# By the Numbers – Equipment/Machinery

## equipment/machinery

## DID YOU KNOW?

Employee exposure to unguarded or inadequately guarded machines is prevalent in many workplaces. Consequently, workers who operate and maintain machinery suffer approximately 18,000 amputations, lacerations, crushing injuries, abrasions, and over 800 deaths per year.

Occupational Safety & Health Administration (OSHA) nominated OSHA's top ten cited violations in 2017. Machine guarding was NO.8 on this not so famous list with 1.933 violations. In 2018, machine guarding was NO.9.

A lack of machine safeguarding also held the dubious distinction of making the list of OSHA's ten largest monetary penalties for the year – not once but four times. In fact, the largest proposed monetary penalty, a staggering $2.6 million (USD), arose from an incident where a worker was crushed to death while clearing a sensor fault in a robotic conveyor belt.

According to the most recent Bureau of Labor Statistics data, manufacturing plants reported approximately 2,000 accidents that led to workers suffering crushed fingers or hands, or had a limb amputated in machine-related accidents. The rate of amputations in manufacturing was more than twice as much (1.7 per 10,000 full-time employees) as that of all private industry (0.7).

There was an average annual decrease of 2.8% in overall machine-related fatality rates from 1992 through 2010. Mobile machine-related fatality rates decreased an average of 2.6% annually and stationary machine-related rates decreased an average of 3.5% annually. Groups that continued to be at high risk included older

workers; self-employed; and workers in agriculture/forestry/fishing, construction, and mining.

## KEEP IN MIND

Machines need to move to perform their tasks. Whether it’s a conveyor belt carrying raw material to a mixing tank, power presses bending sheet metal or a drill press punching holes in a piece of wood, they all operate by movements that cause a serious risk to workers.

The risks occur because workers sometimes put their hands or other body parts in the point of operation, get caught in between two moving parts or fail to use proper safety procedures to clear a jammed machine. Not a day goes by when someone isn’t killed by moving machinery or suffers a serious injury like an amputation because they got too close or didn’t follow basic safety procedures.

Working with machinery and equipment is always hazardous. But workers are especially at risk when they try to troubleshoot machinery that isn’t working properly. And troubleshooting is a common task in many workplaces. So given its inherent hazards, it’s important that you have a troubleshooting policy to ensure that workers can safely address machinery issues.

## The potential hazards include:

### Safety hazards

- Contact with moving parts
- Contact with electricity, heat, fire, cold, and other energies
- Contact with pressurized gas or liquid

### Health hazards

- Contact with harmful chemicals or biological hazards
- Contact with harmful noise, radiation, and/or vibration
- Exposure to ergonomic or MSD hazards

# Mechanical Equipment Failures That Cause Workers to Suffer Long-Term Injuries or Death

Employers are increasingly using mechanical equipment and tools to increase productivity. While this can reduce the amount of manual labor some workers must perform and reduce the types of injuries workers once suffered, mechanical equipment and tools can be dangerous. Workers can suffer debilitating injuries or deaths when machinery and smaller tools fail or malfunction.

## Reasons for Equipment, Machinery, and Tool Failures

Mechanical failure of equipment, machinery, and tools can involve many problems, such as misalignment of parts, power surge overloads, broken gear sets, chips or breaks of parts, and oil contamination. In some cases, the breakdown of a part can causes further damage to the machinery and lead to its malfunction and a worker being injured. There are many reasons why equipment fails and causes accidents including:

- **Wear and tear.**Parts in machinery and tools will wear down over time due to their constant use. At some point, they must be replaced due to wear and tear. When employers fail to replace them due to the cost, they will malfunction—sometimes repeatedly if only minor repairs are done.
- **Defective design or manufacture.**In some cases, the machinery, equipment, or tools were designed or manufactured improperly. If the defect is serious enough, it can cause a catastrophic workplace accident if the machinery malfunctions or breaks down.
- **Lack of training.**Workers must be trained in the safe use of heavy equipment, like forklifts, bulldozers, and other heavy machinery and equipment, before using them on the job. Even drills, power saws, and other power tools can be extremely dangerous if workers use them without training in their safe use. Many tragic accidents occur when employers do not take their workers' safety seriously and do not invest the time

to properly train their employees.

- **Improper maintenance.** Employers have a duty to inspect, repair, and replace machinery, equipment, and tools on a regular basis. Unfortunately, many employers do not do this, which can result in a tragic workplace accident.
- **Operator error.**Many accidents occur when operators of equipment and machinery make errors or engage in negligent actions. This can lead to their own injuries or the injuries of others, such as when a heavy machine operator hits a nearby worker.

**Third-party negligence.** In some cases, a third party, such as a sub-contractor or supplier, may have provided the machinery, operated it, or maintained it and may have caused an accident due to negligence.