

# Machine guarding, the hidden danger

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The purpose of this session is to familiarize everyone with the importance of machine guarding, and how to recognize hazards of moving machinery.

Examples are an excellent way to help inform trainees of how guarding or the lack of guarding might affect them. Collect information about injury incidents or near misses in your facility. You also can include examples of situations in the attendee's home environment.

Employees often are injured or killed by moving parts that are not recognized as hazards or dangers; or by moving parts you might assume no one would put any part of their body into.

Ask the group to name instances where they or someone they know were injured or had a near miss from an unguarded part of equipment at work or at home.

If there is a white board or flip chart available, write their responses down. (See possible responses in the table below.)

Share with the group that the hazards associated with a lack of machine guarding are not always recognized. Often it is easier to be unsafe than to be safe. Sometimes we rationalize that because the job will take so little time or because we have always done it this way, we choose to ignore the risks.

Inform the group there are three major types of machine hazards:

- Point of operation;
- Power transmission;
- Miscellaneous moving hazards.

Type of machine	Type of operation	Type of injury
Power press	Taking finished part from dies	Crush injury (amputation) of finger
Drill press	Adjusting speed by moving v-belt	Laceration to fingers
Conveyor	Crawling under	Caught hair around roller
Part feeder	Adjusting stroke	Crushing injury to fingers
Circular saw	Cross-cutting wood	Laceration of finger

We must also guard the operator's controls.

Ask the group who in the facility might be exposed to machine guarding hazards or dangers. Answers include:

- Maintenance workers;
- Set-up people;
- Production workers;
- Visitors to the facility;
- Employees working at home.

### Understand the principle of guarding hazards

Ask the group to list the three major types of hazards. The answers are:

- Point of operation: the area of a machine where work is performed, such as cutting, forming, grinding, boring, shaping;
- Power transmission: where power is transmitted from power sources to equipment (gears, chains, flywheels, pulleys, belts, cams, couplings, spindles, connecting rods);
- Miscellaneous moving hazards (feed mechanisms, reciprocating, rotating and transverse moving parts, flying material, sparks).

Make sure everyone understands that point-of-operation hazards, the most obvious examples, are not the only hazards or danger points on a piece of equipment.

Ask the group if the equipment operator is the only person exposed to danger from the point of operation. The answer is no. An observer or a supply person may be exposed to more but less obvious hazards or danger. Light curtains (presence-sensing devices), two-hand controls or barrier guards can protect the operator, whereas an observer may be able to access the point of operation from an unprotected side, the back or from underneath the equipment.

Remind the group that not all guarding devices provide complete protection. The operator may be able to reach the point of operation before the danger portion of the operation cycle has been completed if he or she can move faster than that portion of the equipment cycle, reach under or around the electric eye curtain, or under, around or through the barrier guard.

Ask the group why power transmission hazards are so dangerous. The answer is that workers may get body parts or clothing caught by gears, chains, flywheels, pulleys, belts, cams, couplings, spindles or connecting rods.

Remind the group that people get their hands caught in V-belts and pulleys or chains and gears when a piece of equipment cycles unintentionally, or when it is activated by someone who is unaware an employee is working on the equipment.

Ask the group how a person can be injured by miscellaneous moving parts. The answer is that this type of incident usually occurs when a person is working in an area while the equipment is operating. An employee might be making an adjustment on the back of a piece of equipment and get caught by the movement of a shuttle or by parts of the equipment moving in close proximity to one another. This can happen when a person is setting up the equipment.

Remind the group that injuries do not always happen because an employee deliberately puts a body part in harm's way. Many times a person will slip and reach out to protect him or herself, placing a hand or other body part in the hazard area or danger zone.

### Group actions

1. Identify hidden hazards or dangers in the point of operation, power transmission and miscellaneous moving parts of the equipment in your facility or at home.
2. Identify and report equipment that is not properly guarded.
3. Follow your company's policies and procedures for safe setup of equipment and lockout/tagout procedures.
4. Ensure guarding methods are in place and being used.

## References

### Web sites

- Machine Guarding (Occupational Safety and Health Administration): [www.osha.gov/SLTC/machineguarding/index.html](http://www.osha.gov/SLTC/machineguarding/index.html)
- Online Safety Library: Machine Guarding / Machine Shop Safety (Oklahoma State University): [www.ehs.okstate.edu/links/machine.htm](http://www.ehs.okstate.edu/links/machine.htm)
- Machine Accidents (North Carolina State University): [www.ncsu.edu/ehs/www99/right/handsMan/factsheet/machines.html](http://www.ncsu.edu/ehs/www99/right/handsMan/factsheet/machines.html)

### Videos

BWC's Division of Safety & Hygiene video library has a number of videos on machine guarding safety. These are available for loan to Ohio employers. Order a catalog by calling 1-800-OHIOBWC (ask for the video library), or visit our web site, [ohiobwc.com](http://ohiobwc.com).

**Daniel S. Gleghorn**, a certified safety professional, has 35 years of experience in occupational safety and health. He is executive vice-president of American Safety & Health Management Consultants Inc.; and previously managed industrial health and safety issues for various subsidiaries of the Goodyear Tire & Rubber Co. Gleghorn was named All-Ohio Safety Professional of the Year for 1990.

We always strive to improve the *Safety Leader's Discussion Guide*. Your feedback can help. Please e-mail your comments to [Safety@ohiobwc.com](mailto:Safety@ohiobwc.com).