Employee Safety

Why Machine Guarding Is Key for Workplace Safety

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What You Need to Know

OSHA 29CFR 1910.212 requires employers to protect operators from moving parts of machinery that may cause cutting, crushing, amputation, or being struck by flying chips and debris.
Local and national emphasis programs, driven by hazard statistics, are regularly developed by OSHA to help target companies to inspect, evaluate and fine.
Proper safety training and documentation is needed that educates employees on what to look out for when a machine malfunctions; Experts say machine-guard accountability is also an essential element to successful protection programs.

Machining can be dangerous. Physical machine guards play a critical role in the safety of employees performing routine machining tasks.

According to the Occupational Safety and Health Administration (***OSHA***), any machine part, function or process that may cause injury must be safeguarded. OSHA 29CFR 1910.212 is a general standard that covers protection of workers from mechanical hazards posed by many different types of machinery.

The regulation requires employers to protect associates from moving parts of machinery that may cause cutting, crushing, amputation, or being struck by flying chips and debris.

“For example, if associates are operating a hydraulic power press and they are working near the point of operation where the parts of the machine come together to manipulate the metal, safeguards must be in place to protect them from any hazards,” says Brian Drake, assistant regional administrator for enforcement programs for OSHA Region 7.

To prevent injury, a ***mechanical guard*** fixed on the press limits the size of the opening where the product is placed into the machine so employees can’t get their fingers, arms or hands into the point of operation.

“This type of guard, called an engineering control, is not dependent on employee decision-making process or behavior,” Drake says.

A Closer Look at Machine Guards, by Type

There are several types of machine guarding techniques, depending on the industry. According to Frank Quarato, president of the Center for Safety & Environmental Management, the simplest guards prevent an associate from physically coming in contact with the face of the machinery where the work is being done.

"With a drill press or a CNC machine, the hazard is all encased inside the machine," Quarato says. "When you open the door to go into that area, it automatically trips a switch that stops the machine from rotating, so there's no further momentum."

Other guards are designed to let associates get a better view of the work as it's going on. "Light guards use laser beams similar to garage door sensors so you have a lot better vision," Quarato says. "But the moment you get too close and break that beam, the machine trips the switch and prevents contact."

A third form of guarding uses a harnessing system, like a glove that goes over the wrist and index finger and hooks to long strings attached to the machine overhead.

"If you reach forward, the string pulls tight, shuts the machine off and opens the mouth of the machine, so you can reach in, pull a finished part out and put in a new raw part to be machined," Quarato says. "When you pull your hands back, it activates the machine to start running again."

Yet another machine guard uses two large "EZ" type buttons that require the operator to use both hands to push the buttons in order to actuate the machine.

These types of guards are considered engineering controls, which don't rely on human behavior to keep associates safe.

Workplace Injury Statistics on Machine Guarding Drive OSHA Inspections

As part of its responsibilities, OSHA looks at statistics to see where injuries and fatalities are occurring most frequently, and then develops local or national emphasis programs (LEPs or NEPs), based on a company's NAICS code, which would indicate the likelihood that such a hazard exists.

Once on a list, some companies are randomly selected for an inspection to look for these types of hazards. For example, OSHA's national office has developed an amputation NEP, to help reduce the number of amputations nationally.

"Because of this NEP, anytime we go into a facility with machinery that would expose employees to amputation hazards—which is a vast majority of facilities—we do an inspection to look for amputation hazards," Drake says.

If a machine is not properly guarded against amputations or other hazards, OSHA will cite the

employer.

“When we’re inspecting, we’re looking for places where the guarding is broken or missing, or the guarding has been circumvented,” Drake says.

For example, sometimes an associate rigs a bypass to the interlock switch on the door of a plastic injection-molding machine to save time and keep the machine running with the guard not in place.

“It’s amazing how you put a guard in place and somebody will defeat it,” says Frank Quarato, president of the ***Center for Safety & Environmental Management***. “Or, employers will take the guards off for maintenance, but once the machine is back up and running they won’t put the guards back on.”

Some older machines were never manufactured with guards, and some newer machines, including those from overseas, may not come with guards in place. However, employers are still required to protect associates from the hazardous area even if no guards exist, according to Drake.

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> Assistant Regional Administrator for Enforcement Programs, OSHA, Region 7

Safety Training and Accountability for Machine Guards

Associates require training in the need and value of machine guards, as well as how to work with them in place, how to remove them for maintenance, and what to do if they break or go missing.

“There’s always an aspect of training that comes into play, but with engineered controls the guards are just there and the employees don’t usually have to do anything to protect themselves,” Drake says. “But associates need training in how important the guards are, how to adjust them to the product, and how important it is if the guard malfunctions to keep their body parts out of the dangerous area.”

Quarato likes a “more eyes; less lies” philosophy for maintaining safeguards on hazardous machinery.

“The harder you hold people accountable for their responsibilities, the more you’re going to find that these programs actually work,” he says. “Policies are important, having them in writing is even more important, but there has to be something that invokes an action.”

Drake believes that injuries or fatalities due to broken or missing machine guards cannot be considered accidents, which would be unpreventable.

“Most machinery comes with guards in place, so you just leave them on,” says Drake. “Every single one of these injuries is preventable, and it’s the employer’s responsibility to ensure their employees are protected from those hazards to keep the incidents from occurring.”

Do you promote machine guard accountability in your safety program? Share how you help protect workers from the dangers of machine use.