

In this issue of the Environmental Health and Safety (EHS) Listserv, November 1, 2012:

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1. NEW Machine Shop Safety Safe Operating Procedure (SOP) + Safety Event

If you work with any power-driven (including manually-operated) stationary machines and equipment used to shape and/or form metal, wood, or other materials by cutting, impact, pressure, electrical or other processing techniques, check out the new EHS SOP (link below), which is intended to provide general safety guidance. The SOP includes sections on relevant standards, potential hazards, risk mitigation strategies, and general safe operating rules.

Also, be sure to attend the November 7, 2012, **Machine Shop Safety** event from 12:30 – 3:30 p.m. at the Nebraska East Union. Don Gardner, CSP, Loureiro Consulting, has worked with other universities throughout the country on various aspects of machine shop safety. If you are unable to attend in person, this important safety event will be live-streamed through the EHS web site.

Resources:

- **General Machine Safety** SOP http://ehs.unl.edu/sop/s-gen_machine_safety.pdf
- **Machine Shop Safety** live-streamed at: <http://ehs.unl.edu/training/Colloquium/stream>

2. Could THIS Happen to You? Eye Injuries at UNL

Eye injury prevention is such an important topic that there are two “official” Eye Injury Prevention months! The U.S. Department of Health and Human Services focuses on this topic in July and the American Academy of Ophthalmology promotes October as National Eye Injury Prevention Month. Let’s review the causal factors of 17 recent eye injuries that have occurred at the University of Nebraska-Lincoln (UNL):

- 9 (53%) occurred because safety glasses, goggles, and/or face shields were available but not used.

- 3 (18%) occurred when safety glasses, goggles, and/or face shields were not available. In two of these three cases the need for eye and/or face protection had not been previously identified.
- 3 (18%) were due to improper use or type of eye or face protection.

As you can readily see, almost all these injuries could have been prevented by use/proper use of eye and/or face protection appropriate to the task. This is not unique to UNL. According to OSHA (Occupational Safety and Health Administration), "Thousands of people are blinded each year from work-related eye injuries that could have been prevented with the proper selection and use of eye and face protection." The following resources will assist in assuring that hazards are identified, and proper risk mitigation strategies are selected, including selection of proper eye and face protection, as well as other Personal Protective Equipment (PPE).

Resources:

- EHS Web-based **Personal Protective Equipment (PPE)** training <http://ehs.unl.edu/onlinetraining/#PPE>
- **Job Safety Assessments** SOP <http://ehs.unl.edu/sop/s-JSA.pdf>
- **Welding Lens Shade & Personal Protective Equipment (PPE) Selection** SOP http://ehs.unl.edu/sop/s-welding_lens_and_ppe.pdf
- **Personal Protective Equipment (PPE) – Eyes and Face** SOP http://ehs.unl.edu/sop/s-PPE_eyes-face.pdf
- OSHA Safety and Health Topics: *Eye and Face Protection* <http://www.osha.gov/SLTC/eyefaceprotection/index.html>
- OSHA Standards - Personal Protective Equipment: Eye and face protection (29 CFR 1910.133) http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9778

3. Help Protect Antelope Creek and Dead Man's Run

Storm Water is water that originates during precipitation events. As precipitation flows over impervious surfaces such as concrete, asphalt or even with a rapid flow rate over dirt, it can pick up animal waste, oil and other fluids that have leaked from automobiles, salts used for de-icing, pesticide residues, sediments from un-stabilized ground, and other pollutants. These pollutants are then carried through the storm water sewer system to receiving bodies of waters.

Two streams that are part of the local ecosystem are Antelope Creek, which runs through City Campus, and Dead Man's Run, which runs through East Campus. UNL maintains a storm water pollution prevention plan, the purpose of which is to minimize the introduction of pollutants originating on campus to Antelope Creek and

Dead Man's Run. To that end, EHS has developed several web resources to inform the campus community on steps that can be taken to help preserve and protect water bodies from storm water pollutants.

Resources:

- **Construction Site NPDES Permits SOP** http://ehs.unl.edu/sop/s-construction_site%20npdes_permits.pdf
- **Storm Water Illicit Discharge Detection and Elimination (IDDE) SOP** http://ehs.unl.edu/sop/s-stormwater_IDDE.pdf
- **Vehicle/Equipment Washing SOP** http://ehs.unl.edu/sop/s-vehicle-equip_washing.pdf

4. Personal Protective Equipment (PPE) – General Considerations

Over the past few months the EHS Listserv has reviewed PPE for protection of specific areas of the body. Now let's look at some general considerations of PPE selection and use. Regardless of the specific PPE, there are a few general rules to observe:

- Selected PPE must be appropriate to the hazard.
- PPE must fit the user and provide a reasonable level of comfort.
- PPE should be stored appropriately to maintain integrity and keep it free of contamination.
- Users of any type of PPE must read and adhere to the manufacturer's use and maintenance instructions.
- Employees should demonstrate to their supervisor or other authority an understanding and ability to properly don (put on), doff (remove), and care for their assigned PPE.
- Care must be taken to remove PPE at an appropriate location to prevent the spread of contaminants from the work area to "clean" areas.
- Do not reuse disposable/single-use PPE.
- Decontaminate re-usable PPE immediately after use and in accordance with manufacturer's instructions.
- If re-usable PPE is to be shared by workers, it must be disinfected between users.
- All PPE should be inspected prior to each use to verify its integrity.
- Compromised PPE should be removed from service.
- Refrain from wearing items that could compromise the integrity of the PPE (e.g., rings that can pierce gloves, etc.).
- Re-evaluate suitability of specific PPE in response to new or changing hazards in the work place.

Selection of the appropriate ensemble of PPE requires a THOROUGH understanding of the potential hazards, degree of hazard, and exposed body part. OSHA standards require conducting and documenting a hazard assessment that considers health and physical hazards of the work environment/tasks and exposed body part(s) to determine the appropriate ensemble of PPE.

At UNL, supervisors are responsible to conduct hazard assessments. EHS is available as a resource. Review the hazard assessment and selected PPE periodically. New and improved products are coming to market all the time. As a general rule, OSHA requires the employer to provide necessary PPE at no cost to the employee with certain exceptions allowed. Departments are at liberty to set their policies for PPE payment, so long as the Department's policy does not conflict with OSHA requirements.

Further information on general considerations relating to PPE is contained within the EHS web-based training, ***Personal Protective Equipment (PPE)***.

Resources:

- EHS Web-based ***Personal Protective Equipment (PPE)*** training <http://ehs.unl.edu/onlinetraining/#PPE>
- ***Job Safety Assessments*** SOP <http://ehs.unl.edu/sop/s-JSA.pdf>
- OSHA Standards - Personal Protective Equipment General Requirements (29 CFR 1910.132)
- OSHA PPE Assessment tool http://www.osha.gov/dte/library/ppe_assessment/ppe_assessment.html

5. Risk Assessment: Step 4. Appropriate Controls

A risk assessment is a thorough look at the workplace or task 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 by removing a hazard or reducing the level of risk by implementing appropriate precautions or control measures. The first three steps in the risk assessment process were discussed in previous editions of the EHS listserv: identification of hazards; analysis of who or what may be harmed including the manner in which harm might occur; and evaluation of the level of risk and the likelihood of an adverse incident.

The fourth step is to determine and implement appropriate controls. There may be a number of possible risk reduction strategies, some being more preferred than others when there is more than one option. Following is the hierarchy of controls, with elimination or substitution being the most preferred method of control and use of personal protective equipment the last line of defense when there are hazards that remain after all higher levels of control have been put into place:

- **Elimination or substitution removes the hazard from the workplace.** This includes such things as substitution of less hazardous chemicals/fluids, automated material handling, reducing force/energy, or in the case of machinery, such things as eliminating pinch points by increasing clearance.
- **Engineering controls are built into the design of the space, equipment, or process to minimize the hazard and provide control at the source.** Examples include special ventilation devices (e.g., fume hoods, biosafety cabinets, dust collectors, etc.), machine barriers or interlocks, over-temperature control devices, etc.
- **Administrative controls alter the way the work is done and work practices.** This includes policies, standards and operating procedures such as housekeeping, training, and equipment maintenance.
- **Personal Protective Equipment is worn by individuals to reduce any residual exposure.** PPE examples are safety glasses/goggles, face shields, ear plugs, protective footwear, helmets, respirators, etc.

When selecting risk reduction/control measures keep in mind how any measure considered might affect the process. For example, a measure that interferes with the ability to complete the task may create a barrier for compliance.

The effectiveness of selected risk reduction measures should be validated initially and again periodically by observation of worker's techniques encompassing the various components. Validation might include testing of interlocks and awareness devices such as lights, beepers, horns, fences, labels, etc.; prompt review of injuries and near-misses; regular medical surveillance in the case of noise or respiratory hazards, etc.

It is good practice to review your risk assessment on a regular basis. Triggers for re-assessment might include:

- Starting a new project;
- Changing a work process or workflow;
- Changing/adding tools, equipment or machinery (including locations);
- Moving to a new area;
- Introducing new chemicals/substances; and/or
- Whenever new information becomes available on a currently used product.

Of course you will want to keep documentation on all aspects of your risk assessment. Documentation, even if not required, will assist with re-evaluation over time.

Resources:

- **Job Safety Assessments SOP** <http://ehs.unl.edu/sop/s-JSA.pdf>
- OSHA Job Hazard Analysis <http://www.osha.gov/Publications/osha3071.pdf>
- Canadian Centre for Occupational Health and Safety: Risk Assessment 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
- A step by step guide to COSHH (Control of Substances Hazardous to Health Regulation 2002) assessment <http://www.hse.gov.uk/pubns/books/hsg97.htm>
- OSHA Hazard Prevention and Control <http://www.osha.gov/SLTC/etools/safetyhealth/comp3.html>

6. Revised Safe Operating Procedures

- **Communication of Work Area Safety Information** <http://ehs.unl.edu/sop/s-workareasafety.pdf>
More detail added to this document.
- **Select Agents** http://ehs.unl.edu/sop/SA_SOP_SelectAgents.pdf
Updated to reflect recent changes in the regulations.
- **Select Agents and Toxins – Clinical and/or Diagnostic Laboratory Activities** http://ehs.unl.edu/sop/s-bio-select_agents_clinical_diagnostic_lab_activities.pdf
Updated to reflect recent changes in the regulations.

Remember...SAFETY IS AN ATTITUDE!

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