



Personal Protective Equipment

The Most Dangerous Workplace Safety Hazards on a Shop Floor

Gillian Scott | May 09, 2019

Shop floors present many opportunities for injuries, from broken bones caused by trips and falls to more serious risks of amputation and death caused by contact with machinery or moving parts. But what areas of a manufacturing facility are the most dangerous?

The *Bureau of Labor Statistics* reports that in 2017, of 303 total fatal injuries in manufacturing, 79 were caused by transportation incidents, another 79 were caused by contact with objects and equipment, 50 were caused by falls, slips and trips, 41 were caused by exposure to harmful substances or environments, 31 were caused by violence and other injuries by persons or animals, and 21 were caused by fires and explosions.

According to the *National Safety Council's Injury Facts* from 2017, the most common injuries in manufacturing were: sprains, strains and tears (34,110); cuts, lacerations and punctures (14,740); soreness and pain (14,290); and fractures (13,130). The top sources of injuries were: parts and materials; worker motion or position; machinery; floors, walkways and ground surfaces; containers; hand tools; vehicles; furniture and fixtures; chemicals and chemical products; trucks; carts, dollies and hand trucks; and ladders.

We talked to Sean Moser, a safety specialist with MSC, to find out the most dangerous spots on a shop floor—the spots where these injuries and fatalities are most likely to occur. Moser says that when he visits a facility, he likes to start with a tour of the whole building.

“For me, the organization of a building really kind of determines what kind of safety culture they have,” he says. “An organized shop floor is going to be an area that you’re less likely to have as many slips, trips and falls. It’s an area that you have better interactions between equipment and the people working around the equipment. It means that the shop is taking the additional thought into planning for injuries.”

What Is 5S?

According to John Grover, director of lean manufacturing at Lista International, *writing in EHS Today*, 5S is “a system to reduce waste and optimize productivity through maintaining an orderly workplace and using visual cues to achieve more consistent operational results.” It includes five main principles:

- Sort
- Set in Order
- Shine
- Standardize
- Sustain

“Implementing the 5S method means cleaning up and organizing the workplace in its existing configuration,” Grover writes. “It typically is the first lean method that organizations implement. This lean method encourages workers to improve their working conditions (including safety and ergonomics) and helps them to learn to reduce waste, eliminate unplanned downtime and conduct in-process inventory.”

Want to learn more? Read “Why Using 5S in Lean Manufacturing Protects Workers.”

Slips, Trips and Falls: Working and Walking Surfaces Hazards

A floor may seem pretty benign. Add hazards like boxes, debris and slick spots, though, and you’ve got a situation ripe for slips, trips and falls.

“I actually have seen people slip on packets of silica that come with their *reflective vests*,” Moser says. At one facility, he reports, workers often tripped on a speed bump while walking from the parking area to the building.

Moser says 5S principles are important when it comes to preventing these types of accidents because they focus on organization. (For *more on 5S*, see the sidebar.)

“It takes a little bit of extra effort to pick up, to clean up your area, to make sure that you don’t have any trip hazards, to make sure that everything has a location and that piece of equipment is in its location,” he says. “And if you see a lot of stuff, just debris on the floor, trip hazards everywhere around the perimeter of the walkway, you know that the potential for slips, trips and falls is going to be like that throughout the entire shop.”

See how 5S can make an impact on the shop floor: “Infographic: Make 5S a Reality in Your Machine Shop.”

Slips, Trips and Falls Hazards: Ladders, Stairs and Other High Places

Ladders, stairs, raised platforms and other high work areas create the potential for falls from height.

Fall protection equipment, regular inspection of equipment and training can help in some cases. Other times, raising awareness may be all that's needed.

"There are things you can do with each of those to help mitigate safety and help make it a safer environment," says Moser, noting that actions like painting steps yellow or having a **yellow rail** will make workers more visually aware of a stair hazard.

Lifting Safety and Hazards: Shipping and Receiving

Shipping and receiving areas present a variety of hazards, says Moser, including struck-by accidents caused when workers move materials around and other injuries like sprains and strains caused by lifting. These injuries may seem minor, but Moser says their impact can be costly if the effects are long term.

Moser notes that, as in **fall prevention**, 5S principles are big when it comes to preventing injuries in shipping and receiving. This could mean organizing materials so less lifting is needed or grouping items for maximum efficiency and to reduce the distance or number of times something needs to be moved.

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Safety Specialist, MSC Industrial Supply

Lifting Safety and Hazards: Loading Docks

"With any dock, you're going to have the potential for falls due to people falling off the dock, or due to packages and equipment falling on you when you're transporting it from the truck to the dock, things of that nature," says Moser.

Moser says pedestrian safety is an often-overlooked issue when any kind of powered industrial truck is being used.

"Then you have to worry about pedestrian interactions. You have to take into consideration that these are giant machines that most of the time have very little safety precautions as far as sideview mirrors or rearview mirrors," he says. "Very few times does a shop floor have a good pedestrian interaction program in place."

IndustrySafe Inc., a safety management software provider, also recommends that workers operating powered industrial trucks meet OSHA's training requirements.

Electrical Safety and Hazards: Electrical Cords and Panels

"While electrical hazards are a serious concern for those directly working with electricity, such as electricians and engineers, the manufacturing industry also has many electrical risks for its workers,"

says IndustrySafe. "Some of these electrical hazards may include improperly installed equipment, exposed wires, unlocked electrical panels and more."

Electricity is a notably dangerous hazard anytime water is being used, Moser says, especially if it's used near electrical equipment. If water pools on the floor—either from a manufacturing task or when workers come in from outside—that can cause a safety issue.

Moser says one of the most common issues he sees is the daisy-chaining of **electrical cords**.

"A lot of times in shops that is a norm because they don't have enough electrical outlets, so they'll daisy chain a bunch of electrical power strips and electrical cords and make themselves one really long extension cord," he says.

Accidents and injuries can range from slips, trips and falls—when workers trip over cords that are stretched across a walkway—to overheating if the wrong type of cord is being used.

Machine Safety and Hazards

Machines are perhaps the most obvious danger in a manufacturing facility. They present a wide variety of hazards: pinch points, crush hazards, moving parts like rotors, gears and belts, and more.

Preventing the injuries caused by these can mean adding **machine guarding**, using personal protective gear, or even using tape or signage to keep workers from entering hazardous areas.

"Properly guarded machinery helps to keep workers safe, but it is also critical to train workers properly, with regular re-testing and re-training if needed," says Casey Heigl at **Industrial Safety & Hygiene News**. "This will ensure the safe operation of heavy machinery and a safe work environment. Only employees trained and certified in the use of specific machinery should operate the equipment."

What is the most dangerous spot on your shop floor?