

In this issue of the Environmental Health and Safety (EHS) Listserv, July 8, 2015:

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1. GHS Implementation – The Next Step

As of June 1, 2015, manufacturers of hazardous chemicals are required to comply with the new provisions for format and content of Safety Data Sheets. If it has been awhile since you completed the EHS Chemical Safety Training, you might want to review some of the key elements to re-familiarize yourself with the pictograms, signal words, hazard statements, and precautionary statements that will be displayed on SDSs that comply with the new format rules. Laboratory workers may review the EHS web-based training, **Chemical Safety**. For workers in the areas of Housing Dining Services, Custodial Services, Housing Custodial Operations or any Maintenance operation, there is targeted training that provides information on the limited classifications of chemicals these workers are likely to encounter.

Upon request, EHS will provide FREE safety posters that can be displayed in chemical use or storage areas as a handy reminder of GHS pictograms and the applicable chemical physical or health hazards. Contact EHS, 402-472-4925 or ehs@unl.edu, to get your poster(s).



If you have not already replaced older versions of Material Safety Data Sheets with the newly formatted SDSs, contact the appropriate chemical manufacturer or distributor if they are not readily available online.

Resources

- EHS web-based training <http://ehs.unl.edu/web-based-training>
- Safety Posters (review to place your order) <http://ehs.unl.edu/safety-posters>

2. ACS Guidelines and Evaluation Procedures

The American Chemical Society (ACS) recently revised their guidelines and procedures for Bachelor's degree programs to incorporate a requirement that "programs should provide students with training that allows them to recognize chemical and physical hazards in laboratories, assess the risks from these hazards, know how to minimize the risks, and prepare for emergencies." While written within the context of Chemistry education, this revision to the ACS guidelines applies across all areas of work/research at UNL where hazardous chemicals are used.

Over the past several years, EHS has developed a number of Safe Operating Procedures to assist in this endeavor. The over-arching SOP, Chemical Hazard Assessment and Risk Minimization, is listed in the resources section of this article. Upon request, EHS will also provide one-on-one guidance on implementing hazard assessment and risk mitigation techniques. EHS will be introducing a new web-based training module in the near future. Consistently adhering to these concepts and the safety ethic will have a dramatic impact on the safety of chemical operations.

- **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

- ACS Guidelines and Evaluation Procedures for Bachelor's Degree Programs <http://www.acs.org/content/dam/acsorg/about/governance/committees/training/2015-acg-2015-acg-guidelines-for-bachelors-degree-programs.pdf>
- American Chemical Society, Safety Practices and Recommendations (Publications): <http://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/safetypractices.html>

- **Chemical Hazard Assessment and Risk Mitigation** SOP
http://ehs.unl.edu/sop/s-chemical_haz_assessment_risk_min.pdf

3. Drying Oven Fire at UNL!

If you're a regular reader of the EHS listserv, you know that we constantly emphasize the importance of sharing accident and near-miss information so that others can learn from our experiences. To that end, we'd like to share a recent incident that occurred in a UNL laboratory. This incident involved a fire in a drying oven. Unfortunately, this is not the first oven fire that has occurred in a UNL laboratory, but we hope that it is the last.

The oven had an operating range of 65° – 250° C (149° – 482° F) and had been loaded with various types of laboratory ware, including Eppendorf tubes, pipette tips, glass beakers, and other items. The intent was to dry these materials after they had been through an autoclave cycle. Normally, the laboratory observed two different settings, a high setting for glass and a low setting for plastics. However, on this day the mixed load was treated with the oven on the high setting. Furthermore, there were several different types of plastics in the oven. Some of the plastic items with a lower melting point melted, flowed onto the heating element, and caused a fire.

It is important to understand that various plastics have different melting points, examples of which are listed in the following table:

Material	Melting Point	Maximum Temperature
HDPE (High Density Polyethylene)	130° C (266° F)	120° C (248° F)
LDPE (Low Density Polyethylene)	120° C (248° F)	80° C (176° F)
Polycarbonate	149° C (300° F)	121° C (250° F)
PTFE (Polytetrafluoroethylene)	330° C (626° F)	300° C (572° F)
Polypropylene	130° C (266° F)	135° C (275° F)
PVC (Polyvinyl chloride)	80° C (176° F)	70° C (158° F)
Acetals	160° C (320° F)	80° C (180° F)

As you can see, the upper range of this oven exceeded the melting point of all but one of the listed plastics. On a positive note, the laboratory worker was able to extinguish the fire with a portable fire extinguisher averting damage to surrounding equipment and the building, although the building had to be evacuated for a period of time to allow fumes to dissipate. Suggestions for increasing safety when using ovens include:

- Ensure that all users are trained in proper operation, settings, and range for each oven that they operate.
- Read and adhere to all of the manufacturer's instructions for installation, operation, and maintenance.
- Do not use mercury thermometers in ovens.

- Do not place flammable or combustible materials in an oven.
- Verify the material of construction and its maximum temperature before placing in an oven.
- Verify correct temperature setting before starting the oven.
- Provide surveillance while the oven is in operation.
- Encourage laboratory workers to participate in fire extinguisher training (available upon request from EHS).
- Consider separate ovens with operating temperature ranges appropriate for the material of construction to be placed within. In this example, this fire would not have occurred if the oven had a maximum operating temperature of 120° C or less.
- Do not attempt to use household ovens for laboratory purposes.



Resources

- **Fire Safety – General Prevention and Extinguishers** SOP
http://ehs.unl.edu/sop/s-fire_safety.pdf
- EHS web-based **Fire Extinguisher** Training <http://ehs.unl.edu/web-based-training#FireExt>

4. Updated Nail Gun Safety Info

Pneumatic nail guns injured about 22,000 workers each year from 2001-2005, severely enough that the workers needed treatment at an emergency room. The National Institute of Occupational Safety and Health (NIOSH) and United States Occupational Safety and Health Administration (OSHA) encourages everyone to rely on its publications for the most protective recommendations on nail gun safety.

These publications provide instruction for reducing the risk of the seven major causes of nail gun injuries:

- Unintended nail discharge from double fire;
- Unintended nail discharge from knocking the safety contact with the trigger squeezed;

- Nail penetration through lumber work piece;
- Nail ricochet after striking a hard surface or metal feature;
- Missing the work piece;
- Awkward position nailing;
- Bypassing safety mechanisms.

Resources

- OSHA Nail Gun Safety <https://www.osha.gov/doc/topics/nailgun/index.html>
- NIOSH Nail Gun Safety <http://www.cdc.gov/niosh/topics/nailgun/>

5. Cell Phones - A Walking Hazard

Smartphone use is increasing. The hazards of using a smartphone to make calls, text, check email, or search/browse the internet while driving are well publicized. Dangers of driving and using cell phone are reviewed through videos in the ***Driver Safety and Improvement Training*** series which is FREE to all UNL faculty/staff (EHS Listserv May 26, 2015).

While walking seems automatic, areas in the brain controlling executive function and attention are necessary for walking. Although injuries from cell phone use and driving are often more serious, injuries from texting or other use while walking accounts for more injuries per mile than distracted driving. Nationally, of the 41,000 pedestrians treated yearly in emergency rooms, up to 15 percent of the accidents, or more than 6,100 involved cell phones. This is likely an understatement as injured people are reluctant to admit behaviors they find embarrassing.

Some incidents reported due to walking and cell phone use include bumping into walls or other obstacles (including other people), falling down stairs, stepping off curbs resulting in a fall, walking into traffic, tripping over uneven portions of the walkway/clutter in the walking path, and even stepping off a bridge. Besides being a danger to yourself, cell phone use while walking presents a danger to others in your path.

If you must use your cell phone, move out of the stream of pedestrian traffic and stop walking until the task/call is completed.

Resources:

- Healthline News ***Texting While Walking Causes More Accidents Than Texting and Driving*** (Sandra Levy, 3/10/14)
<http://www.healthline.com/health-news/tech-texting-while-walking-causes-accidents-031014>
- Ohio State University Research and Innovation Communications ***Distracted Walking*** (Jeff Grabmeier, 6/19/13)
<http://researchnews.osu.edu/archive/distractwalk.htm>
- Stony Brook (University) News ***Walking and Texting at the Same Time: Stony Brook Study Says Think Again*** (Dr. Eric M. Lamberg & Dr. Lisa M Muratori,

1/18/12)

http://commcgi.cc.stonybrook.edu/am2/publish/Medical_Center_Health_Care_4/Walking_and_Texting_at_the_Same_Time_Stony_Brook_Study_Says_Think_Again.shtml

- WTOP News ***Texting, walking more risky than distracted driving*** (Neal Augenstein, 3/4/14) <http://wtop.com/news/2014/03/texting-walking-more-risky-than-distracted-driving/>

6. Safety Shorts

This series features links to short safety resource(s) each month. Regardless of format - video, PDF, other - these short features cover various topics and are intended as resources for safety committees, faculty/staff/students, as well as individual laboratories/work areas. This month's features are:

- Nail Gun Safety (Packaging Incorporated, duration 3:30 minutes). Do's and Don'ts of safe nail gun operation. https://www.youtube.com/watch?v=5bjMG9_dBaA
- Texting While Walking Accidents: Video (ABC News, duration 2:19 minutes). ABC News reviews the types of accidents that have occurred with cell phone use. <https://www.youtube.com/watch?v=wl0JojWH1rQ>
- Walking While Texting (National Geographic, duration 2:49 minutes). Video illustrates that even talking on the phone while walking can result in impairment. https://www.youtube.com/watch?v=tm2lfv3_ELc

NOTE: Resources are provided for informational purposes only. Publication does not in any way endorse a particular company or product or affect current UNL policies and procedures.

7. Revised SOP

- ***Respiratory Protection - Use and Maintenance of Powered Air Purifying Respirators*** SOP http://ehs.unl.edu/sop/RPP_SOP_PAPR.pdf
Updated to include additional information on Equipment Inspection.

Remember...SAFETY IS AN ATTITUDE!

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