Safety Culture

Moving Violations: Protecting Workers from Falling Objects and Other Struck-By Hazards

James Langford | Dec 15, 2022

When a worker standing on a factory floor drops a drill bit or measuring tape, chances are that it's no big deal.

But when the same thing occurs high above the ground, the falling tool quickly becomes a hazard to life and limb for anyone standing below. And thanks to the laws of physics, the farther the object falls, the more deadly it becomes.

To illustrate the potential risk, safety equipment supplier 3M explains that an 8-pound tool dropped from a height of 200 feet would fall at a speed of about 80 mph and have an impact force of 5,540 pounds by the time it strikes the ground.In the U.S. alone, accidents involving worker contact with objects and equipment, including dropped tools and other items, killed 716 workers and injured more than 196,000 in 2020, according to the ***National Safety Council***.

Struck-By Accident Prevention Tips

Paying attention to your surroundings and securing loose objects and heavy machinery are vital in preventing "struck-by" accidents that lead to as many as 700 deaths a year, according to the National Safety Council.

Here are ***some tips*** from safety supplier 3M and the council for making workplaces safer:

- Conduct a safety audit of your workplace to identify potential hazards from falling tools.
- Check vehicles, including forklifts, etc., to make sure they're safe to operate.
- Store loose materials, including boxes, tarpaulins and tools, securely when not in use.
- Make sure items stored at higher levels such as overhead shelves are secured so that they don't fall and injure workers underneath.
- Store heavy objects close to the floor.
- Wear ***appropriate PPE***, such as steel-toed shoes and hard hats.
- Don't operate equipment unless you've had proper training for it.
- Don't obstruct your vision by overloading equipment.
- When heavy equipment is in use, make eye contact with operators before approaching them.
- When lifting one or more objects, make sure they're secure and raise them evenly to prevent slipping.

In one high-profile case in November 2014, a 58-year-old man delivering wallboard to a construction site in Jersey City, New Jersey, died after he was struck in the head by a tape measure that had fallen from a worker some 400 feet above him, according to contemporaneous accounts from ***The New York Times*** and other news media.

Such accidents are preventable, safety experts and regulators agree, with the proper tools, training and procedures.

Indeed, rules set by the federal Occupational Safety and Health Administration, the nation's top workplace safety regulator, require a variety of safeguards to avoid both worker falls and so-called struck-by hazards, which include dropped tools as well as impact with ***forklifts*** and other mobile workplace equipment.

Violations of the provision ***governing industries outside of construction*** led to more than $3 million in penalties in the 12 months through September 2022. Nearly half—about $1.5 million—were imposed on manufacturers, the most of any industry, according to OSHA records.

Primary Accident Prevention

In construction, governed by separate OSHA rules, struck-by hazards are one of four accident causes that account for 60 percent of all workplace deaths.

While many companies have set up fall-prevention programs for their employees, drop-prevention initiatives for tools and equipment have been lacking, says ***safety equipment supplier 3M***.

The focus instead has been largely on keeping the falling object from injuring anyone through so-called secondary systems such as hard hats, signs and physical barriers including nets.

"Unfortunately," a 3M trainer explains in a ***safety video***, "none of these things fit the actual issue." The gaps in nets, for example, allow some falling tools through easily, depending on size and the angle of descent.

Furthermore, if the falling object collides with something on its way down, it can easily be deflected far beyond the boundaries of a safety net or any other barrier designed to protect people on the ground.

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> 3M

While safety helmets provide some protection from workplace hazards, even they can't withstand the impact of an object falling from a significant height with thousands of pounds of force, the trainer says.

The best safety measure, he says, is a primary system that prevents the drop from occurring in the first place. The tool-tethering systems that 3M sells to do that job were inspired by safety harnesses that allow workers, if they fall, to fall safely and return to the job.

"We took that same idea and applied it to everything you take to height: Create a safe, solid connection point," he explains.

Many modern tools come with built-in connection points for tethering, and older equipment can often be retrofitted so that both types can be linked to a fixed structure or to worker tool belts, harnesses or wristbands.

Tethering works for tools that weigh up to 80 pounds, including some rivet busters and portable generators, though anything over 5 pounds should never be tied to a person since it might dislocate a wrist or shoulder if it came loose, 3M says.

3M's DBI-SALA Tethering Systems

The company's DBI-SALA-branded 5-pound retractable tool lanyards work with a variety of equipment and include a housing connection point that swivels with the operator's movements to keep lines from twisting, according to 3M.

The entire package weighs less than half a pound and DBI-SALA adaptors are available for connecting the device to harness webbing. An added advantage of tethering systems is that they enable workers to climb more easily and safely since their hands are free to grasp holds.

One potential gap in tethering systems arises when workers high above the ground need to swap tools, but there's a simple workaround: The employee taking over the tool should connect to it before the other worker disconnects, 3M notes.

For smaller parts like rivets or nuts and bolts, many safety suppliers offer buckets and pouches that can be closed to prevent dropping, 3M says.

Preventive systems that keep workers from dropping tools and other objects can help businesses avoid huge losses in time, productivity, money and most importantly, lives, says ***Never Let Go***, a British safety-equipment supplier specializing in lanyards and tethering.

In Britain, getting struck by a moving object ranks third among the most common causes of both ***fatal*** and ***nonfatal*** workplace injuries, according to the RIDDOR report covering 2021. The acronym stands for Reporting of Injuries, Diseases and Dangerous Occurrences Regulations.

“Any time an employee dies at work, it is a tragedy with high emotional and financial consequences,” the company notes in a report on its website. “Remember, if you are working in public areas, it is not just your workforce at risk, but anyone passing nearby.”

What equipment and procedures does your workplace use to prevent struck-by accidents? Tell us in the comments below.