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1. Do You Know? Colloquia Online

Do you know that previous Laboratory Safety Colloquia are available online, including the most recent, “Safe Handling: Unstable, Reactive & Energetic Chemicals?” For most topics there is a video of the presentation, in addition to the presentation and ancillary resource documents. Consider a periodic review of those topics relevant to the hazards in your laboratory. Following are topics available.

- Centrifuges: Research or Rocket?
- Compressed Gas Cylinders
- Cryogen Safety
- Electrical Safety in the Laboratory
- Exposure Control - Ventilated Hoods, Cabinets, & More
- Flammable, Corrosive, & Toxic Gas Safety
- Laser Safety: Hazards, Bioeffects, & Control Measures
- Preventing Laboratory Fires
- Pyrophorics (Air-Sensitive) Chemical Safety
- Safe Handling: Highly Toxic Chemicals
- Safe Handling: Unstable, Reactive, and Energetic Chemicals
- Steam Sterilization Using Autoclaves

These presentations can be used as a learning tool for new post doctorate candidates, graduate students, and laboratory staff. Some of the presentations may also be valuable resources to supplement undergraduate/graduate coursework. Is it time for you to look these over again?

- Laboratory Safety Colloquium Series
  - EHS web site http://ehs.unl.edu/laboratory-safety-colloquium-series
  - Office of Research and Economic Development web site http://research.unl.edu/lsi_9-06.shtml
2. Personal Protective Equipment (PPE) – Head Protection

While there are many injuries and illnesses that can befall workers and employees in all fields, some of the most painful and tragic are head injuries.

Who needs head protection PPE and why? Persons in the following types of jobs are often at risk of head injury and will need to use appropriate head protection when conducting tasks that put them at risk of injury: trades workers, welders, agricultural and landscape workers, animal handlers, mechanics, and others.

The following two case reports of accidents investigated by the Occupational Safety and Health Administration (OSHA) illustrate how seemingly innocent workplace activities can have deadly consequences:

- Two employees were using a wire rope to winch a wooden tool shed onto a flatbed trailer. The wire rope broke, snapped back, and struck one of the employees on the top of the head, killing him. The employee was not wearing a hard hat.

- A carpenter was attempting to anchor a plywood form in preparation for pouring a concrete wall, using a powder actuated tool. The nail passed through the hollow wall, traveled some 27 feet, and struck an apprentice in the head, killing him. The tool operator had never been trained in the proper use of the tool, and none of the employees in the area, including the victim, were wearing personal protective equipment.

Analysis of injury incidents at UNL over the past 24 months reveal that 5% of injuries reported were “head” injuries. That may not sound like a lot…until you are the one with the head injury. Head injuries may not be the most frequent injury, but their importance lies in the relative severity. After effects such as residual cognitive impairment, emotional disturbances, and adverse effects on motor skills are all changes that can continue long after the physical manifestations of head injury have resolved.

Head protection is necessary when there is risk of:

- Falling objects striking the top or sides of the head. This is commonly encountered during construction and renovation activities.
- Forceful impact with the ground, for example, while riding ATVs or horses.
- Bumping the head against fixed objects. This is commonly encountered by persons who occasionally work in tight or cramped spaces such as crawl spaces, tunnels, mechanical spaces, and who use mechanical devices to approach ceilings to conduct work (such as using a lift to reach and change or adjust light fixtures, etc.).
- Being struck by an object, e.g., a tool or piece of equipment coming loose and force propelling the item. Most often this is due to improper use of
equipment, malfunctioning machinery, or failure to follow the safety protocol for tool/equipment use.

- Accidental contact with energized electrical conductors. This type of situation might be encountered when working from ladders or aerial lifts.

Protective helmets (formerly, and still commonly referred to as “hard hats”) reduce the amount of force from an impact blow. Another class of protective headgear is called a “bump hat or cap.” This type of headgear can be used when protection is needed from minor head bumps and lacerations.

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

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. All protective helmets must conform to the American National Standard for Industrial Head Protection, ANSI Z87.1.

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

- When the head protection PPE is necessary;
- What specific head protection is necessary;
- How to properly put on, take off, adjust, and wear assigned head protection;
- The limitations of the assigned PPE;
- The proper care, maintenance, useful life and disposal of the assigned head protection PPE.

General instruction on all these items is contained within the EHS web-based training, **Personal Protective Equipment (PPE)**. Instruction on specific assigned head 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#PPE](http://ehs.unl.edu/training/online#PPE)
- **Job Safety Assessments** SOP [http://ehs.unl.edu/sop/s-JSA.pdf](http://ehs.unl.edu/sop/s-JSA.pdf)
- OSHA Standards - Personal Protective Equipment: Head protection (29 CFR 1910.135)
3. June = National Safety Month – Ag Safety

Hopefully we conduct our lives with safe practices always in mind. It never hurts though to take a moment to refocus on safety. According to the National Safety Council, agriculture is one of the most hazardous industries in the United States. The Bureau of Labor Statistics reports that fatal work injuries involving farming/fishing/forestry workers are on the rise.

The most common cause of serious and fatal injuries in agriculture involves moving and overturning vehicles. Other causes of accidents include:

- falling from heights (through fragile roofs, trees, off grain bins, etc.);
- struck by moving or falling objects (bales, trees, etc.);
- trapped by something collapsing or overturning
- getting caught in moving equipment;
- livestock related fatalities;
- asphyxiation / drowning.

Many farm accidents occur during repair and maintenance work and animal care. Most accidents involve farm machinery. The tractor is the most common machine in farm fatalities. The most common mechanism in tractor fatalities is roll-over, often involving towing.

Here are a few recent incidents to review, toward the goal of leading us to reconsider our own work practices:

- In May an 88 year-old died while he worked under a tractor in his barn. A part of the tractor fell on him.
- In May a longtime educator was killed when the tractor she was riding flipped over.
- In May a 51-year old man fell from a grain bin he was working on.
- In May a 56-year old North Dakota State University Vice President of Agriculture died after being pinned by machinery. Investigation indicated that he left the cab and went behind the parked equipment. It appears the tractor began moving, he attempted to get onto the tractor, and then it rolled onto his leg and chest.
- In May a Maryland man and his two sons died in a manure pit on a dairy farm. They were working at the edge of the pit, preparing to move the manure to tanker trucks for spreading. Investigation indicated it is likely one victim slipped in and the other two died trying to rescue him.
- In May two farm employees were working on a square baler using a metal pipe to hit the handle of the baler when one of them accidentally hit the other’s hand, crushing his middle finger.
In April a 25-year old man was killed when his tractor rolled over and trapped him. Investigation showed the tractor got stuck, and in efforts to free the tractor and plow, it rolled over.

In April an 18-year old man suffered serious head injuries while using a larger tractor to pull a smaller tractor out of the mud. The chain in use snapped, whipped back, smashed through the tractor’s back window, and hit him in the head.

What are some mitigation strategies to prevent these types of injuries?

- Use the right tools for the job and use them according to their designed purpose.
- Be aware of confined space (pits, silos, etc.) hazards and avoid entering spaces that may contain a hazardous atmosphere or other hazard. EHS offers a web-based training module for **Confined Space Awareness**.
- Adhere to lockout/tagout principals to properly de-energize and safeguard machines and equipment before attempting maintenance or repairs. EHS offers a web-based training module, **Lockout/Tagout (LO/TO) for Machines & Equipment**.
- Do not attempt repairs that require special expertise/equipment you do not have/that is not available.
- Ensure that tractors are equipped with Roll-Over Protection Structures.
- Tractor operators should:
  - Ensure that a driver is always at the controls of a tractor.
  - Shut off the vehicle, remove the keys, and engage brakes before dismounting.
  - Follow traffic laws of stopping, speeding and yielding.
  - Wear seat belts when provided.
  - Be aware of potholes, soft shoulders, loose gravel, and deceptively deep trenches.
  - Fight the urge to save a piece of machinery if it’s unmanned and moving.
- When working at heights, use appropriate safeguards and only conduct operations you have been trained for. A fall arrest system might be necessary.

EHS has a number of Safe Operating Procedures (SOPs) on various agricultural safety topics. Work safe in June and all year around!

Resources:

- Ag Safety SOPs  [http://ehs.unl.edu/sop/index.shtml#ag](http://ehs.unl.edu/sop/index.shtml#ag)
- EHS Web-based **Confined Space Awareness** training [http://ehs.unl.edu/training/online/#Asbestos](http://ehs.unl.edu/training/online/#Asbestos)
- EHS Web-based **Lockout/Tagout (LO/TO) for Machines & Equipment** training [http://ehs.unl.edu/training/online/#LOTO](http://ehs.unl.edu/training/online/#LOTO)
4. Changes to Come - Construction Storm Water Permit

Nebraska’s current National Pollutant Discharge Elimination System (NPDES) General Construction Permit (GCP) which regulates storm water under the Clean Water Act expires on December 31, 2012, and a new General Construction permit will go into effect. The new permit will likely reflect an updated Federal permit and will include new requirements. Some of these new requirements are as follows:

- A 14 day period between Notice of Intent (NOI) submittal and disturbing soil (land disturbing activities). The current requirement is 7 days.
- Site inspections following a rain event greater than 0.25 inches compared to the current 0.50 inches. EPA believes most storm events greater than 0.25 inches can lead to discharges.
- Sites adjacent to waters of the state must maintain a 50-foot natural buffer or a combination of a buffer and additional sediment and erosion controls to achieve a reduction in sediment loads equivalent to that achieved by a 50-foot buffer. The use of undisturbed natural buffers allows sediments and other potential pollutants to settle prior to discharging.
- More stringent BMPs (Best Management Practices) for eliminating track-out. Some requirements include removing any track-out that occurs by the end of the work day and restricting vehicle access as well as implementing additional BMPs.
- A turbidity limit for discharges at construction sites larger than 10 acres. However, EPA has issued a ‘stay’ on this numeric requirement as it reexamines data to determine the numeric level. Eventually, EPA will lift the stay.

To review the current 2012 Federal EPA General Construction Permit please visit:

If you have any questions relating to storm water at UNL construction sites please contact James Lange, Environmental Specialist: 402-472-2212 or jlage4@unl.edu

5. Revised Safe Operating Procedure


Addition of reference to a publication produced by the California Nanosafety Consortium of Higher Education, "Nanotoolkit: Working Safely with Engineered Nanomaterials in Academic Research Settings." This publication provides guidance and templates for PIs and others to conduct and document risk assessments for work with engineered nanomaterials that may present risk of exposure.

Remember...SAFETY IS AN ATTITUDE!

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