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## OSHA Machine Guarding

### Key Terms

A **device** is a mechanism that prevents injury by ensuring that the worker's hands are out of the danger zone when the machine's cycle is active.

**Feeding** is the process of adding or removing stock from a machine at the point of operation.

A **gate** is a barrier that must be closed and secured before a machine can begin its cycle.

A **guard** is a barrier that prevents access to dangerous areas.

An **in-running nip point** is a hazard caused by rotating machine parts. A nip point can occur in many places. First, and perhaps most obviously, nip points can occur between two parts of machinery which rotate in opposite directions and are in contact or in close proximity.

Additionally, they can occur between a rotating part and a tangentially moving piece, or between a rotating part and a fixed piece.

**Kickback** occurs when a saw blade catches on a piece of stock, throwing the stock back in the direction of the operator.

The **lockout/tagout** method is a procedure indicating that a machine is being worked on. This can be shown by either locking parts in place to prevent accidental energizing or by placing a highly visible tag on the machine to advise other employees not to activate the machine until the tag is removed.

A **pinch point** is any area other than the point of operation where clothing, body parts, or other objects can be caught in moving parts.

The **point of operation** is the area of the machine where work is performed on stock.

A **presence-sensing device** detects objects in the danger zone when light or radio waves are interrupted, or when an arm or probe cannot extend to its expected length due to an obstruction.

A **press** is a machine that shears, punches, or forms materials by cutting, shaping, and so forth.

A **pullback** is a device that withdraws the operator's hands when the machine cycle starts.

**Punching** is an action that occurs when a powered arm or ram forcefully impacts material.

A **push stick** is a tool used to move stock through a saw blade without the worker's hands coming in close proximity to the blade.

**Reciprocating movement** is repeated back-and-forth or up-and-down motion.

A **restraint** is a device that prevents the operator's hands from entering the danger zone by being attached or tethered to another surface.

A **safety guard** (or **safeguard**) is a feature designed to prevent dangerous contact of body parts or other objects with hazardous machinery, or to otherwise minimize the danger associated with a machine part.

A **safety trip control** is a device that is activated by putting pressure on a sensor due to a shift in body weight or deliberate action, shutting down the machine on contact.

**Shearing** is a method of trimming material by applying power to a single blade that cuts the material cleanly and evenly.

**Stock** is the material being worked with in a machine. Stock discussed in this course may include a variety of materials, including wood, metal, and plastic.

**Transversing movement** is movement in a continuous, straight line.

A **two-hand control device** requires both hands to operate a machine throughout the cycle.

A **two-hand trip device** requires both hands to activate a machine.

Regulations

29 CFR 1910.212

Machine Parts that Require Machine Guarding

Hazardous Motions

Hazardous Actions

Methods of Machine Guarding

Guards

29 CFR 1910.217(c) covering:

Fixed Guards

Interlocking Guards

Adjustable Guards

Self-adjusting Guards

Devices

29 CFR 1910.217(b&c) covering:

Presence-sensing Devices

Pullback Devices

Restraint Devices

Safety Trip Control Devices

Two-hand Control Devices

Two-hand Trip Devices

Gate Devices

Location and Distance Guarding Methods

Feeding and Ejection Methods

Saws and Potential Safeguards

Table Saws

Point of Operation Solutions 29 CFR 1910.213 (c)(1) and (d)(1) and (s)(9)

Other Moving Parts 29 CFR 1910.213(a)(12) and (a)(9)

Kickbacks 29 CFR 1910.213(c)(2) and (c)(3) and (s)(2)

Flying Particles 29 CFR 1910.213(s)(7)

Straight-line/Gang Rip Saws

Point of Operation Solutions 29 CFR 1910.213(g)(1-3), 29 CFR 1910.219, and 29 CFR 1910.213(h)(5)

Nip Points 29 CFR 1910.213(n) and (n)(3)

Flying Particles 29 CFR 1910.219, 29 CFR 1910.213(s)(1), 29 CFR 1910.213(s)(7), 29 CFR 1910.213(c)(2) and 29 CFR 1910.213(f)(2)

Cut-off Saws

Point of Operation Solutions 29 CFR 1910.213(g)(1-3) and 29 CFR 1910.219

Kickbacks and Flying Particles 29 CFR 1910.213(s)(1&7)

Band Saws

Point of Operation Solutions 29 CFR 1910.213 (i)(1-3) and 29 CFR 1910.219(d)

Radial Saws

Point of Operation Solutions 29 CFR 1910.213(h)(1,3,4) and 29 CFR 1910.213(g)(3)

Kickbacks 29 CFR 1910.213(h)(2&5)

Scroll Saws, Chop Saws, Miter Saws and Hand-held Saws

Point of Operation Solutions 29 CFR 1910.213(r)(4)

Circular saws 29 CFR 1926.304(d&f)

Presses and Brakes and Potential Safeguards

Mechanical Power Press

Full Revolution Clutch 29 CFR 1910.211(d)(5)

Part Revolution Clutch 29 CFR 1910.211(d)(6)

Hydraulic Presses

Point of Operation Solutions 29 CFR 1910.212(a)

Additional Safety Measures 29 CFR 1910.219

Pneumatic Presses

Point of Operation Solutions 29 CFR 1910.212(a)(1-3)

Hydra-mechanical Presses

Point of Operation Solutions 29 CFR 1910.212(a)(1-3)

Mechanical Friction Clutch Presses

Point of Operation Solutions 29 CFR 1910.212(a)(1-3)

Plastics Machinery and Potential Safeguards

29 CFR 1910.212

Horizontal Injection Molding Machines

Thermoforming Machines

Employer and Employee Responsibilities

Employer Responsibilities

Self-inspection Appendix G

Personal Protective Equipment 29 CFR 1910.133(a)

Employee Responsibilities

Common Machine Guarding Safety Violations

Lockout/Tagout Method

*29 CFR 1910.147(c)(1)*