E-PME *Enlisted* PROFESSIONAL MILITARY EDUCATION

Workspace Safety Precautions 3.G.02

Learning Objective(s): Observe your workspace and **LIST** any safety discrepancies.

Why You Need to Know This

As your employer, the Coast Guard is obligated by law to provide you with a safe and healthy work environment. Shipboard life, shipyard industrial activities, and aviation maintenance areas, especially, are inherently dangerous. The Coast Guard is dedicated to enhancing readiness by ensuring every Coast Guard workplace, both ashore and afloat, is as free from hazards as possible. The goal of the Coast Guard's safety program is to train personnel in safe practices and procedures and continually provide recommendations for improving safety conditions. However, the responsibility for workplace safety and health is delegated to each Coast Guard member, regardless of job level. **In other words, safety is everyone's responsibility.** The acceptance of this responsibility is a condition of employment.

This lesson will provide you with the information you will need to know in regards to workspace safety precautions.

Topics Covered

This section will cover the following topics:

- Wearing Personal Protective Equipment (PPE)
- Using Hand or Power Tools
- Working on or Around Machinery
- Entering or Working in Confined Spaces
- Working on or Around Electrical Equipment
- Handling Flammable or Toxic Materials
- Working with Bio-Hazardous Material
- Working Aloft
- Working Over the Side

At the end of this lesson you will be required to participate in a learning activity. You are encouraged to first review the learning activity and the sign off requirements located in the "**You and Your Supervisor**" section of this lesson. Reviewing this information before you begin the lesson will allow you to take proper notes and focus on key learning points.

Wearing Personal Protective Equipment (PPE)

Personnel Protective Equipment (PPE) which includes, eye, face, and ear protection should be worn at all times when working with tools, and especially when using power tools or chemicals.

Using Hand and Power Tools

While manufacturers produce tools with safety in mind, they are not hazard-free. Most people do not think of hand and power tools as being dangerous. Unfortunately, many people sustain serious injuries each year from hand and power tools. Most hazards strike without warning!

Safety precautions are necessary to remove or prevent these hazards. Hand and power tools are dangerous in part, because everyone is so familiar with them. The following precaution should be observed:

- **Hand Tools:** Hand tools are non-powered: axes, hammers, screwdrivers, etc. The greatest hazards posed by hand tools result from misuse and improper maintenance. Misuse involves using tools for things that they are not designed or intended for that purpose. Some examples include using:
    - A screwdriver as a chisel, which can break the screwdriver tip sending fragments flying. These fragments can hit the user or others nearby.
    - Hammers or axes with loose, splintered, or cracked wooden handles. These handles can cause the head to fly off.
    - Sprung wrench jaws, which can slip.

- **Power Tools:** With electric power tools, there are still more applicable safety precautions to consider. These involve:
    - Cords, plugs, hoses, and tool casings
    - Grounding and insulation
    - Personal protective equipment

- **Cords, Plugs and Tool Casings:** Abiding by the following rules will help prevent injuries:
    - Always inspect cords, plugs, and tool casings before use
    - Never carry tools by the cord or hose
    - Never yank cords or hoses from receptacles
    - Keep cords and hoses away from heat, oil, and sharp edges.
    - Always disconnect tools when not in use, before servicing, and when changing accessories like blades, bits, and cutters

Using Hand and Power Tools (Continued)

- **Grounding and Insulation:** To protect the user from shock, tools must have a 3-wire cord with grounding and be used with grounded receptacles (NEVER remove the third prong from the plug).

  Double insulated tools do not require a three-pronged plug.

Basic Safety Rules: Hazards associated with hand and power tools can be alleviated by following six basic safety rules:

1. Keep all tools in good condition with regular maintenance and proper guards in place.
2. Use the right tool for the job.
3. Examine each tool for damage before use.
4. Operate according to the manufacturer's instructions.
5. Provide and use the proper protective equipment (This cannot be over emphasized).
6. Identify defective tools or equipment following appropriate tag-out procedures and immediately remove from service (For example, if an electric drill is missing the grounding prong from the plug, tag it and remove it from service until it can be repaired. If it cannot be repaired, then properly dispose of it).

Working on or Around Machinery

Moving machine parts can cause severe workplace injuries. Moving equipment such as crushed fingers, hands, or arms; amputations; burns; and blindness, just to name a few.

When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must be either controlled or eliminated by installing safeguards. These safeguards are essential for protecting workers from needless and preventable injuries.

The most common hazards are flywheels, shafts, clutches, and winches. All of these require safeguards securely fixed to protect workers from contacting them while they are in motion.

Note: A good rule to remember is that any machine part, function, or process that can hurt you MUST be safeguarded.

Entering or Working in Confined Spaces

Tanks, voids, and unventilated spaces are classified as confined spaces. Confined spaces are any areas that have all three characteristics:

- Large enough and so configured that an employee can bodily enter and perform assigned work.
- Limited or restricted means for entry and exit.
- Not designed for continuous human occupancy or worked in on a full-time basis.

A **Closed Compartment Opening Request Form** is not required to open confined spaces. However, it can be an effective tool to communicate the need to open a confined space. Before opening confined spaces:

- Tag out all systems connected to affected space and make entry into DC closure log as per Coast Guard regulations manual. M5000.3 (series).
- Ensure a Gas Free Engineer (GFE) is present at the space opening prior to opening space. Ventilate space for 24 hours.

Before an employee enters <u>any</u> confined space, the internal atmosphere must be tested with a calibrated direct-reading instrument by a certified Gas Free Engineer (GFE). Once the GFE has tested the space work will continue based on the findings of the atmospheric tests.

NOTE: After confined space is opened and tested, GFE will issue a gas free certificate stating the condition of the confined space and the safety precautions to be observed while working in the confined space. Ensure that the gas free certificate is posted at all space openings, bridge or quarterdeck, and EOW log.

Confined space entry is one of the most dangerous work evolutions that Coast Guard members and contractors are asked to perform. Working in confined spaces has many hazards and conditions not found in a typical work environment.

Each confined space has unique contents, configuration, ventilation, temperature variations, etc., and each of the space's hazards can affect the others. Some spaces present entrapment hazards; others contain atmospheric hazards; some contain both.

Entering or Working in Confined Spaces (Continued)

All confined spaces are to be considered hazardous until proven otherwise. Low oxygen, explosive vapors, and toxic fumes are the most common finding upon initial testing of a confined space. Confined spaces are either a:

- **Non-permit confined space**. A non-permit confined space does not contain hazards or potential hazards. Non-permit confined spaces do not require special requirements for entry.

- OR -

- **Permit-required confined space.** A permit-required confined space contains or has potential to contain:

  - A known or potentially hazardous atmosphere (i.e., fuel tanks, CHT tanks, ballast tanks, etc.).
  - Material capable of engulfing entrants (soil, sand, grain, woodchips, etc.).
  - An internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a dangerously sloping floor.
  - Any other recognized serious safety or health hazard.

Working On/Around Electrical Equipment

Unsafe work practices cause most electrical accidents, so employees must observe safe work practices at all times. **Electrical safety basics can prevent injuries** to you and your shipmates:

- Never work on electrical equipment alone.
- Stay a prescribed distance from exposed energized lines (Many electrical fatalities are caused by the operation of materials handling equipment, e.g., cranes, near overhead power lines, or operating excavation equipment, e.g., backhoes, near underground power lines).
- Do not use electrical equipment when the user, work surface, or equipment is damp or wet, unless the equipment is specifically listed for this application, and the workers are protected against electrical shock (lockout tag-out, insulating gloves, insulating mats, etc.).
- Ensure all electrical equipment is grounded.
- Implement a lockout tag-out system to de-energize and secure electrical equipment.
- Properly secure locking-type connectors after connection.
- Handle only the insulated portion of energized plug and receptacle connections.

Handling Flammable or Toxic Materials

Personal Protective Equipment (PPE) is required when handling flammable or toxic materials. Before using a product, review container warning labels and respective **Material Safety Data Sheets (MSDS)**.

The MSDS provides information on proper use, potential hazards, protective measures to be taken, and emergency first aid procedures to be followed. The MSDS for a specific material might specify certain types of hand, face, and respiratory protection.

For example, following is a MSDS excerpt for a general purpose cleaner:

- **Respiratory Protection:** NIOSH CARTRIDGE RESPIRATOR WHEN VAPORS EXCEED TLV
- **Ventilation:** LOCAL EXHAUST RECM BY MFG
- **Protective Gloves:** RUBBER, NEOPRENE OR LATEX
- **Eye Protection:** CHEMICAL GOGGLES

For your safety and the safety of others, ensure the PPE requirements listed are strictly adhered to.

Working with Bio-Hazardous Material

Coast Guard resources, e.g., helicopters, small boats, and cutters, are routinely dispatched to transport persons with serious injuries or life-threatening illnesses. Frequently, the interior decks and rescue/medical equipment are contaminated with biohazards such as bodily fluids.

Each unit is required to have a written plan for the decontamination of resources and protection of personnel from biohazard material. The plan should establish procedures for decontaminating aircraft, vessels, and equipment after exposure to biohazard wastes. Proper completion of these procedures protects personnel from exposure to infectious agents such as Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

Universal precautions shall be used by all members whenever the potential for exposure to blood borne pathogens exists. Personnel shall adhere rigorously to infection control precautions to minimize risk of exposure to all blood and other body fluids, all of which shall be considered infectious materials.

Working with Bio-Hazardous Material (Continued)

Universal precautions are an infection control approach developed by the Center for Disease Control (CDC) that assumes every direct contact with body fluids is potentially infectious. The precautions require that employees who may be exposed to direct contact protect themselves as though such body fluids were HIV or HBV infected.

Potentially infectious blood and body fluids include blood, semen, vaginal secretions, amniotic fluid, cerebrospinal fluid, joint (synovial) fluid, chest (pleural) fluid, abdomen (peritoneal) fluid, and heart (pericardial) fluid.

These fluids may be released and mixed with blood as the result of an injury or other natural process. Since it is difficult to distinguish between body fluid types, ALL body fluids are considered potentially infectious and Universal Precautions must be taken.

Protective measures to eliminate or minimize employee exposure to infectious materials include:

- Engineering controls
- Work practice controls
- Use of personal protective equipment to minimize the risk of acquiring HIV, HBV, and other blood borne diseases in the occupational setting.
- Appropriate personnel trained in the application of universal precautions.

Working Aloft

Personnel may go aloft only to perform necessary work or duty. Before sending a person to work aloft, a **Man Aloft Chit** must be completed specifying the safety procedures that will be in place for each specific evolution, this is signed at least by the OOD to grant permission to go aloft. The chit is routed to the various division involved and must be acknowledged by the appropriate signature.

Working Over the Side

Numerous safety precautions are applicable when working over the side or aloft using a Bos'n chair or stage. A few safety measures are given here. Consult your unit's SOP to outline your unit's particular requirements.

- Obtain permission from the OOD
- Notify the Engineer Officer who shall then ensure that the propeller is not turned over and overboard discharges are secured near the working parties.

Working Over the Side (Continued)

- A PFD will be worn when working over the side as mandated by the Coast Guard Rescue and Survival Systems Manual, COMDTINST M10420.10 (series).
- A separate crewmember will be delegated as a safety observer.
- Rig a manrope or Jacobs ladder at one end of the stage.
- Rig a safety runner (second line) to both ends of the stage when working over a dry-dock bed.
- Check the position of the staging to ensure it's clear of scuppers or overboard discharges.
- Only use pneumatic tools; do NOT use electric tools.

Learning Activity

To successfully complete this requirement you will need to observe your workspace and list any safety discrepancies with work place supervisor.

For You and Your Supervisor

In order to meet the sign-off requirement for this lesson **YOU** must perform the following:

1. Prior to meeting with your supervisor review the contents of this lesson and organize your thoughts in writing.
2. Observe your workspace and list any safety discrepancies with your workplace supervisor.

Before signing off on this requirement your **SUPERVISOR** must:

1. Make sure the member can identify workspace safety discrepancies.
2. Provide the member with corrective feedback and answer any questions they may have related to this topic.
3. Sign off the check-off sheet on the Record of Enlisted Professional Military Education (E-PME) Performance Requirements.

References

The references used to develop this lesson can be found at CG Directives (CG-612), www.uscg.mil/directives:

- Shipboard Regulations Manual, COMDTINST M5000.7 (series)
- Safety and Environmental Health Manual, COMDTINST M5100.47 (series)
