

Machine Guarding Mechanical Hazards

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Machine Guarding Mechanical Hazards

Each piece of machinery has its own unique mechanical and non-mechanical hazards. Machines can cause severe injuries; amputations, fractures, lacerations or crushing injuries. Machines can also cause minor injuries such as bruises, abrasions, sprains, strains, burns or cuts.

Mechanical Hazards

Examples of mechanical hazards that can hit, grab or trap an operator are:

- **Hazardous Motions**—including rotating machine parts, reciprocating motions (sliding parts or up/down motion), and transverse motions (materials moving in a continuous line).
- **Points of Operation**—the areas where the machine cuts, shapes, bores or forms the stock being fed through it.
- **Pinch Points and Shear Points**—areas where a part of the body can be caught between a moving part and a stationary object.

A wide variety of mechanical motions and actions may present hazards to the worker. The basic types of hazardous mechanical motions and actions are:

- **Hazardous Motions**
 - Rotating
 - Reciprocating
 - Traversing
- **Hazardous Action**
 - Cutting
 - Punching
 - Shearing
 - Bending

Examples of non-mechanical hazards that can injure operators, or others in the area, include chips, splashes, sparks or sprays that are created as the machine is running.

Machine entrapment injuries can be severe. Follow your company's procedures for calling emergency medical personnel and for reporting the injury to management.

Machine operation instructions can also lead to less risk of injury because the instructions explain the machine's operations and how to prevent, or at least recognize, a malfunction.

Employees who follow the machine's operating instructions ensure that the machine is being run correctly and safely. This includes all machine safety features and guards.

Employee Training

Although OSHA does not require specified training under the machine guarding regulations, the General Duty Clause requires that employers provide a safe work environment. Employees who understand mechanical hazards can protect themselves from those hazards.

Training Tips

- Select which handout you will use and review it prior to training.
- Review 29 CFR 1910, Subpart O—Machinery and machine guarding.
- Using the employee handout, review the types of mechanical guards.
- Describe the types of guards in place at your facility, in a particular department or on a specific piece of equipment.
- Discuss any injuries or close calls that your machine operators or mechanics have had.
- Explain the importance of doing a machine inspection to check for properly working safety devices prior to starting the machine or when changing shifts.

For more information see 29 CFR 1910 Subpart O—Machinery and machine guarding.

Machine Guarding Mechanical Hazards Handout 1

Each piece of machinery has its own unique mechanical and non-mechanical hazards. Machines can cause severe injuries such as, amputations, fractures, lacerations or crushing injuries. Machines can also cause minor injuries such as bruises, abrasions, sprains, strains, burns or cuts.

Mechanical Hazards

Examples of mechanical hazards that can hit, grab or trap an operator are:

- Hazardous motions.
- Points of operation.
- Pinch points and shear points.

There are different types of hazardous mechanical motions and actions:

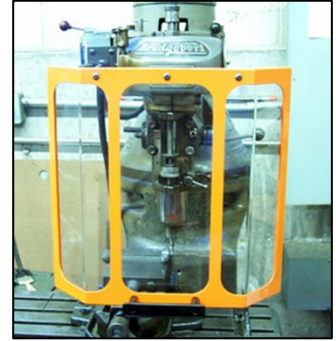
- Hazardous motions such as rotating parts, reciprocating parts or traversing parts.
- Hazardous actions such as cutting, punching, shearing or bending.

Non-mechanical Hazards

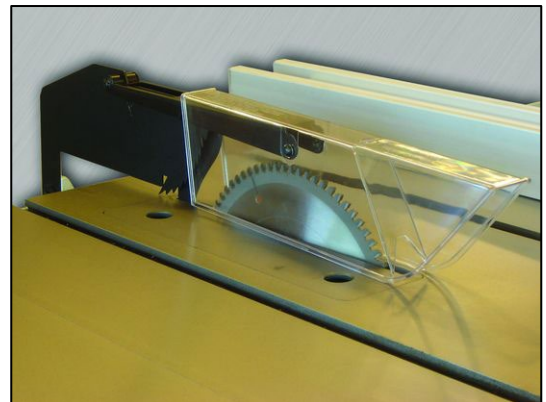
There are also non-mechanical hazards that can injure operators, or those nearby, including, flying chips, splashes, or sprays that are created when the machine is running.

Operating Instructions

Follow the machine's operating instructions to ensure that the machine is being run correctly and safely. Understand how the machine works, and you will reduce your risk of injury.



A guard helps to protect the operator.



The guard on the table saw deflects chip from flying into the operator's face and eyes.

Machine Guarding Mechanical Hazards Sign-Off Sheet

The employees of _____ Company Name _____, have taken part in a training session Machine Guarding Mechanical Hazards. The session covered:

- Types of mechanical hazards.
- Mechanical motions and actions which prevent hazards.
- The need to ensure that machine guards are in place and operating.
- How proper machine operation ensures worker safety.

DATE OF TRAINING: _____

FACILITY: _____

EMPLOYEE SIGNATURE

PRINT NAME

Supervisor's Signature

Machine Guarding Keeps You Safe Handout 2

Machine guards are your first line of defense against injuries caused by machine operations. Each machine must have adequate safeguards to protect the operators from the machine's hazards.

FIVE GENERAL METHODS OF SAFEGUARDS

GUARD

- These are physical barriers that prevent contact. They can be fixed, interlocked, adjustable or self adjusting.

DEVICES

- These limit or prevent access to the hazardous area. These devices can be: presence-sensing devices, pullback or restraint straps, safety trip controls, two hand controls or gates.

AUTOMATED FEED & EJECTION MECHANISMS

- These eliminate the operator's exposure to the point of operation while handling stock.

MACHINE LOCATION or DISTANCE

- This method removes the hazard from the operator's work area.

MISCELLANEOUS AIDS

- These methods can be used to protect both operators and people in the area. Examples include: shields to contain chips, sparks or sprays; holding tools that an operator uses to handle materials going into the point of operations; and awareness barriers to warn people about the hazards in the area.

can be done without removing or bypassing a guard may be done without taking any extra precautions.

Ask your supervisor about extra precautions that need to be taken if routine or repeated adjustment, tool changes or other minor work requires that a guard be removed or bypassed.

Know When to Use Lockout/Tagout

If unexpected machine start-up could cause injury, use a lockout/tagout program. Any major repair or tool change that would expose workers to the machine's hazards requires lockout/tagout. For example, if a machine gets jammed, and a guard has to be removed or bypassed in order to remove the jam, the machine needs to be locked out to protect the person who is reaching into the point of operation to clear it.

Responding to Injuries and Accidents

Machine entrapment injuries can be severe. Follow your company's procedures for reporting the injury to management and for calling emergency medical personnel.

Missing or Damaged Guards

Report a machine that is missing a guard. It is unsafe to operate the machine until the guard is replaced. If your inspection shows a damaged guard, also report it. The damaged guard may not be providing adequate protection. If a guard becomes damaged while you are operating the machine, stop the machine and have the guard inspected. It may need to be replaced or repaired before you can continue to work safely.

Maintenance Allowed During Normal Operation

Routine adjustments or lubrication that

Machine Guarding Keeps You Safe Sign-Off Sheet 2

The employees of _____ Company Name _____, have taken part in a training session Machine Guarding Keeps You Safe. The session covered:

- Methods of machine guarding.
- Missing or damaged guards, and how to report them.
- Maintenance during normal operations, and when to use lockout/tagout.
- Responding to injuries and accidents.

DATE OF TRAINING: _____

FACILITY: _____

EMPLOYEE SIGNATURE

PRINT NAME

Supervisor's Signature