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## THE LAST LINE OF DEFENSE: HEAD-TO-TOE PPE SELECTION

#### By Edgar Boord, risk control consultant

Personal protective equipment (PPE) is very important to assure employee safety in the workplace (and at home).

Different categories of PPE protect parts of the body from hazard potential. Within each category of PPE, there are many different types that protect from specific hazards. For example, cut-resistant gloves would not be used to handle corrosive chemicals.

If hazards cannot be eliminated through system design (processes and equipment), engineering controls (i.e., machine guarding) or administrative controls (i.e., training and safe operating procedures), PPE is the last line of defense to keep an individual safe.

Proper use and care of PPE can drastically reduce the severity and likelihood of injury. Let's explore potential risks you may encounter, as well as what types of PPE may be best to keep you safe from the hazard.

#### RISKS

- **Struck by Injuries:** Falling/flying/moving objects, low-hanging rafters.
- **Cuts and Lacerations:** Cutting tools, sharp edges and moving parts/equipment.
- **Chemical Hazards:** Working with chemicals with hazardous properties (reactive, flammable, corrosive, toxic, or any other characteristics that may cause harm or illness).
- Walking/Working Surface Hazards: Slippery or uneven surfaces and protruding objects.
- Hot Surfaces and Extreme Temperatures: Surfaces on kilns/ovens/stoves, working with welding and hot work equipment, walk-in coolers/freezers, or use of dry ice in science labs.
- Bloodborne Pathogen Exposure: Performing first aid/CPR, or while handling/cleaning blood and other bodily fluids.
- Other Hazards: May include falls from heights, confined spaces, hazardous air quality, high noise exposure, foreign matter or substances in the eyes, light/radiation exposure, and a number of other potential hazards.

#### **BEST PRACTICES/ACTIONABLE ITEMS**

- Always **refer to ANSI standards** provided with most PPE to assure the correct protection for the hazard(s) you may encounter.
- Head, face and ear protection can include hard hats for falling objects, safety glasses/goggles/ face shields for flying debris or chemical hazards, welding helmets for hot work, and earmuffs/plugs for noise exposure (check for noise reduction ratings).
- Torso/neck and arm protection can include chemical splash aprons, flame-resistant jackets and sleeves for welding or hot work, and Kevlar sleeves or bite guards for the arms when working with children in emotional support classrooms that may bite or scratch.
- Hand protection can include flame-resistant gloves for welding/hot work, oven mitts that provide forearm protection, cut- and puncture-resistant gloves for working with cutting tools,

and a variety of latex/nitrile/rubber gloves that provide protection while handling chemicals with specific hazardous properties.

- Leg protection may include chaps specific for chainsaws or welding/hot work, and knee pads with support for performing tasks that require constant kneeling.
- Protective footwear selection should be based on work and the potential hazards. Use steel-toe and metatarsal shoes/boots for heavy/falling objects, aggressive tread for snow/ice, slip-resistant footwear for wet/greasy and similar surface conditions, or even shoes with ample ankle and arch support if working on your feet for extended periods of time. Footwear covers can also be used to provide grip during floor stripping/waxing duties.

There are many considerations when selecting the appropriate PPE for the job and hazards that exist. Handling of chemicals can present very specific hazards and properties that require a certain type of material (i.e., latex versus nitrile gloves). Make sure the level of protection is ample for the potential hazard.

Conduct a PPE hazard assessment for the type of work to make sure the correct equipment is selected. Refer to the Occupational Safety and Health Administration (OSHA) guidelines and assessment tools for selection:

https://www.osha.gov/sites/default/files/training-library\_ppe\_assessment.pdf

#### https://www.osha.gov/Publications/osha3151.pdf

Assure ample protection by referencing the American National Standards Institute (ANSI) standards for eye/face (ANSI Z87.1-1989), head (ANSI Z89.1-1986) and foot protection (ANSI Z41.1-1991).

Always make sure your PPE is maintained and cleaned, in good working condition and fits properly.

#### Sources:

https://www.osha.gov/sites/default/files/traininglibrary\_ppe\_assessment.pdf https://www.osha.gov/Publications/osha3151.pdf

## HORSEPLAY ON THE JOB Is No Laughing Matter

By Mark Nease, risk control consultant

Employees may find that there are benefits to having fun at work—improved morale and increased job satisfaction are just a few. If, however, having fun involves horseplay, then workplace safety can be compromised, leading to an injury.

Horseplay is defined as rough or foolish play. It can involve pranks, unauthorized contests or the foolish use of equipment and tools. Remember that adults are not immune to horseplay.

#### **Risks**

Horseplay is the opposite of the safe and responsible actions required to do your job. Horseplay is an unsafe act that puts employees at risk for injury and must be prohibited.

In addition to increasing the risk for injury, employee horseplay can reduce quality and productivity at the workplace. If you've ever been the victim of a physical joke or prank, you may have found yourself looking over your shoulder, wondering what the next prank would be. This mindset can bring down employee morale, leading to poor work performance and even injury.

Horseplay and pranks may not directly cause harm but could still be detrimental to the organization. The embarrassed recipient of a prank could seek revenge, leading to workplace violence.

#### **Best Practices/Actionable Items**

- **Policy:** Organizations should have a clearly defined and written policy stating that horseplay is never acceptable by any employee. The policy must be strictly enforced.
- **Supervision:** Supervisors need to be up front when communicating to their staff that horseplay is unacceptable in the workplace.
- See something, say something: Staff need to report observed horseplay through the proper channels. A protocol should be communicated to staff on how to report horseplay.
- Preventing counterproductive behavior: Horseplay and pranking can be a result of employees becoming bored at their jobs. Supervisors should assign work to staff to prevent boredom and subsequent counterproductive work behavior.

It is okay to have fun on the job, but not through horseplay and at the expense of others. Having fun through horseplay is an unsafe act that is no laughing matter.

#### A TWO-PART SERIES

Reducing Your Risk of Crime: How to Better Protect Your Interior Assets

by Jake Ruziecki, risk control consultant

With the current state of the economy, unemployment rates and the uncertainty surrounding the COVID-19 pandemic, some individuals may take extreme measures to make ends meet. At this time, it is important to take your workplace security into consideration.

Historical data shows a surprising drop in crime rates during times of economic crisis. However, this is likely due to most areas taking extra security measures.

The first in a two-part series, this article provides guidelines to help shed light on some of the exposures your place of business may have, along with controls that can be implemented to better protect the valuables assets within your walls.

#### **Risks**

- When you consider all the valuable items in your buildings at risk for theft, computers, projectors and tablets are just the tip of the iceberg. Keep in mind your other valuables such as artwork, IT equipment and servers, vocational lab tools including medical equipment and welding equipment, and facilities equipment such as tools and power equipment.
- Theft is often coupled with vandalism. The property damage costs associated with a breakin can often significantly surpass the costs of the items stolen. You may remember in the 1990 comedy, Home Alone, "The Wet Bandits" would flood a house after a robbery by stuffing a rag down a sink and leaving the water running.
- Although most school break-ins typically fall under a nuisance category and don't often result in serious damages, more professional and malicious break-ins may involve the loss of higher-value equipment and significant damage to your building's utilities and interior.

#### **Best Practices/Actionable Items**

- Maintain Awareness: Periodically check that all doors, windows, and other building access points such as loading docks are secured throughout the day, and before the building is unoccupied. Doors that are propped open or not securing properly create vulnerable access points. Verify that all access points are visually and physically secured to help deter potential intruders.
- Interior Security: During after-school gatherings such as athletic events, make sure to limit access only to necessary areas of the building. The same practice should be performed at the end of each day. Secure hallways and classroom doors to slow and deter criminals that may have already gained unauthorized access into the building.
- Security Systems: It's recommended to periodically review the need for additional security cameras and intrusion alarms. Identify areas in need of additional coverage so you can limit blind spots that give criminals the opportunity to remain undetected. Also consider providing coverage for larger storage buildings not immediately connected to school buildings.

When you consider putting these security controls into place, you'll be more likely to deter intruders from attempting to gain further access within your buildings and reduce your likelihood of greater losses.

If you feel as though your existing security measures are lacking, consider contacting a reputable security contractor or your assigned Risk Control Consultant for guidance.

# Idle Components/Equipment

by Kyle B. Stewart, risk control consultant

Pennsylvania schools were closed in March by the governor's order and remain closed through the summer. That could mean several of your building's components have been idle for an extended period of time. If Pennsylvania school buildings open to students in the fall, nearly six months may have lapsed since equipment/components were in daily operation.

Facilities personnel routinely conduct equipment checks on major building component systems as part of an operational preventative maintenance program. In addition, everyone should conduct their own inspection of normal day-to-day equipment within their designated classroom or work area.

#### RISKS

Daily use causes wear and tear on equipment that can lead to premature failure(s), forcing equipment to be taken out of service. However,

components/equipment sitting idle can also lead to failures or breakdowns.

Extended building closures may cause routine inspections to be missed. These pre-use or periodic visual inspections can identify unsafe conditions that may cause a work-related injury or property loss. Potential unsafe conditions associated with idle equipment may include:

- Electrical hazards.
- Fungal contaminants due to the presence of water.
- Cybersecurity from outdated firmware.
- Fire hazards.
- Expired emergency first aid safety supplies.

#### BEST PRACTICES/ ACTIONABLE ITEMS

Consult with the component/equipment manufacturer regarding recommended restart procedures for returning equipment to service following extended shutdown. Do not allow equipment to operate unattended upon restart.

Prior to returning equipment to service, staff familiar with the equipment/process should conduct a visual inspection to identify any unsafe conditions warranting repairs or replacement of equipment or components. Examples include, but are not limited to:

#### **Emergency Eyewash/Shower Stations**

- Flush plumbed eyewash/shower stations to remove stagnant water/contaminants from plumbing lines; plumbed units should be flushed weekly thereafter and recorded.
- The water in portable eyewash stations (5-6 gallons) should be changed in accordance with the "wash shelf life" specified by the additive saline manufacturer, typically every six months.
- Verify portable eyewash solution bottles are not expired, replace where necessary.

#### Cord/Plug Safety

- Inspect cord plug and insulation for cracks, splices and/or damage caused by friction or vermin.
- Replace according to manufacturer recommendations; a qualified electrician should complete all repairs.

#### Room/Area Layout

- Configure rooms to discourage the use of multi-outlet power adapters; it is recommended to plug electrical devices directly into a building's wall outlet.
- Cords should be secured beneath desks so they don't extend into designated walking aisles, which may result in a slip/trip/fall injury.

#### Technology/Laboratory Equipment

• Ensure flexible hoses are pliable and not in need of replacement, and control modules are working properly.

- Provide sufficient clearance from combustible materials around heat-generating devices (i.e., burners, 3-D printers, kilns, etc.).
- Utilize Ground-fault Circuit Interrupter (GFCI) protection to supply power to devices in wet/damp locations.
- Check lamps in overhead projectors for accumulation of dust which may present a fire hazard.

### Recreational Equipment (i.e., playgrounds, bleachers, walking surfaces)

- Inspect playground equipment components to confirm appropriate depth of protective surfacing material and equipment is free of stinging insect nests.
- Conduct preventative maintenance to correct any safety hazards and repair/replace components in accordance with the manufacturer's recommendations and consensus standards.
- Bleachers and grandstands should be inspected annually by a competent person.
- In addition, an engineer, architect, or manufacturer representative should conduct an inspection once every two years.
- Ensure stage rigging is secured to prevent use by unauthorized personnel and annually inspected by a competent third-party vendor.

Conducting a visual inspection prior to placing idle equipment back into services is only effective if all unsafe conditions are promptly corrected to mitigate potential work-related injuries and liability exposure.

In the event permanent corrective actions cannot be immediately completed, temporary preventative measures such as lock-out/tag-out (LOTO) procedures should be initiated to place the equipment out of service and prevent use until repairs and/or replacement can be completed.

## SAFETY AROUND THE SHOP: RADIAL ARM + POWERED MITER BOX SAWS

by Derek Neubauer, risk control consultant

This is the third in a four-part series to introduce and review safety precautions that should be taken for the most used equipment in the shops. In this issue, we will discuss **radial arm saws** and their most common replacement, the **powered miter box saw**.

These types of saws are used for rough cuts of wood using either an outward (toward the user – radial arm saw) or a chopping motion (miter box saw). Due to the chopping motion of the miter box saw, it is commonly referred to as a chop saw.

Radial arm saws are slowly being replaced by the miter box saw, due to the miter saw's light weight, portability and slightly safer operation. However, radial arm saws are still in use, either due to personal preference or slightly better performance on angled cuts.

At the high school level, radial arm saws and miter saws can be used by both staff (instructor, maintenance staff) and students in maintenance shops, wood shops, metal shops, STEAM labs and art rooms. At the middle school/junior high school level, these saws are not as popular in shops depending on curriculum.

Potential injuries can include cuts, amputations, and eye and head injuries.

#### Risks

• Contact injuries are the most common type of injury. This occurs when a body part comes in contact with the blade.

- Eye and face injuries can occur from a lack of guarding, improper use/selection of personal protective equipment and entanglement with gloves or improper clothing during use.
- A radial arm saw without a properly-operating automatic return device allows the blade to spin nearer the user.

#### **Best Practices:**

- The instructor should provide **training** on the equipment prior to use.
- **Proper eye protection or face shields** should be provided and used during all times of operation. Gloves and loose clothing should not be used.
- Hands and fingers should always stay clear of the cutting areas during operation.
- Ensure all guards and the automatic return device are installed and working properly before operation.
- Never cut pieces of wood less than six inches.
- Never work with material that has **nails or screws**.
- Use clamps when possible to secure the work.
- The instructor should **check moving parts and blades** on a periodic basis.

With proper training, personal protective equipment, and required machine guarding, the radial arm saw and miter box saw will remain an integral part of the school's vocational program.



300 Sterling Parkway, Suite 100 Mechanicsburg, PA 17050 Toll-free 844-480-0709 CMRegent.com



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