

In this issue of the Environmental Health and Safety (EHS) Listserv – May 6, 2020

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1. Radiation Safety Basic (Session 1 & Session 2) and X-Ray Trainings = Zoom

Due to university directives to limit person-to-person contact, the regularly scheduled Radiation Safety Basic Training, both Session 1 and Session 2, as well as the X-Ray Safety Training will be provided via Zoom online. Contact ehs@unl.edu for the Meeting ID of the specific training you need to take. The next training sessions will be:

- X-Ray Safety Training, Thursday, May 7, 2 – 5 pm CDT
- X-Ray Safety Training, Thursday, June 4, 2 – 5 pm CDT
- Radiation Safety Basic Training (Session 1), Tuesday, June 2, 2020, 1 – 5 pm CDT
- Radiation Safety Basic Training (Session 2), Tuesday, June 9, 2020, 1-5 pm

While this information is on the Environmental Health & Safety website “Events” listing, we want to be sure all who need this training are aware of the change in delivery method.

2. Mosquitos, Ticks and Disease

It is that time of year when there is alternating wet weather and hot weather in the transition from spring to summer. That weather pattern creates standing water, which is the perfect breeding ground for mosquitoes, ticks, fleas and other insects. With an increase in ticks and flying insect populations comes an increased risk of exposure to the diseases that these insects can carry.

Mosquitos or tick bites can transmit vector-borne diseases such as West Nile Virus (mosquitos), Lyme disease (ticks) and Rocky Mountain Spotted Fever (ticks). These diseases are called “Vector-Borne Diseases” because they are transmitted through an insect or “vector.” Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans.

Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later inject it into a new host during a subsequent blood meal. According to the Centers for Disease Control, vector-borne diseases have increased threefold in the United States between 2004 and 2016.

Problems associated with vector-borne diseases:

- They are hard to predict, prevent or control.
- Only a few have vaccines.
- Some vectors are notoriously hard to kill and develop resistance to insecticides.
- Almost all vector-borne viruses and bacteria are zoonotic, meaning they can cause disease in animals as well as in humans.

To avoid “getting bit,” follow these prevention tips:

- Wear insect repellent. Yes, it is safe when used as directed. Insect repellent is the BEST way to protect against insect bites—even children and pregnant women should protect themselves. Higher percentages of active ingredient provide longer lasting protection. It is best to use an EPA-registered insect repellent and the EPA has developed a web tool to help you select the right repellent for you (<https://www.epa.gov/insect-repellents/find-repellent-right-you>). Below are some of the common active ingredients in repellents and example products.
 - DEET. Products containing DEET include Cutter, OFF!, Skintastic.
 - Picaridin (also known as KBR 3023, Bayrepel, and icaridin). Products containing picaridin include Cutter Advanced, Skin So Soft Bug Guard Plus, and Autan (outside the United States).
 - Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD). Products containing OLE include Repel and Off! Botanicals. Do not use these products on children under 3 years old.
 - IR3535. Products containing IR3535 include Skin So Soft Bug Guard Plus Expedition and SkinSmart.
 - Para-menthane-diol (PMD) Product examples are Off!, Off! Botanicals
- Cover up. When weather permits, wear long-sleeved shirts and pants. Thoroughly check skin and clothing daily for ticks.
- Keep mosquitoes outside. Use air conditioning or make sure that you repair and use window/door screens.
- Avoid areas prone to insect infestation and take action to eliminate or treat potential breeding grounds.

Tips for applying insect repellent:

- Always follow the product label instructions.
- Reapply insect repellent as directed.
 - Do not spray repellent on the skin under clothing.
 - If you are also using sunscreen, apply sunscreen first and insect repellent second.

Researchers traveling to other countries/parts of the United States to conduct research activities should review the prevalence of vector-borne diseases as they review other local safety considerations.

Resources

- Nebraska Department of Health & Human Services (NeDHHS) (phone: 402-471-3121)
- Centers for Disease Control (CDC) – Division of Vector-Borne Diseases <https://www.cdc.gov/ncezid/dvbd/>
- CDC Prevent Mosquito Bites <http://www.cdc.gov/features/StopMosquitoes/>
- CDC Insect Repellent Use & Safety <http://www.cdc.gov/westnile/faq/repellent.html>
- CDC Lyme Disease Prevention <http://www.cdc.gov/Features/LymeDisease/>
- Rocky Mountain Spotted Fever <http://www.cdc.gov/rmsf/>
- Nebraska Department of Health and Human Services WNV (West Nile Virus) Surveillance <http://dhhs.ne.gov/Pages/West-Nile-Virus-Data.aspx>
- Nebraska Department of Health and Human Services General Information on WNV <http://dhhs.ne.gov/Pages/West-Nile-Virus.aspx>
- CDC Zika Virus Information:
 - (1) <https://www.cdc.gov/zika/geo/index.html>
 - (2) <https://wwwnc.cdc.gov/travel/page/zika-travel-information>
 - (3) <https://www.cdc.gov/zika/index.html>

3. Take Care When Working in the Heat

National Heat Awareness Day, sponsored by the National Weather Service, is observed each year on the last Friday in May. Resulting in numerous fatalities each year, heat exhaustion and dehydration due to heat are some of the leading weather-related killers in the United States.

We often associate heat-related illness with outdoor operations such as farm work, landscaping, and research “in the field.” However, EHS routinely reviews injury reports from employees working INSIDE an unconditioned building (e.g., warehouse, storeroom) or areas of a building prone to heat build-up (e.g., kitchens, laundry, autoclave rooms, etc.).

National Heat Awareness Day occurs each year on the last Friday in May. Nationally, heat kills more people annually than all other weather conditions combined. While this article primarily references outdoor conditions, the principles and practices presented also apply to indoor work in hot environments.

Working in the heat stresses the body and can lead to illness or even death in severe cases. Exposure to heat can also increase the risk of other injuries because of sweaty hands, fogged-up safety glasses, dizziness, and burns from hot surfaces. Most heat-related health problems can be prevented or the risk of developing them can be reduced.

Following are two main categories of risk factors the worker should evaluate when contemplating outdoor work:

- **Weather Conditions.** The risk of heat stress is relative to temperature, humidity, sunlight, and wind speed. High temperature, high humidity, direct sunlight and low wind speed make the worst combination. If possible, schedule strenuous work for the cooler parts of the day.
- **Personal Factors and Physical Demands.** The risk of heat stress increases with physical demands. For example, a worker who is walking is at higher risk than a worker who is riding in a vehicle. Older workers, obese workers, and persons taking certain types of medication, such as antihistamines, are at a greater risk for heat illness.

It may not always be possible to work only in cooler parts of the day. The risk of heat-related illness can be reduced by:

- **Acclimation.** Build up tolerance to heat by short exposures before undertaking longer periods of work in a hot environment.
- **Appropriate clothing.** Light, loose clothing and a hat are the clothing of choice.
- **Hydration.** Drink 8-16 ounces of water *before* working in the heat. Drink 4-8 ounces of water or electrolytes every 15-20 minutes while working in the heat. AVOID alcohol, coffee, tea, or soda pop, which further dehydrate the body.
- **Adequate Rest Periods.** Work at a steady pace. Take breaks when your body signals you need one, preferably in shaded or cool areas.
- **Education.** Heat stress can manifest as a number of conditions, all to be taken seriously, and some requiring medical assistance to avoid permanent aftereffects. Workers should know the signs and symptoms of these conditions so they can take proper action if they or their co-workers are affected.

More in-depth information can be found within the EHS Safe Operating Procedure (SOP), **Heat Stress**.

The Occupational Safety and Health Administration (OSHA) in collaboration with the Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health (NIOSH) developed a free smartphone **Heat Safety Tool** that calculates a heat index, identifies the associated risk level and provides reminders about protective measures that should be taken to protect

workers from heat-related illness. The app is available for either Android or iPhone.

Further recommendations from the National Institute for Occupational Safety and Health (NIOSH) for those working in hot environments include:

- Limit time in the heat and/or increase recovery time in a cool environment.
- Use a buddy system where workers observe each other for signs of heat intolerance.
- Have adequate amounts of cool, potable water near the work area and encourage each other to drink frequently.

While we think of summer as the “hot” time of year, sometimes temperatures in the spring can reach dangerous levels as well. Remember to practice heat safety wherever you are and in whatever you are doing. Heat-related illness and death are preventable.

Resources:

- OSHA Health and Safety Topics: Occupational Heat Exposure <http://www.osha.gov/SLTC/heatstress/>
- OSHA Heat Safety Tool (phone app-English & Spanish) https://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html
- OSHA Health and Safety Topics: Using the Heat Index http://www.osha.gov/SLTC/heatillness/heat_index/index.html
- EHS **Heat Stress** SOP <https://ehs.unl.edu/sop/s-heatstress.pdf>
- National Institute for Health & Safety (NIOSH) Safety & Health Topics: *Heat Stress* <http://www.cdc.gov/niosh/topics/heatstress/>
- Heat Safety Tips and Resources <https://www.weather.gov/safety/heat>
- Centers for Disease Control and Prevention “Extreme Heat” <https://www.cdc.gov/disasters/extremeheat/index.html>

4. Safety Short – Hot Weather Hazards

This series features links to short safety resource(s) each month. Provided this month is a resource for working safely in a hot environment.

- **7 Ways to Beat the Heat – Hot Weather Hazards – Preventing Illness & Deaths in Hot Environments** (Safety Memos, Duration 3:29 minutes) <https://www.youtube.com/watch?v=WYnj1G94e6Y>

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.

5. Keeping Stormwater Runoff Sustainable (Lawns & Gardens)

As we continue to landscape our home lawns and gardens into the summer months it is important to recognize that certain landscaping practices can adversely impact stormwater runoff that flows into our local lakes and streams. To ensure more sustainable stormwater runoff from your home lawn or garden it is important to recognize and limit the landscaping practices that contribute to a worsening environment downstream.

Common landscaping practices that adversely impact stormwater runoff include, over application of fertilizers, pesticides and herbicides; disposing leaves and grass clippings into storm sewers, allowing disturbed soil to erode and precipitation to transport the sediment off site. Below are some tips and tricks that you can do at home to protect surface water quality.

- Do a soil test in your lawn or garden to better understand what type and how much fertilizer to apply. Do not over-apply and sweep up any fertilizer that is left on hard surfaces. Use slow release nitrogen and non-water soluble fertilizers when applicable.
- Adhere to the label instructions when applying pesticides and herbicides. Attempt to use the least amount necessary to get the job done. Use the spot & treat method rather than a blanket application and do not apply or dispose rinsate on hard surfaces.
- Sweep up and remove grass clippings, leaves, and tree trimmings from hard surfaces to prevent them from being transported into the storm sewer system during the next precipitation event.
- Cover bare and exposed soil to prevent erosion. There are many sediment and erosion control products available depending on the size and application needed. For many home lawn projects the most effective practices will focus on erosion controls such as, establishing vegetation, installing mulch, and temporarily covering the soil or stockpile with a tarp. Some sediment control practices that can be helpful include directing runoff into a vegetated area and/or installing wattles or silt fencing to filter runoff.

For more information regarding practices you can do at home and information about how the University of Nebraska-Lincoln keeps its stormwater runoff sustainable please visit <https://ehs.unl.edu/stormwater-management>.

6. Revised Safe Operating Procedures

- **Biological Decontamination of Lab Equipment** https://ehs.unl.edu/s-bio-decontamination_lab equip.pdf
Revised to clarify some of the wording in the existing guidance, update reference information and provide for use of various disinfectants by

referencing the manufacturer's instructions instead of specifying a set contact time for decontamination.

- **Biosafety Containment Levels** https://ehs.unl.edu/s-bio-containment_levels.pdf
Updated to clarify that the guidance in the document is consistent with guidance found in both the Biosafety in Microbiological and Biomedical Laboratories and the NIH Guidelines and other regulatory and guidance documents, but also reflects enhancements that have been implemented at UNL such as the requirement for a biosafety manual at all containment levels. The guidance related to containment of plants and plant-associated micro- and macro-organisms has been revised to provide clarification about implementation of the described practices and procedures.
- **Disposing of Biohazardous Materials, Including Recombinant Nucleic Acids** <https://ehs.unl.edu/s-bio-dispose.pdf>
Revised to remove redundant information also provided in the EHS SOP *Autoclave Operation and Use* and clarify the methods of biohazardous waste disposal available on campus. Additionally, new guidance has been added to specify that waste that has been subjected to an unsuccessful autoclave treatment must not be disposed of, but re-autoclaved until a successful run is achieved. Finally, the guidance related to autoclaving animal carcasses has been updated as well as guidance for labeling and disposing of biohazardous sharps that are not infectious to humans.
- **Dosimetry Program** <https://ehs.unl.edu/s-dosimetry.pdf>
Revised to clarify personnel who are required to wear dosimetry, how dosimetry is sent and received by EHS.
- **HIV and HBV Research Laboratories** https://ehs.unl.edu/sop/s-hivresearch_1.PDF
Revised for clarification and readability, to specify additional training requirements as required in the OSHA Bloodborne Pathogens Standard 29 CFR 1910.1030, add guidance about hand-washing and eyewash facilities and liquid disinfectant traps for vacuum lines.
- **Incident Reporting – National Institute of Health (NIH) Guidelines** https://ehs.unl.edu/s-bio-incident_reporting-NIH.pdf
Revised to clarify and simplify the existing guidance on reporting of “incidents” involving recombinant or synthetic nucleic acids. As a reminder, incidents include spills, exposures, releases, initiation of research without IBC approval, improper disposal of recombinant material and escape of genetically modified organisms.

- **Lentiviral Vectors** https://ehs.unl.edu/s-lentiviral_vectors.pdf
Revised to remove references to NIH Recombinant DNA Advisory Committee (RAC), which has been re-chartered to focus on reviewing emerging biotechnology. Additional guidance related to pseudotyping (altering the surface proteins that aid cell entry) viruses has been added. The guidance related to reducing containment levels for certain experiments and use of non-HIV-1-derived lentiviral vectors has been clarified. Finally, guidance about use of Lenti-CRISPR systems which utilize the CRISPR/CAS system for gene editing has been added.
- **Pathogen Inventories** https://ehs.unl.edu/sop/s-bio-pathogen_inventories_1.pdf
Revised to clarify inventory requirements for replication incompetent viral vectors and add clarifying language about discovery and reporting of select agents found in lab inventories.
- **Radiation Safety SOPs** <https://ehs.unl.edu/sop/radiation-safety>
All other Radiation Safety SOPs not specifically listed here had minor editorial changes for EHS contact information or misspellings.
- **Radiation Accidents** https://ehs.unl.edu/s-rad_accidents.pdf
Updated into new format.
- **Radiation Survey Meter Use** https://ehs.unl.edu/s-RAM_survey_meter_use.pdf
Revised to include the new Survey Meter video resource.
- **Safety Protocol: 241 AM (BE) Neutron Probe** https://ehs.unl.edu/sop/SP_SOP_241Am%28Be%29NeutronProbe_6.pdf
Revised to update emergency contact information.
- **Transport of Biohazardous Materials at UNL (Including Research and Clinical Specimens/Materials)** https://ehs.unl.edu/s-bio-transport_biohaz_materials.pdf
Revised to clarify its applicability to transport of materials by UNL personnel on or between campuses. The definition of biohazardous materials has been clarified to explicitly include genetically-modified plants, animals, microbes, etc. New guidance related to use of public transportation for movement of biohazardous materials has been added. Finally, instruction to contact UNLPD and EHS in the event of a theft, loss or release of material or organisms.

Remember...SAFETY IS AN ATTITUDE!

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