

Title: Machine Guarding – (Hands-on)

Overview

Participants will gain knowledge and understanding of the job hazards to employees working around unguarded equipment and how the OSHA regulations for general industry, construction, and agriculture industries are intended to protect workers from amputations, lacerations, crushing injuries, abrasions and death. The participants will gain this knowledge by presentation of machine guarding lecture, including open discussion of what methods their employers are using to guard rotating and transverse motions and cutting, punching, shearing, and bending operations. The hands-on element of the training will provide participants to examine the various types of guarding methods (fixed, interlocked, adjustable, self-adjusting).

Objective

Participants will:

- Understand the risk hazards to employees working around unguarded equipment
- Gain knowledge and understanding of the machine guarding standards for general industry, construction, and agriculture industries.
- Use of hands-on guarding methods to re-inforce a better understanding of the various types of guarding methods and how they can implement and/or improve their current methods of machine guarding, including how best to guard any unguarded equipment.

Materials

- White board with markers/eraser
- Note pad with pencils
- Hands-on guarding methods
 - Belt-pulley trainer
 - Shaft trainer
 - Expanded metal with various size openings
 - Adjusting guard on vertical band saw and grinder
 - Bench grinder
 - Two grinding wheels
 - Bench vertical bands saw
 - Materials with various thickness
 - Bench drill press
 - Adjustable plexi-glass guard
 - Drill press self-adjusting guard
 - Paint shaker with interlock

Lesson Directions:

1. Fixed Guard (30 minutes – lapse time: 30 minutes)
 - a. Un-guarded belt-pulley on stand with design requirements for distance that guard must be from the in-going nip points.
 - b. Participants will determine maximum opening size for guard based on the design requirement and sketch a guard for the application.
 - c. Un-guarded shaft connected with pillow bearing on a base with grease servicing requirements.
 - d. Participants will discuss if the projected ends of the shaft are required to be guarded and sketch how best to guard, or other options available
2. Adjustable Guard: (45 minutes – lapse time: 75 minutes)
 - a. Bench grinder and two grinding wheels: one good and one defective
 - b. Participants will make proper adjustments for the tool rest and tongue guard
 - c. Participants will perform a ring test to determine which grinding wheel is good.
 - d. Vertical band saw with materials of various thickness
 - e. Participant will adjust guard for the various material thicknesses
 - f. Drill press
 - g. Participant will evaluate various method for guarding rotating motion
3. Self-adjusting Guard (15 minutes – lapse time: 90 minutes)
4. Interlock (30 minutes – lapse time: 120 minutes)
 - a. Paint Shaker
 - b. Participants will explore how to interface interlocks to safe guard employees

Evaluation

Participants will fill out a training survey to rate the value of the training, including rating the materials, training environment, and instructor. The survey will be used to make improvements to future training classes.

Assess Participates

- Pre-test to test general knowledge in regards to machine guarding
- Post-test to document knowledge achieved

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