DEPARTMENT OF
ENVIRONMENTAL
HEALTH AND SAFETY

# EHS BULLETIN

NOVEMBER 2024

## IN THIS ISSUE



## HANDLING CYROGENIC LIQUIDS

Cryogenic liquids, or cryogens, are gases at normal temperatures and pressures but are in a liquid state at low temperatures. Liquid nitrogen, helium, hydrogen, and methane are some of the common cryogens used in laboratory settings. They are extremely cold and have boiling points of less than -150°C. They also expand into very large volumes of gas. All personnel who work with cryogens must be aware of their hazards and how to safely handle with them prior to use.

### FIRE/EXPLOSION HAZARD:

- Neither liquid nitrogen nor liquid air should be used to cool a flammable mixture in the presence of air. Oxygen can condense from the air and lead to a potentially explosive condition.
- Adequate ventilation is required. This can prevent the build-up of vapors of flammable gases such as hydrogen, methane, and acetylene. When using gases such as nitrogen, helium, or hydrogen, oxygen can be condensed out of the atmosphere, creating a potential for explosive conditions.
- Without adequate venting or pressure-relief devices on the containers, high pressures can build up by cryogen evaporation.
- For liquid Dewar flasks, do not use any stopper or other device that would interfere with venting of gas.

### ASPHYXIATION HAZARD:

- As the cryogen warms and evaporates, oxygen may be displaced to the point that employees could experience oxygen deficiency or asphyxiation.
- Asphyxiation is a concern, because the threat may not be obvious. Rescuing an asphyxiated employee will endanger the life of the rescuer if oxygen is not provided.

### EXTREME COLD CONTACT HAZARD:

- Even very brief contact with a cryogenic liquid can cause tissue damage like that of thermal burns.
- Prolonged contact may result in blood clots that have potentially serious consequences. In addition, surfaces cooled by cryogenic liquids can cause severe damage to the skin.

### PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED WHEN HANDLING CYROGENIC LIQUIDS:

- Closed-toed shoes, long sleeves, and long pants
- Splash resistant goggle and a full-face shield
- Laboratory coat
- Insulated gloves

### FOR ADDITIONAL INFORMATION, SEE THE LINKS BELOW:

- OSU Laboratory Safety Manual
- NIH Cryogen Safety
- OSHA Cryogens and Dry Ice Quick Facts

**For questions, please call EHS at (405) 744-7241 or email at ehs@okstate.edu**

# ERGONOMICS

Oftentimes, ergonomics is overlooked as a potential serious workplace hazard, probably because injuries related to bad ergonomics typically are not as obvious as other injuries, such as those caused from falls or interactions with large machinery. Do not let this fool you into thinking that ergonomics are not important; these injuries can often be just as serious to the workplace and the individual if they are not addressed.

The goal of practicing good ergonomics in the workplace is to reduce the risk of musculoskeletal disorders (MSDs). MSDs include carpal tunnel syndrome, tendonitis, strained muscles, and ruptured discs, just to name a few. MSDs resulting from poorly designed workstations can lead to reduced productivity, missed time, loss of income, increased insurance claims, and pain and suffering that could impact both workers and their friends and families.

Musculoskeletal disorders affect joints, ligaments, tendons, muscles, and bones. The pain can be acute or chronic, depending on the severity. The common symptoms of MSDs may vary, but are typically: fatigue, sleep disturbances, pain that worsens with movement, aching or stiffness, muscle twitches, and burning sensations in the muscles.

If you are experiencing pain and discomfort due to poor office ergonomics, request an ergonomics assessment from EHS.

## MONTHLY TRAINING OPPORTUNITIES

**Respiratory Protection**
1st Tuesday of every month at 8:30 a.m.
FM North Building, Room 101C
Registration: email ohsp@okstate.edu

**Bloodborne Pathogen Training**
2nd Tuesday of every month at 9 a.m. and 2 p.m.
EHS Conference Room, 003 UHS
Registration: email chemicalsafety@okstate.edu**Fire**

**Safety w/Hands-On Extinguisher Training**
2nd Friday of every month at 9 a.m.
EHS Conference Room, 003 UHS
Registration: email ohsp@okstate.edu

**Monthly Employee Training**
3rd Thursday of every month at 9:30 a.m.
EHS Conference Room, 003 UHS
Registration: email ohsp@okstate.edu

**Laboratory Safety and Hazardous Waste Training**
4th Tuesday of every month at 8:30 a.m.
EHS Conference Room, 003 UHS
Registration: email ohsp@okstate.edu

## FOLLOW THESE STEPS TO REQUEST AN ERGONOMICS ASSESSMENT:

- Visit our website – ehs.okstate.edu.
- Scroll to the bottom of the main page to “Forms and Permits”.
- Select “Ergonomics Assessment Request”.
- Fill out the request form through CampusOptics.
- After submitting the request, you will be contacted by EHS to set up an ergonomic evaluation.

**For other ergonomic questions, call EHS at (405) 744-7241 or send us an email at ohsp@okstate.edu.**