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MACHINE GUARDING SAFETY

Machines can be hazardous and injuries are extremely common. Moving machine parts have the potential to cause severe workplace injuries, such as crushed fingers or hands, amputations, burns, or blindness. Machine guards ward off danger. Safeguards are essential for protecting workers from these preventable injuries. Any machine part, function, or process that may cause injury must be safeguarded. When operating a moving part machine with a safety guard, it will prevent the operator's hands, fingers and body from any type of danger which could result in serious injury. When the operation of a machine or accidental contact injures the operator or others in the vicinity, the hazards must be eliminated or controlled.

Any individual who operates this equipment must be trained first and also authorized. You are expected to have the responsibility to operate the machine efficiently and safely. Don't take this responsibility lightly. It is crucial to understand why safe guards are to be used on machines. An operator or maintenance worker must be informed as to the location of the safe guards on the machines, and should also be provided information on why safe guards protect them and what hazards they protect them from.

MECHANICAL HAZARDS

Three types of mechanical components present amputation hazards:

- *POINT OF OPERATION* is the area of the machine where the machine performs work – i.e., mechanical actions that occur at the point of operation, such as cut- ting, shaping, boring, and forming.
- *POWER-TRANSMISSION* APPARATUS is all components of the mechanical system that transmit energy, such as flywheels, pulleys, belts, chains, couplings, connecting rods, spindles, cams, and gears.
- *OTHER MOVING PARTS* are the parts of the machine that move while the machine is operating, such as reciprocating, rotating, and transverse moving parts as well as lead mechanisms and auxiliary parts of the machine.

HAZARDOUS MECHANICAL MOTIONS

A wide variety of mechanical motion is potentially hazardous. Here are the basic types of hazardous mechanical motions:

- ROTATING MOTION is circular motion such as action generated by rotating collars, couplings, cams, clutches, flywheels, shaft ends, and spindles that may grip clothing or otherwise force a body part into a dangerous location.

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- RECIPROCATING MOTION is back-and-forth or up-and-down motion that may strike or entrap an employee between a moving part and a fxed object.
- TRANSVERSING MOTION is motion in a straight, continuous line that may strike or catch an employee in a pinch or shear point created by the moving part and a fxed object.
- CUTTING ACTION is the action that cuts material and the associated machine motion may be rotating, reciprocating, or transverse.
- PUNCHING ACTION begins when power causes the machine to hit a slide (ram) to stamp or blank metal or other material. The hazard occurs at the point of operation where the employee typically inserts, holds, or withdraws the stock by hand.
- SHEARING ACTION involves applying power to a slide or knife in order to trim or shear metal or other mate- rials. The hazard occurs at the point of operation where the employee typically inserts, holds, or withdraws the stock by hand.
- BENDING ACTION is power applied to a slide to draw or stamp metal or other materials in a bending motion. The hazard occurs at the point of operation where the employee typically inserts, holds, or withdraws the stock by hand.
- IN-RUNNING NIP POINTS, also known as “pinch points,” develop when two parts move together and at least one moves in rotary or circular motion. In-running nip points oc- cur whenever machine parts move toward each other or when one part moves past a stationary object. Typical nip points include gears, rollers, belt drives, and pulleys.

HAZARD ANALYSIS

You can help prevent workplace amputations by looking at your workplace operations and identifying the hazards associated with the use and care of the machine. When evaluating work activities for potential amputation hazards, you need to consider the entire machine operation production process, the machine modes of operation, individual activities associated with the operation, servicing and maintenance of the machine, and the potential for injury to employees.

The results from the analysis may then be used as a basis to design machine safeguarding and an overall energy control (lockout/tagout) program. This is likely to result in fewer employee amputations; safer, more effective work methods; reduced workers’ compensation costs; and increased employee productivity and morale.

PRIMARY SAFEGUARDING METHODS

Two primary methods are used to safeguard machines.

- Guards provide physical barriers that prevent access to danger areas.
- Safeguarding devices either prevent or detect operator contact with the point of operation or stop potentially hazardous machine motion if any part of an individual’s body is within the hazardous portion of the machine.

Both types of safeguards need to be properly designed, constructed, installed, used and maintained in good operating condition to ensure employee protection.

The type of operation, size, and shape of stock, method of feeding, physical layout of the work area, and production requirements all affect the selection of safeguards. Also, safeguards should be designed with the machine operator in mind as a guarding method that interferes with the operation of the machine may cause employees to override them. To ensure effective and safe operator use, guards and devices should suit the operation.

TYPES OF GUARDS

- FIXED GUARDS provide a barrier between a person and the point of operation, power train, or other moving parts. These include fences, gates, and protective covers for blades, presses, and all moving parts.
- INTERLOCKED GUARDS, when opened or removed, disengage the machine’s power source. It cannot be restarted until the guard is replaced.
- ADJUSTABLE GUARDS provide a barrier that can be adjusted to many different operations, such as varying sizes of stock.
- SELF-ADJUSTING GUARDS are barriers that move, or self-adjust, according to the size or position of the workplace. The guard returns to its resting position when no material is passing through.

SAFETY DEVICES

- Presence-SENSING devices cause the machine to stop working when a body part enters a certain danger field.

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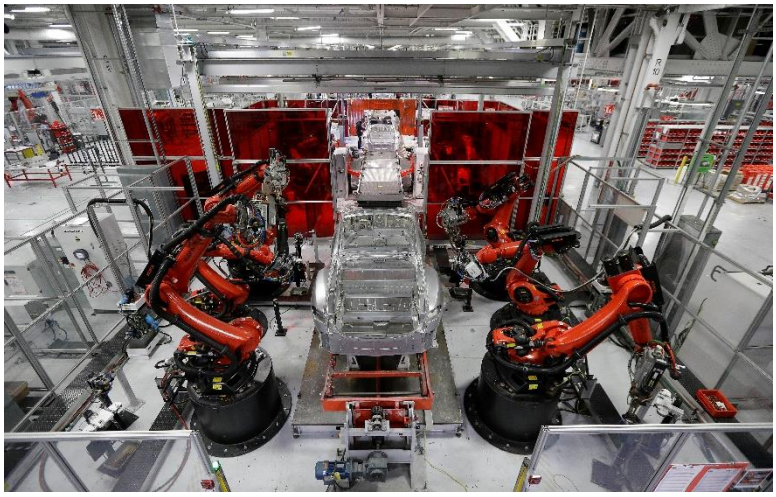
- RESTRAINTS use cables attached to a worker's hands and to a fxed point behind the worker to prevent hands from coming too close to the machinery.
- PULLBACK devices also use cables attached to the operator's hands or arms. During the dangerous part of the operation (when a slide or ram is descending) the worker is forced out of the way.
- SAFETY TRIP controls are used primarily for emergencies. If a worker falls or trips against a pressure sensitive bar, the machine will stop automatically.

CRITERIA FOR MACHINE SAFEGUARDING

- Prevents employee contact with the hazard area during machine operation.
- Avoids creating additional hazards.
- Is secure, tamper resistant, and durable.
- Avoids interfering with normal op- eration of the machine.
- Allows for safe lubrication and maintenance.



THOUGHT OF THE DAY

Safety Awareness Saves Lives

MINUTES OF MEETING

Date:_____**Person Conducting Meeting:**_____

Topic:_____

Branch: _____**Division:**_____

Attendees:

NAME	INITIAL	DATE

NAME	INITIAL	DATE

Additional Items Discussed:

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Problem Areas or Concerns:

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Comments:

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