>
- Chemical Safety Safe Operating Procedures (SOPs)  
<http://ehs.unl.edu/sop/chemical-safety>
- OSHA Standards: Hazard Communication 29 CFR 1910.1200  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=10099](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099)
- OSHA Standards: Occupational exposure to hazardous chemicals in laboratories 29 CFR 1910.1450  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10106](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10106)

## 2. Personal Protective Equipment (PPE) – Foot Protection

Persons in the following types of jobs are often at risk of foot injury and will need to use appropriate protection when conducting tasks that put them at risk of injury: kitchen personnel, trades & construction workers, custodians, artists & theater workers (doing construction), agricultural and landscape workers, animal handlers, mechanics, material movers/handlers and others.

Foot protection is necessary when there is risk of injury due to:

- A heavy object falling on the foot or rolling over the foot;
- A sharp object penetrating the sole of the foot or cutting through the top;
- Ignition of flammable or explosive vapors or dusts from static electricity discharged between the foot and walking surface;
- Electric shock or arc flash burns from electrical systems;
- Chainsaw usage (or similar cut hazard);
- Contact with large amounts of chemicals, potentially infectious materials (PIM), human body fluids, or human pathogens;
- Slips or falls due to wet or slippery surfaces, or rough terrain.
- Environmental conditions (such as extreme heat/cold, venomous snakes, etc.).

Statistics tell the story of the importance of preventing foot injuries:

- According to the Bureau of Labor Statistics (BLS), more than 60,000 foot injuries per year result in lost work days.
- BLS cites a study of foot injuries that found 75 percent of the injuries occurred when workers were not in compliance with foot protection PPE requirements.
- According to the National Council on Compensation Insurance, the average cost of a lost work day foot injury is \$9,600.
- Eighty percent of all footwear injuries are caused by an object weighing no more than 30 pounds impacting the foot.

Common injuries reported at UNL are:

- Persons moving materials or equipment themselves rather than waiting for or securing the services of Moving Services. The injured person typically is not wearing foot protection, resulting in fractures, cuts and bruises when the material/equipment falls.
- Persons who work in areas where floors are often wet, sustain a variety of injuries from slips/falls. In situations such as custodial activities (e.g., mopping or cleaning up spills), kitchen activities, dishwashing, greenhouse, animal housing operations, and others where there can be wet surfaces, workers should wear slip-resistant shoes.

Information on foot protection PPE is contained within the EHS web-based training, ***Personal Protective Equipment (PPE)***. Selection of appropriate ANSI-approved foot protection is determined by evaluation of work tasks and work environment as part of a comprehensive risk assessment.

For most foot hazards, protective footwear must be constructed and tested in accordance with ASTM (American Society for Testing and Materials) Standards. However, the ASTM footwear standards do not address some foot hazards, such as slip resistance, thermal insulating capability, resistance to chemical permeability and biological agents, and ankle support. In these cases, good judgment must be exercised.

EHS has developed a ***Job Safety Assessments*** SOP to assist supervisors with identifying existing and potential work area hazards toward the goal of determining appropriate PPE, for circumstances where engineering and work practice (administrative) controls do not fully control the hazard.

Once hazards are assessed and appropriate foot protection PPE is selected, the employer is responsible to provide training to employees so that they know:

- When the foot protection PPE is necessary;
- What specific foot protection PPE is necessary;
- How to properly put on, take off, adjust, and wear assigned foot protection;
- The limitations of the assigned foot protection PPE;

- The proper care, maintenance, useful life and disposal of the assigned foot protection PPE.

General instruction on all these items is contained within the EHS web-based training, **Personal Protective Equipment (PPE)**. Instruction on specific assigned foot protection must be provided to workers by the supervisor or their designee.

Resources:

- EHS web-based **Personal Protective Equipment (PPE)** training <http://ehs.unl.edu/training/online>
- **Job Safety Assessments** SOP <http://ehs.unl.edu/sop/s-JSA.pdf>
- **Foot Protection – Evaluation and Checklist** SOP [http://ehs.unl.edu/sop/s-foot\\_protection.pdf](http://ehs.unl.edu/sop/s-foot_protection.pdf)
- OSHA Standards - Personal Protective Equipment: Foot protection (29 CFR 1910.136) [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=9786&p\\_table=STANDARDS](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9786&p_table=STANDARDS)

### 3. Risk Assessment: Step 1. Identify Safety Hazards

A risk assessment is a thorough look at the workplace to identify things, situations, processes, etc. that may cause harm, particularly to people. The goal of the risk assessment process is to create a safer work environment through removing a hazard or reducing the level of its risk by adding precautions or control measures. Risk is the chance that someone could be harmed by a hazard. A hazard is anything that can cause harm, such as chemicals, working from ladders, electricity, machinery, high pressure, etc.

The first step in Risk Assessment is to identify safety hazards. The goal is to identify and record all possible hazards that may be, or potentially may be, present in your workplace. Consider the methods and procedures used in handling, storage, processing/using components needed to complete your daily tasks and periodic tasks.

Working as a team may be beneficial when conducting a hazard assessment. Consider including people experienced/familiar with the work as well as someone less experienced who might view procedures from a different perspective. Here are some things to consider:

- Look at all aspects of the work.
- Include infrequent and periodic activities such as maintenance, repair, and cleaning.
- Review injury incident records of your own area, the department or other areas of UNL where similar work is conducted, and injury incidents at other universities or similar work environment.

- Consider the experience of those performing the work, systems being used, current equipment, and anticipated additions.
- Review literature relevant to your work (manufacturer's manuals/publications, professional journals, etc.).
- Think about foreseeable unusual conditions, such as power outages, chemical spills in your own or an adjacent area, fire, tornado, etc.
- Include consideration of groups which may have a different level of risk, e.g., undergraduate students who may participate in the work/research, persons with disabilities, new or expectant mothers.

The EHS SOP, **Job Safety Assessments**, is intended to assist supervisors in the entire risk assessment process (identifying hazards, minimizing risks, and managing residual hazards).

Assistance with a hazard assessment for areas using chemicals may be found in the EHS **Chemical Safety** training module. Unit Four: Hazards Mitigation, reviews the chemical aspect of hazard assessments.

Resources:

- OSHA Job Hazard Analysis <http://www.osha.gov/Publications/osha3071.pdf>
- **Job Safety Assessments** SOP <http://ehs.unl.edu/sop/s-JSA.pdf>
- EHS Web-based **Chemical Safety** training (Unit 4)  
<http://ehs.unl.edu/training/online>
- Canadian Centre for Occupational Health and Safety: Risk Assessment  
[http://www.ccohs.ca/oshanswers/hsprograms/risk\\_assessment.html](http://www.ccohs.ca/oshanswers/hsprograms/risk_assessment.html)
- European Agency for Safety & Health at Work: Risk Assessment  
<http://osha.europa.eu/en/topics/riskassessment/index.html>

## 5. NEW & Revised Safe Operating Procedures – Program Document

- **NEW - Personal Protective Equipment – Body Protection SOP**  
Provides information on the selection and use of outer garments to protect the body from injury
- **NEW - Personal Protective Equipment – Hand Protection SOP**  
Provides information on the selection and use of protective gloves to protect the hands from injury
- **NEW - Personal Protective Equipment – Head Protection SOP**  
Provides information on the selection and use of helmets, bump caps, and hard hats to protect the head from injury
- **NEW – Use of Diagnostic X-ray Equipment in the Healing Arts SOP**  
[http://ehs.unl.edu/sop/s-diagnostic\\_x-ray equip\\_0.pdf](http://ehs.unl.edu/sop/s-diagnostic_x-ray equip_0.pdf)  
Summarizes regulatory and UNL policy requirements to possess and operate diagnostic x-ray equipment in the healing arts. The healing arts include human

medicine and associated research, dentistry and veterinary medicine, excluding College of Dentistry.

- **PROGRAM DOCUMENT Revised – Hearing Conservation Program**  
[http://ehs.unl.edu/programdocuments/Hearing\\_Conversation\\_Program.pdf](http://ehs.unl.edu/programdocuments/Hearing_Conversation_Program.pdf)  
Corrected definitions in the Appendix
- **Revised: Biosafety Training SOP** <http://ehs.unl.edu/sop/s-bio-training.pdf>  
Links to resources updated to point to main EHS webpage. Recommended training in the “Additional Considerations” section was updated to include PPE, fire extinguisher, and general electrical safety. Appendix A was updated to include all EHS online training relevant for bio-labs.
- **Revised: Chemical Security SOP** <http://ehs.unl.edu/sop/s-chemsecurity.pdf>  
Removed reference to a SOP that no longer exists (Select Agent Security)

**Remember...SAFETY IS AN ATTITUDE!**

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