# MACHINERY AND MACHINE GUARDING

## A. Introduction

The Machine Guarding Program is designed to protect employees from hazards of moving machinery. All hazardous areas of a machine shall be guarded to prevent accidental "caught in" situations.

## B. Requirements of Employees

- Inspect the machine prior to use.
- Do not remove machine guards unless equipment is locked and tagged.
- Replace machine guards properly.
- Report machine guard problems to your supervisor immediately.
- Do not operate equipment unless guards are in place and functional.
- Only trained authorized employees may remove machine guards.

## C. Definition of Terms

- **Guards**: Barriers that prevent employees from contact with moving portions or parts of exposed machinery or equipment which could cause physical harm to employees.
- **Enclosures**: Mounted physical barriers which prevent access to moving parts of machinery.
- **Point-of-Operation**: The area on a machine or item of equipment, where work is being done and material is positioned for processing or change by the machine.
- **Power Transmission**: Any mechanical parts which transmit energy and motion from a power source to the point-of-operation. Example: Gear and chain drives, cams, shafts, belt and pulley drives and rods. NOTE: Components which are seven feet or less from the floor or working platform shall be guarded.
- **Nip Points**: In-running machine or equipment parts, which rotate towards each other, or where one part rotates toward a stationery object.
- **Shear Points**: the reciprocal (back and forth) movement of a mechanical part past a fixed point on a machine.
- **Reciprocating**: Reciprocating motions are produced by the back and forth movements of certain machine or equipment parts. This motion is hazardous, when exposed, offering pinch or shear points to an employee. A fixed enclosure such as a barrier guard is an effective method against this exposure.
- **Transverse Motions**: Transverse motions are hazardous due to straight line action and in-running nip points. Pinch and shear points also are created with exposed machinery and equipment parts operating between a fixed or other moving object. A fixed or hinged guard enclosure provides protection against this exposure.
- **Cutting Actions**: Cutting action results when rotating, reciprocating, or transverse motion is imparted to a tool so that material being removed is in the form of chips. Exposed points of operation must by guarded to protect the operator from contact with cutting hazards, being caught between the operating parts and from flying particles and sparks.
- **Shearing Action**: The danger of this type of action lies at the point-of-operation where materials are inserted, maintained and withdrawn. Guarding is accomplished through fixed barriers, interlock, remote control placement (two-hand controls), feeding or ejection.

## D. Machine Guarding Requirements

- Guards shall be affixed and secured to the machine where possible.
- A guard shall not offer an inherent accident hazard.
- If the employee can move over, under, around or through to make contact with the equipment part and become injured the equipment is not properly guarded.
- The point-of-operation of machines whose operation exposes an employee to injury shall be guarded.
- Revolving drums, barrels and containers shall be guarded by an enclosure that is interlocked with the drive mechanism.
- When the periphery of fan blades is less than seven feet above the floor or working level, the blades shall be guarded with a guard having openings no larger than ½ inch.
- Machines designed for a fixed location shall be securely anchored to prevent walking or moving. Example: drill presses, bench grinders, etc.

## E. General Requirements for Machine Guards

- Guards must prevent hands, arms or any part of an employee's body from making contact with hazardous moving parts. A good safeguarding system eliminates the possibility of the operator or other employee from placing parts of their bodies near hazardous moving parts.
- Employees should not be able to easily remove or tamper with guards. Guards and safety devices should be made of durable material that will withstand the conditions of normal use and must be firmly secured to the machine.
- Guards should ensure that no objects can fall into moving parts. An example would be a small tool which is dropped into a cycling machine which could easily become a projectile that could injure others.
- Guard edges should be rolled or bolted in such a way to eliminate sharp or jagged edges.
- Guards should not create interference that would hamper employees from performing their assigned tasks quickly and comfortably.
- Lubrication points and feeds should be placed outside the guarded area to eliminate the need for guard removal.

## F. Training

All employees shall be provided training in the hazards of machines and the importance of proper machine guards. Machine safety and machine guarding rules will be thoroughly explained as part of the department specific new hire orientation program and annually as refresher safety training.