

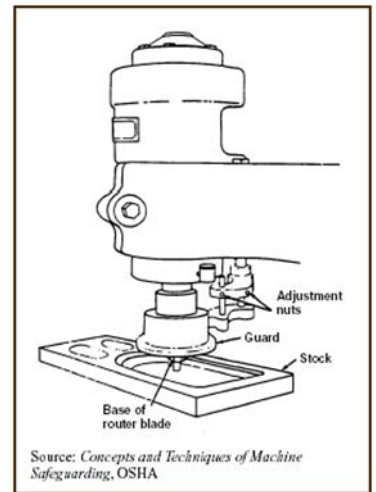


**SUPERVISOR INSTRUCTIONS:**

- Use toolbox trainings to encourage safety/environmental discussions during monthly meetings with employees.
- Campus Services' employees should maintain the employee sign-in sheet in their department's safety/environmental compliance binder as a record of training. All other groups should maintain a record of training in accordance with their Division's training procedures.

We have all had the experience of doing what we thought was a favor for someone, only to have it rejected or unappreciated. If machine guards were human they would experience this type of frustration frequently. While the basic motive for guarding is to protect - not prohibit - guards are often looked upon by employees as obstacles. However, guards wherever they are and whatever they are, are placed for protection.

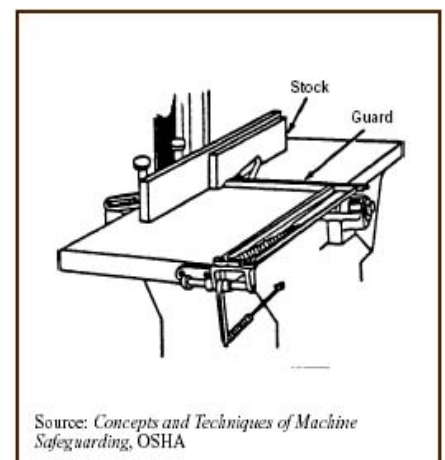
Statistics reveal that three out of every ten lost-time injuries involve the hands and arms. Almost ten percent of all disabling injuries are caused by machinery. While machine guards cannot prevent all injuries to the hands, guards do prevent many accidents that in the past have crippled and maimed employees. For fiscal year 2010, machine guarding ([29CFR1910.212](#)) was one of the Occupational Safety and Health Administration's (OSHA's) top 10 most frequently cited regulations.



Source: *Concepts and Techniques of Machine Safeguarding*, OSHA

Machine guarding protects the machine operator and other employees in the work area from hazards created by ingoing nip points, rotating parts, flying chips & sparks. Guards also protect machine operators in the event of a mechanical or electrical failure. A guard cannot be effective without the cooperation of the person operating the machine. Therefore, it is very important that anyone working with or around machinery understands the following general safety rules:

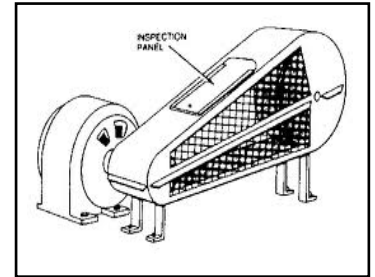
- Before operating machinery always check to ensure that the proper guards are in place and are in good condition.
- To prevent accidents, be careful around meshing gears; in-running rollers; reciprocating parts; chain and sprocket drives; cams and rollers; belts and pulleys; flywheels; cutting or abrasive surfaces; cooling fans; conveyor equipment; rotating couplings and shafts; and hot or overheated parts.
- No machine should be operated without guards in place.
- If guards are defective or missing, report this unsafe condition to your supervisor, IMMEDIATELY.
- Only trained personnel should make guard adjustments.
- When guards are removed for adjustment or repair, the main power switch for the machine should be locked in the off position. When the service job is completed, make sure the guard is replaced securely and is working properly.



Source: *Concepts and Techniques of Machine Safeguarding*, OSHA

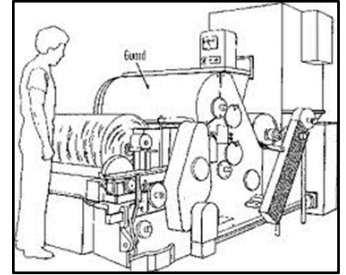
### **Fixed Guards**

Fixed guards are physical barriers permanently attached to machines that prevent operators from reaching over, under, around or through hazardous areas. These guards are simple, durable and effective however, they may restrict visibility and they have to be removed for machine adjustments and repairs. Operators must understand that fixed guards can be removed only by personnel trained in the maintenance of the equipment.



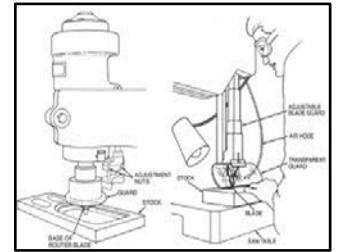
### **Interlocked Guards**

When this type of guard is opened or removed, the tripping mechanism and/or power will automatically shut off or disengage. The moving parts of the machine are stopped, and the machine cannot cycle or be restarted until the guard is back in place. An interlocked guard may use electrical, mechanical, hydraulic or pneumatic power or any combination of these. Interlocks should not prevent "inching" by remote control if required. Replacing the guard should not automatically restart the machine. To be effective, all removable guards should be interlocked to prevent occupational hazards.



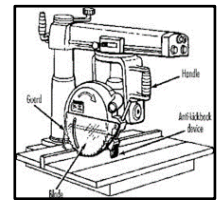
### **Adjustable Guards**

Adjustable guards provide barriers that can be manually adjusted by the operator to fit the size of the stock being processed. In some cases these guards are not fitted tightly enough to prevent tools or fingers from being pulled under or around them, placing the operators at risk of serious injuries. The machine has to be stopped if the guard requires re-adjustment during a run. Adjustable guards do not generally provide the protection of fixed and interlocking guards.



### **Self-Adjusting Guards**

Self-adjusting guards provide barriers that adjust automatically to the size of the stock entering the hazardous area. As the operator moves the stock, the guard opens only enough to admit it and then returns to its original position. Restricted visibility is a problem and operators may need to be reminded constantly that they are not allowed to remove them.



### **What Characteristics Should Machine Guards Have?**

Placing and keeping guards on exposed machinery is a major step in preventing lacerations and amputations of body parts. It is also an OSHA requirement. In general, guards should have the following characteristics:

- **Prevent Contact:** The safeguard must prevent hands, arms, or any other part of a worker's body from making contact with dangerous moving parts. A guard should not only prevent accidental contact but should prevent workers from intentionally going around or bypassing the guard.
- **Be Secure:** If the guard is easily removable, it will be ineffective. The guards should be of durable material and most should be bolted or screwed on so that they require tools for removal.
- **Create No New Hazards:** The guard itself should not create a new hazard. For example, sharp or jagged edges could cause lacerations. The guards should be affixed in a manner that eliminates sharp edges.
- **Create No Interference:** A good guard should allow the employee to work comfortably and efficiently - since otherwise it may be removed.

## SAFETY/ENVIRONMENTAL TOOLBOX TALKS – MACHINE GUARDING

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- **Allow Safe Maintenance:** If possible, guards should be designed to allow minor maintenance on the machines without either removing the safeguards or being exposed to the hazard. If the guard must be removed or deactivated, then lock-out procedures should be followed before any maintenance is performed.

### **Questions for Discussion**

1. What guards are on the various pieces of equipment in your area and how do they protect employees from injuries? (Examples: V-belt drive guards, barrier guards, motor-coupling guards, etc.)
2. What problems do these guards present and how do you deal with them?
3. What internal procedures/policies must employees adhere to regarding machine guarding?
4. Have there been accidents and injuries that resulted from improper use of machine guards?
5. True or False. One drawback to fixed guards is that they can interfere with the operator's view of what he or she is doing.  
**Answer:** True
6. True or False. When an interlocked guard is opened or removed, the power to the machine automatically shuts off or disengages.  
**Answer:** True
7. True or False. Adjustable guards provide better protection than fixed or interlocking guards.  
**Answer:** False. Adjustable guards don't provide better protection than fixed or interlocking guards because in some cases these guards are not fitted tightly enough to prevent tools or fingers from being pulled under or around them, placing the operators at risk of serious injuries.
8. True or False. Adjustable guards may be re-adjusted without stopping the machine.  
**Answer:** False. The machine must be stopped if the guard requires re-adjustment during a run.
9. True or False. Self-adjusting guards provide barriers that move according to the size of the stock.  
**Answer:** True