

# Machinery safety:

## Controlling hazards

### Common machinery hazards:

- **Bench grinders** – work rest must be 1/8 inch from wheel, tongue guard 1/4 inch from wheel



- **Missing guards** - belt should be guarded if it is less than 7 feet from the floor



- **Adjustable bandsaw guards** – guard must be moved down to protect worker



- **Pressurized air nozzles** – do not use to blow off clothing – must not exceed 30 psi



Protecting workers from the risks associated with operating or interacting with machinery is a big part of effective workplace safety programs. Proper machine guarding prevents accidents and injuries from exposure to moving parts, sharp edges, or other mechanical hazards.

### Machinery hazards



#### Moving parts

Moving parts such as gears, belts, and shafts can pose significant risks, including entanglement, impact, or crushing injuries.

#### Sharp edges and hot surfaces

Sharp edges and hot surfaces can cause cuts, burns, or other injuries.

#### Electrical hazards

Exposed wiring, faulty components, or improper grounding can cause electrical shocks, burns, and fires.

#### Noise

High noise levels can lead to hearing loss or stress-related health issues. Businesses can evaluate their noise levels using dosimeters for noise monitoring. Action level according to the ACGIH (American Council of Government Industrial Hygienists) is 85 decibels as a time-weighted average for an eight-hour day.

### Ergonomic hazards

Awkward or repetitive motions, especially from poorly designed machinery or inadequate workspace, can lead to musculoskeletal disorders. Outdated workplace practices with manual material handling can also play a role.

### Mechanical failures

Wear and tear, lack of maintenance, or design flaws can contribute to sudden machine failures that can result in unexpected movements or release of hazardous substances.

### Controlling machinery hazards



#### Physical guards

Physical barriers, such as fences, covers, or screens, can effectively prevent accidental contact with moving parts. These guards should be designed to withstand operational stresses and be regularly inspected for wear and tear.

## Safety interlocks

These devices are a way to keep workers away from the point of operation because the machine will not work when a guard is removed, opened, or improperly positioned. These work well during normal operations, but are not considered to be 100% effective for controlling hazardous energy, especially when they are bypassed.

## Emergency stop devices

Emergency stop buttons or pull cords allow operators to quickly shut machinery down in an emergency. These should be properly placed and easily accessible.



## Training and procedures

Comprehensive training programs about the proper use of machinery, the importance of machine guarding, and safe operating procedures are a critical part of controlling machine hazards. These training programs must be periodically reviewed and updated.

## Lockout/tagout

Businesses must have a lockout/tagout program where workers can be exposed to hazardous or stored energy. While electrical is the most common, some other sources include hydraulic, pneumatic, and suspended items (gravity). Find out more on Oregon OSHA's control of hazardous energy page ([bit.ly/469ZrME](https://bit.ly/469ZrME)).

## Regular maintenance and inspections

Regular maintenance and periodic inspections keep machinery safe and in good repair. Businesses can

evaluate their noise levels, check for safe machine operation, and ensure that guards are in good condition.

## Ergonomic design

Design or adjust machines to minimize ergonomic risks. Ensure proper positioning of controls and eliminate the need for static or awkward postures.

## Noise control measures

Soundproofing, vibration isolation, relocating the work, job rotation, and providing personal protective equipment (PPE), like earplugs, can mitigate the risk of hearing loss and other noise-related health issues.

## Introducing new machinery and technology

When new equipment and technology is introduced to the workplace, it can also introduce new hazards. Work closely with equipment manufacturers to understand safety features, stay informed about advancements, and regularly update training on how to operate new equipment safely.



## Summary

Organizations that understand their machinery hazards and implement effective controls can reduce injury risks and ensure compliance with regulations. Keeping safety practices up-to-date and regular machinery safety training are key to protecting the health and well-being of the workforce.

## ACTIVITY IDEAS

- Walk around inspection: Tour your facility and look for machinery hazards. Are the hazards being controlled? Can you improve the controls? Report your findings and proposed solutions to the safety committee and your organizational leadership team.
- Discussion: Talk about recent injuries involving machinery and what could have been done to prevent them. If you have no recent injuries, review one of NIOSH's Fatality Assessment and Control Evaluation reports about machinery ([bit.ly/3EeT3rV](https://bit.ly/3EeT3rV)).
- Review Oregon OSHA's guide Machine safeguarding at the point of operation ([bit.ly/3TC4s8I](https://bit.ly/3TC4s8I)) and find a reference to a machine used at your organization. Ensure you are adequately guarding your machine and that all employees are properly trained.