

<b><i>HEALTH AND SAFETY MANUAL</i></b>		
Title: Machine Guarding		
Approved by: Greg Savoy		Rev. 1/1/08

1 Purpose/Scope:

The purpose of the Machine Guarding Program is to establish procedures to protect employees from hazards of moving machinery.

This program applies to all Company employees and equipment that is owned leased or serviced. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Company employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

2 Definitions/Responsibilities:

2.1 Definitions:

- 2.1.1 Guards - Barriers that prevent Employees from contact with moving portions or parts of exposed machinery or equipment, which could cause physical harm to the employees.
- 2.1.2 Enclosures - Mounted physical barriers, which prevent access to moving parts of machinery or equipment.
- 2.1.3 Point-of-Operation - The area on a machine or item of equipment, where work is being done and material is positioned for processing or changes by the machine.
- 2.1.4 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 (7) feet or less from the floor or working platform, shall be guarded.*

2.1.5 Nip Points - Where equipment parts rotate towards each other, or where one part rotates toward stationery object.

2.1.6 Shear points - The reciprocal (back and forth) movement of a mechanical part past a fixed point on a machine.

## 2.2 Responsibilities:

### 2.2.1 Management:

- Ensure all machinery is properly guarded
- Provide training to employees on machine guarding requirements.
- Ensure newly purchased equipment meets the machine guard requirements prior to use

### 2.2.2 Supervisors:

- Train assigned employees on the specific machine guard rules in their areas
- Monitor and inspect to ensure machine guards remain in place and functional
- Immediately correct machine guard deficiencies

### 2.2.3 Employees:

- Do not remove machine guards unless equipment is locked and tagged out of service.
- Replace machine guards promptly and properly.
- Report machine guard problems to supervisors immediately.
- Do not operate equipment unless guards are in place and functional (except for certain required tests).
- Only trained and authorized employees may remove machine guards.

## 3 Requirements:

### 3.1 General Requirements:

3.1.1 One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks.

- Examples of guarding methods are: barrier guards, two-handed tripping devices, electronic safety devices, etc.

3.1.2 Guards shall be affixed and secured to the machine where possible.

3.1.3 A machine guard shall not become a hazard in itself.

3.1.4 The point-of-operation of machines whose operation exposes a worker to injury shall be guarded.

- 3.1.5 When periphery of fan blades are less than 7-feet above the floor or working level, the blades shall be guarded with a guard having openings no larger than 1/2 inch.
- 3.1.6 Machines designed for a fixed location shall be securely anchored to prevent walking or moving.
- For example: Drill Presses, Bench Grinders, etc.
- 3.1.7 Guards shall prevent hands, arms or any part of a worker's body from making contact with hazardous moving parts.
- 3.1.8 Hazardous moving parts may include saw blades, grinding wheels, belts, shafts, couplings and fan blades, Including shafts, couplings, belts, and fan blades on compressor packages.
- 3.1.9 Guards shall protect workers from flying debris generated by equipment / machinery such as wood chips or metal shavings.
- 3.1.10 Guards shall protect the worker from materials "kicking back".
- 3.1.11 Guards on saws shall only expose the part of the blade making contact with the work-piece.
- 3.1.12 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 must not be easily removed or tampered with.
- 3.1.13 Guards shall ensure that no objects could fall into moving parts.
- Example: a small tool, which is dropped into a cycling machine, could easily become a projectile that could injure others.
- 3.1.14 The edges of guards shall be rolled or bolted in such a way to eliminate sharp or jagged edges.
- 3.1.15 Guards shall not create interference, visually and physically, which would hamper workers from performing their assigned tasks.
- 3.1.16 Where possible, lubrication points and feeds shall be placed outside the guarded area to eliminate the need for guard removal.
- 3.1.17 Guards must be inspected and adjusted on a continuous basis.
- Example: bench grinder, which allows a maximum of one-eighth inch opening between the work rest and the wheel.

- 3.1.18 The Company's owned and client owned equipment/ machinery shall be locked-out and tagged-out as per Company Lockout/Tagout program before guards are removed.
- 3.1.19 Guards shall be in place to protect the worker from injury during equipment cycling, e.g., mechanical presses.
- 3.1.20 When performing internal work on a large natural gas engine, the flywheel shall be secured in a manner to prevent accidental cycling of flywheel / crankshaft.

3.2 Training:

- 3.2.1 Awareness training shall be provided in the hazards of machines and the importance of proper machine guards.
- 3.2.2 Machine safety and machine guarding rules will be thoroughly explained as part of the new hire orientation program and annually as refresher safety training.

4 References:

- 4.1 29 CFR 1910.212, General Requirements for all Machines
- 4.2 29 CFR 1910.213, Woodworking Machinery
- 4.3 29 CFR 1910.215, Abrasive Wheels
- 4.4 29 CFR 1910.217, Power Presses
- 4.5 29 CFR 1910.219, Power Transmission

5 Exhibits:

None.