‘Complacency is real’

Educating workers about the risks of nail guns and other power tools

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KEY POINTS

Complacency, pressure to work fast and lack of awareness may increase the chance of injuries.

Using a nail gun with a sequential trigger rather than a contact trip trigger may reduce the risk of injury by half, studies show.

> Training should include showing workers how to use the tool, supervised time using the tool and real stories of how injuries can occur, experts say.

When Fred Rose, safety training manager at Appleton, WI-based Boldt Co., conducts nail gun training, he shows an animated video that depicts a nail gun injury. In the video, a worker fires a nail into a piece of wood, but the nail hits a knot, causing it to ricochet and go through the hand of the person holding the wood. Rose said the video often prompts some workers to lean over to the person next to them and share their own story of shooting a nail into a hand or foot.

Rose's observation shows both how common such injuries are in construction and the importance of training to heighten awareness among workers. The need for training also extends to other power tools, from drills and jackhammers to table saws, as workers may underestimate the risk of tools they use all the time.

"Complacency is real," Rose said. "They've done it this way and nothing's happened to them so far."

An employer's culture also plays a role – employees may face pressure to work fast to meet a deadline, and some accept injuries as part of the job. To help reduce injuries, experts recommend that workers use safer tools when possible and understand the risks associated with the equipment in their hand.

Two types of nail guns

Hester J. Lipscomb, professor in the Division of Occupational and Environmental Medicine at Duke University Medical School in Durham, NC, said the wide availability of nail guns leads some people to believe anyone can use the tool.

"Just because it's easy to use doesn't mean it's easy to use safely," Lipscomb said.

Safer options are available when it comes to nail guns; however, they are not always used. Lipscomb's extensive research on the subject shows that using a nail gun with a sequential triggering mechanism rather than a contact trip trigger may cut injuries in half.

The contact trip trigger fires whenever the nose and trigger are depressed, allowing workers to keep their hand on the trigger and bounce the nose of the gun on a surface to fire several nails in a row. But the convenience of the triggering mechanism comes at a price – anything you bump while holding your finger on the trigger could get nailed – whether it is a piece of wood, your finger or a co-worker's leg. The tool also may inadvertently fire another nail following the recoil that accompanies the discharge of a nail if the nose piece comes in contact with the work surface, Lipscomb said.

Conversely, the sequential trigger requires the nose to be depressed before the trigger will fire. "That really cuts the risk of unintentional firing substantially," Lipscomb said.

Citing the
Hierarchy of Controls (http://www.cdc.gov/niosh/topics/engcontrols)
, she emphasized the importance of putting the safer tool in the worker's hands as the first step to preventing injury.

Lipscomb said contractors and workers may prefer the contact trip trigger because they believe it is faster. However, one of the studies she conducted found that although using the sequential trigger added an average of 10 minutes to nailing time, it did not have much effect on the overall time it took to complete a construction project.

For maximum effectiveness, Lipscomb said training should include showing workers how to use the nail gun and supervised time using the tool so they can get the feel of it. They need to know how to position their hands when bracing wood, and how to handle the nail gun recoil, she added.

Denny Patterson, a retired carpenter based in the St. Louis area, assists with Lipscomb's research by interviewing workers. He also provides nail gun safety training, and said the responses from workers are mixed. Some have told him they never pick up a nail gun now without thinking of him, while others shake off his advice. His message: "We're just trying to save you some anguish down the road."

Noise and vibration risks

Although hand injuries are an obvious risk with nail guns and other power tools, different areas of the body may be affected as well. Most power tools generate noise, which can damage someone's hearing depending on the intensity and duration of the exposure, ac-

cording to Jim Albers of NIOSH's Division of Applied Research and Technology.

"Noise can also create a safety risk, as it makes it difficult for workers to communicate effectively or stops them [from] hearing warning signals," he added. NIOSH has a searchable database (http://wwwn.cdc.gov/niosh-sound-vibration/) of handheld power tools to help people determine the noise level of the tools in workplace settings.

Wearing hearing protection is important. A study (http://depts.washington.edu/occnoise/content/Noise_HPD.pdf) from the University of Washington found that construction workers were exposed to noise levels exceeding NIOSH's recommended exposure limit of 85 dBA in approximately 70 percent of their work shifts, yet they used hearing protection devices less than 20 percent of the time.

Rose said Boldt's construction workers are required to wear hearing protection. One way he encourages compliance is to tell them that they may not notice a difference in their hearing now, but continuous exposure to high noise levels will have taken a toll by the time they retire.

Another concern with power tools is exposure to vibration, which over time could cause workers to develop hand-arm vibration syndrome, a condition characterized by damage to nerves and blood vessels in the fingers. Workers with HAVS may experience tingling, numbness, loss of dexterity and blanched fingertips.

Danny Riley, professor of cell biology, neurobiology and anatomy at the Medical College of Wisconsin in Milwaukee, has been studying HAVS for 15 years. He said development of the condition depends on the tool, duration of use, genetics and environmental factors such as cold temperature.

Simply because a worker does not "feel" the tool vibrating does not mean damage is not occurring. "It starts off as some tingling and numbness that may persist for a number of minutes after you stop using it, but with time it can persist longer and then you end up

reaching a level where now it doesn't go away," Riley said. "You have symptoms continuously, have trouble buttoning your shirt, you can't feel [your fingers]. The problem there is once it gets to a certain level it becomes irreversible."

To help reduce the risk of HAVS, he advises employers to provide tools designed to emit low vibration and have workers rotate jobs so they are not performing the same task all day. Workers should be careful not to grip vibrating tools any tighter than necessary because doing so increases the transfer of energy from the tool to the hand, Riley said.

He also suggests wearing certified anti-vibration gloves, although their effectiveness will depend on the frequency of the vibration from the tool. Employers should make sure workers know the signs and symptoms of HAVS and implement a medical surveillance program for early detection and prevention of injury.

"[Power tools] can be used in productive, safe ways if everyone's aware of the potential danger but also how to avoid that or minimize it," Riley said.

Culture change

In addition to increased awareness of risks, experts described the need for a culture change as it relates to how workers and employers deal with injuries. "I think we need to get past the point of accepting that it's OK for workers to get injured," Lipscomb said.

That sentiment applies regardless of the tool or the task. Jim Nolan, a retired carpenter who works with Lipscomb and Patterson, said many young workers are afraid to report an injury or hazard. He tells them to insist on proper medical care for their injuries.

"You just have to let them know that you're not a piece of wood out there. You're a person," he said. "I say, 'Your hand and your body is worth more than this job.'"

Patterson said pressure to get the job done quickly is the source of many injuries.

"There's a time associated per square foot and whoever is educating the guys on time is doing a very effective job," he said. "Everybody on that site knows exactly how many hours it takes to build that structure and not everybody on that site knows as much as they should about the safety of their everyday job."

To help teach workers correct, safe methods, Rose said field managers at Boldt use behavior-based safety coaching. If a worker is operating unsafely, the manager stops the act, talks to the worker to determine why he or she was behaving that way, and then explains what the procedures and expectations are going forward.

Regarding speed, he recommended pre-planning to keep the crew organized and discourage use of shortcuts. He said workdays should start with a safe task analysis to discuss the project, potential hazards and how to control them.

In the classroom, Rose has found that encouraging participation through hands-on training and having workers share their personal experiences improves retention of the material. The idea is to have workers move from a mindset of having to follow the rules to wanting to do so.

“If you see the value in doing something because you want to do it for the right reasons, that’s half the battle,” Rose said.

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