

## Machine Guarding

Machines, such as saws, mills, drill presses, sanders, lathes, and grinders, are used every day at Northwestern for cutting, drilling, and shaping materials, such as wood and metal. While these machines are necessary and useful, unguarded moving machine parts have the potential to cause severe workplace injuries, such as crushed fingers or hands, amputations, or eye injuries from flying debris. It is essential that you understand the hazards and necessary precautions while using these machines to ensure you don't get hurt.

### Statistics

According to the Occupational Safety and Health Administration (OSHA), workers who operate and maintain machinery suffer approximately 18,000 amputations, lacerations, abrasions, and crushing injuries, and there are over 800 deaths per year. In addition, missing guards on machines have been on OSHA's Top 10 Most Frequently Cited Standards list for the past five years.

### Hazards

Before we explore the different types of machine guards to keep you safe, you should first understand the hazardous locations where injury is likely to occur.

- ❖ **Point of operation** is where work is performed on the material, such as cutting or drilling. Examples include a saw blade and the grinding wheel of a surface grinder.
- ❖ **Power transmission devices** are the components that provide energy to the point of operation. Examples include flywheels, pulleys, belts, couplings, spindles, chains, and gears.
- ❖ **Other moving parts** of the machine that move while the machine is operating. Examples include auxiliary parts such as, feeders, stackers, reels, and robots.

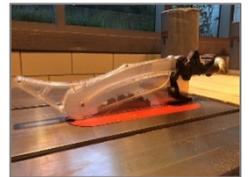
### Don't get caught off guard!

Machine guards prevent your hands, arms, and other body parts from making contact with hazardous moving parts. Guards also protect you from potential flying debris, such as metal chips. Below are the different types of machine guards to prevent injuries and to keep you safe:

- ❖ **Fixed guards** are the preferred guard type as they are considered a permanent part of the machine. An example is the guard covering the majority of the grinding wheel on a bench grinder.
- ❖ **Adjustable guards** allow machines to handle a variety of material sizes. An example is the clear plastic guard on a bench grinder.
- ❖ **Self-adjusting guards** automatically open and close depending on the size of the material. An example is the guard on a table saw.
- ❖ **Interlocking guards** automatically shut off or disengage the machine if the guard is opened or removed. An example is the guard on a CNC machine.



Adjustable and fixed guards on a bench grinder



Self-adjusting guard on a table saw

### Safe work practices

- ✓ Long hair should be worn under a cap or tied back, remove jewelry (e.g., necklaces, rings), and avoid wearing loose clothing to prevent entanglement in moving machinery.
- ✓ Never start a machine without the machine guard in place, and never modify guards.
- ✓ Use the required personal protective equipment (PPE) such as safety glasses, hearing protection, and safety shoes. Visit Risk Management's [Spotlight on Safety](#) for more information on PPE.

**Learn more:** Review OSHA's Safety and Health Topic on [Machine Guarding](#), and complete [Machine Guarding](#) training. **Report all injuries** on the Risk Management [website](#) or 847.491.5084.

### Tips for Success When Talking to Your Team

**Preparation is Key:** Keep the topic relevant. Work with your team to review the various types of machine hazards in your workplace and discuss control methods to stay safe when operating machines.

**Stay Positive:** Keep the focus on what can be done to create a safe workplace, instead of focusing on what has gone wrong in the past.

**Share a Story, Ask for a Story:** Storytelling is a powerful method to convey information. Stories from your employees make the topic even more relatable.

### Safety at Home

There is a good chance that you operate machines at home that require machine guards, such as lawn mowers, trimmers, and power tools. You should follow the same safe work practices at home, and below are some tips to keep you and others safe with performing tasks at home:

- ✓ Always ensure machine guards are in place and working properly to prevent injuries to feet, hands, and other body parts.
- ✓ Keep children away from machines with dangerous moving parts, such as circular saws and lawn mowers.
- ✓ Never leave machines accessible or unattended where they could be accidentally started.

### For Additional Information

Contact Gwen Butler, Director, Environmental Health & Safety, at 847.491.4936

Do you or your team have a safety story you'd like to share? Contact Risk Management at [gwen.butler@northwestern.edu](mailto:gwen.butler@northwestern.edu) for details.