



# Machine Guarding

## Protection for Workers

### Overview

Each piece of machinery has its own unique mechanical and non-mechanical hazards. Machines can cause a variety of injuries ranging from minor abrasions, burns or cuts to severe injuries such as fractures, lacerations, crushing injuries or even amputation. Machine guards are your first line of defense against injuries caused by machine operation. Each machine must have adequate safeguards to protect operators and other employees in the immediate work area from hazards created by ingoing nip points, rotating parts, sparks and flying debris.



*Pinch points and shear points would include power transmission apparatuses such as: flywheels, pulleys, belts, chains, couplings, spindles, cams, gears, connecting rods and other machine components that transmit energy.*

Having an understanding of how a machine works, and how the guards can protect you, will result in a reduced risk of injury.

As an employee you may become accustomed to doing things in a certain way or have tasks flowing a certain way and grow oblivious to the hazards that may be ever present around your piece of equipment. With complacency there is a sense of numbness that develops to hazards. Employees must be on guard and not become complacent in the workplace.

### All guards should:

**PREVENT CONTACT** – machine guards must provide a physical barrier that prevents the operator from having any part of his/her body in the “danger zone” during the machine’s operating cycle;

**BE SECURED IN PLACE** – machine guards must be secure and strong so that workers are not able to bypass, remove, or tamper with them.

**CREATE NO NEW HAZARD** – A safeguard defeats its own purpose if it creates a hazard of its own such as a shear point, a jagged edge, or an unfinished surface which can cause a laceration. If possible, one should be able to lubricate the machine without removing safeguards.

**NOT INTERFERE WITH THE MACHINE OPERATION** – Any safeguard which impedes a worker from performing the job quickly and comfortably might soon be overridden or disregarded. Proper safeguarding can actually enhance efficiency since it can relieve the worker’s apprehensions about injury.

### Hazardous Mechanical Motions:

**HAZARDOUS MOTIONS** – including rotating machine parts, reciprocating motions (sliding parts or up/down motions), and transverse motions (materials moving in a continuous line);

**POINTS OF OPERATION** – the areas where the machine cuts, shapes, bores, or bends the stock being fed through it;

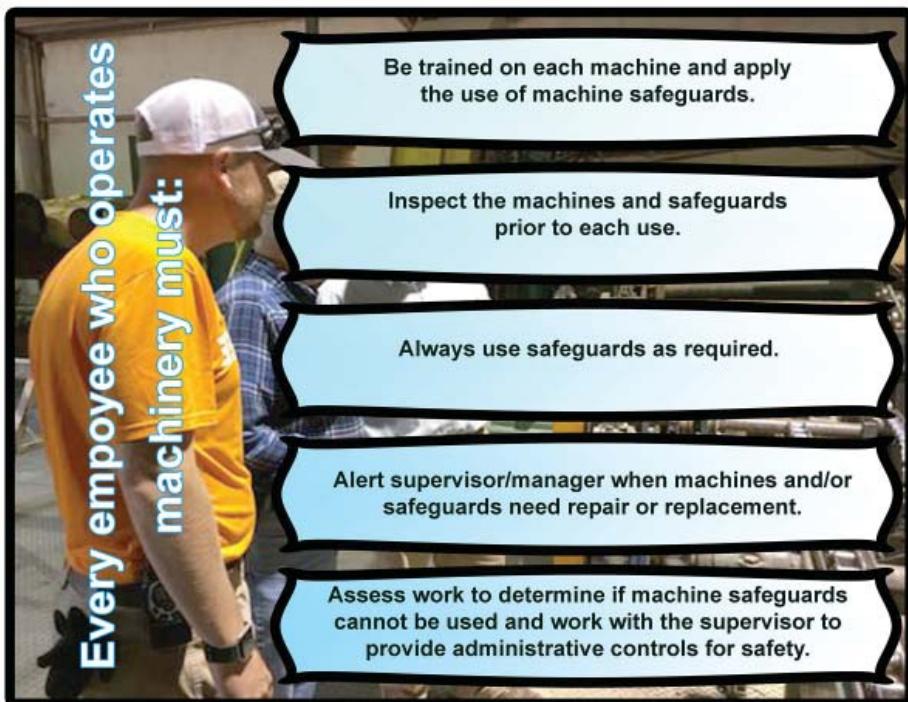
**PINCH POINTS AND SHEAR POINTS** – the area where a part of the body or clothing could be caught between a moving part and a stationary object.

There are also non-mechanical hazards that can injure machine operators or personnel working in the vicinity of machinery. These hazards include flying splinters, chips or debris; splashes, sparks or sprays that are created when the machine is operating. These hazards can be prevented through the use of machine guarding and wearing/use of required personal protective equipment (PPE).

## Methods of Safeguarding

There are five (5) general types of machine safeguards that can be used to protect workers and personnel in the immediate vicinity of machinery.

1. **Guards** – these are physical barriers that prevent contact. They can be fixed, interlocked, adjustable, or self-adjusting.
2. **Devices** – these limit or prevent access to the hazardous area. These can be presence-sensing devices, pullback or restraint straps, safety trip controls, two-hand controls, or gates.
3. **Automated Feeding and Ejection Mechanisms** – These eliminate the operator's exposure to the point of operation while handling materials.
4. **Machine Location or Distance** – this method removes the hazard from the operator's work area.
5. **Miscellaneous Aids** – these methods can be used to protect both operators and people in the immediate vicinity of operating machinery. Examples include shields to contain chips, sparks, sprays or other forms of flying debris; holding tools that an operator can use to handle materials going into the point of operation; and awareness barriers to warn people about hazards in the area.



## SAFETY TRAINING SIGN-IN

Company Name: \_\_\_\_\_ Date: \_\_\_\_\_

Subject: Machine Guarding

The following employees participated in this training.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## True or False

1. An employee trained on his primary machine can fill in as the operator of another machine because he knows his machine's safeguards. T or F
2. If a new guard causes interference with you operating the machine you can take it off as long as you replace it at the end of the shift. T or F
3. Hazardous motions, points of operation, and pinch points are the mechanics of hazards that must be guarded against. T or F
4. When you are protected by the safeguards and others in the work area are protected also, you are good to operate your machine. T or F
5. Complacency can cause accidents. T or F

1. F 2. F 3. T 4. T 5. T

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