SAFETY MATTERS
TRAINING FROM KMIT

KMIT Kansas-Born. Kansas-Bred. Kansas-Based. ToolBox TALKS

MACHINE GUARDING AND SAFETY

When working with machinery, the chance of losing a limb, crushing a finger, or becoming blind is a real possibility if employees are not properly trained or proper procedures are not followed.

It is essential to have safeguards in place when working around machinery and to remain vigilant toward safety.

There are specific causes of machine accidents, including the following:

- Disregard of the formal Lockout/Tagout procedure
- Unauthorized or untrained persons working with machines
- Missing or loose machine guards
- Reaching into the equipment

A wide variety of mechanical motions and actions may present hazards to the worker. These can include the movement of rotating members, reciprocating arms, moving belts, meshing gears, cutting teeth, and any parts that impact or shear. These different types of hazardous mechanical motions and actions are basic to nearly all machines and recognizing them is the first step toward protecting workers from the dangers they present.

A good rule to remember is: Any machine part, function, or process which may cause injury must be safeguarded. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must either be controlled or eliminated.

Dangerous moving parts require safeguarding in three basic areas:

1. The point of operation: the point where work is performed on the material, such as cutting, shaping, boring, or forming of stock.
2. Power transmission apparatus: all components of the mechanical system which transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.
3. Other moving parts: all parts of the machine which move while the machine is working. These can include reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.

The basic types of hazardous mechanical motions and actions are:

MOTIONS

- rotating (including in-running nip points)
- reciprocating
- transversing

ACTIONS

- cutting
- punching
- shearing
- bending

Suggested requirements for properly safeguarding equipment include the following:

- Prevent contact with clothing or body; wear close-fitting apparel.
- Make sure that parts or material cannot fall into moving parts and become projectable.

- Remove additional hazards such as unfinished surfaces and jagged edges.
- Do not create any interference with the equipment operator while he or she is working with live equipment.

Although most people never think that a major injury could happen, it is prudent not to fall into a false sense of security. The best thing to do to prevent a loss from taking place is to review and practice all safety procedures.

SPECIFIC MACHINES WITH PROPER GUARDING

BENCH GRINDER

Abrasive wheels are hazardous because they can create flying debris while grinding, cutting, and polishing materials.

Guards must:

- Protect the user from foreign objects.
- Maintain proper alignment with the wheel.
- Only expose a minimal amount of the wheel

The adjustable tongue guard and the work rest are the two guards that are typically not positioned correctly on bench grinders. The adjustable tongue guard at the top of the wheel should be within 1/4'" of the abrasive wheel and the work rest at the bottom of the wheel should be within 1/8" of the abrasive wheel. According to OSHA standards, the eye shield is optional but is a best practice.

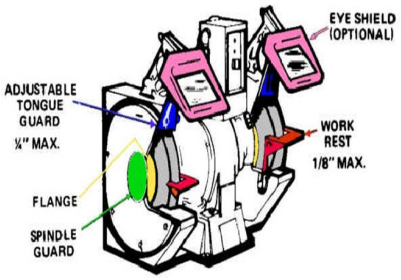

TABLE SAW

A table saw cuts wood with a circular blade whose teeth are moving, in the direction of the operator, at over one hundred miles per hour. This create several hazards: they can cut and sever fingers and hands, they can lift up and throw a workpiece back at the operator at high speeds (kickbacks), they can propel saw dust, splinters, chunks of wood, and even broken saw blade teeth at the operator's eyes. Accordingly, manufacturers equip their saws with guarding, instructions, warnings and recommendations for personal protective equipment (PPE).

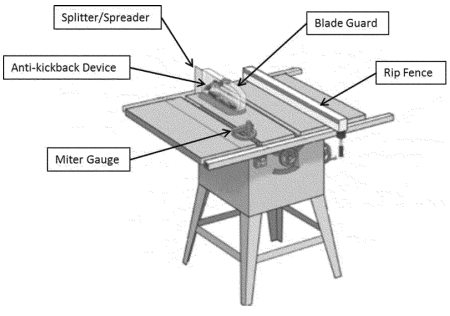

Figure 1. Typical table saw components

Safe table saw operation is dependent on a three-part guarding system. A plastic barrier guard (blade guard) is suspended over the blade to prevent inadvertent blade contact from above, the sides and the rear. The standard style guard is supported by a splitter or riving knife. A splitter/riving knife is a thin piece of steel located behind the blade. Its purpose is to keep the width of the cut open or "split" to prevent the workpiece from pinching the blade or contacting the rear, rising teeth of the blade and thereby causing the blade to throw the workpiece back at the operator. This is known as "kicking back" the workpiece or simply a "kickback". Finally, anti-kickback pawls are suspended from the splitter/riving knife. These small plates have sharp teeth which ride on the top of the workpiece. If the workpiece moves backwards towards the operator, the teeth dig into its upper surface and restrain such motion. The barrier guard also helps contain saw dust, splinters, pieces of wood, and broken saw teeth at their source.

MITER SAW

The operator of a miter saw slides the head out over the work, then lowers the blade into the wood, and makes the cut while pushing the head back toward the fence. Most workers find that this feels safer than pulling the blade toward them during a cut, as is done with a radial arm saw.

Potential Hazards:

- The operator's hands may slip off the stock while pushing into the saw blade. This may result in severe cuts and amputations.
- Severe cuts and amputations may also occur if the operator's hand is too close to the blade during cutting operations.

Solution:

- Miter saws must be equipped with a guard that protects the portion of the saw above the table. The guard must automatically adjust itself to the thickness of the material being cut in order to provide continuous protection from the blade.
- Maintain sharp blades.
- Make sure hands are kept at a safe distance from the blade during cutting operations.
- Always wear eye and face protection.

DRILL PRESS

- Use appropriate PPE, including safety glasses or goggles and hearing protection.
- Do not wear loose clothing or jewelry.
- Secure work with a clamp or drill vise to keep it from being spun by the bit.
- The drill press safety shield should be in place to avoid debris from flying into the face of employees.
- Any machine, including the drill press, designed for a fixed location (signified by holes in the base) must be securely anchored to prevent walking or moving.

Provided by IMA, Inc. for the exclusive use of our clients. All IMA recommendations are purely advisory to help clients identify and effectively control exposures to loss. We do not infer or imply in the making of recommendations and comments that all possible hazards are noted or to indicate that other hazards do not exist. The maintenance of safe premises, operations and equipment, the avoidance of unsafe conditions and practices, and compliance with Federal, State and local statutes and laws are the sole responsibility of the client.

SAFETY MATTERS
TRAINING FROM KMIT

KMIT Kansas-Born. Kansas-Bred. Kansas-Based. ToolBox TALKS

Meeting Topic: Machine Guarding Safety

Date: _____

Company Name: _____

Location/Dept: _____

Instructor Name: _____

Instructor Signature: _____

Print Name:	Sign Name:

By signing this sheet you are acknowledging participation in this training.