Nail Guns:
Injuries, Productivity and Recommendations

Although there are many types of nail guns (framing, finishing, flooring, etc.), there are two commonly used triggers:

Contact trip triggers allow the tool to fire anytime the trigger and the nose of the gun (contact element) are both depressed. The trigger can be held down to allow "bump" or "bounce" nailing.

Sequential triggers require the nose of the gun (contact element) to be depressed before the trigger is pulled. That avoids inadvertent discharge of nails.

The **contact trip trigger carries twice the risk of acute injury** of the sequential trigger, even after considering experience and training. Contact trip nail guns automatically reload after discharging a nail; if the worker's finger is on the trigger of a contact trip gun when this happens, it will fire again if the nose touches anything. This results in inadvertent firing of nails and can be very dangerous.

WARNING: The two types look exactly alike, so workers cannot tell the difference between the contact trip and sequential triggers. A number of manufacturers now have models that allow the triggering mechanism to switch back and forth from contact or sequential, which can also be confusing.

Injury Stats

Nail gun injuries are much more common than people think. Researchers from Duke University found 44% of carpenter apprentices in one four-year training program were injured by nail guns before they finished their training. In another study, Duke researchers interviewed more than 400 carpenters injured by nail guns and found that more than 30% of injuries were due to ricocheting nails and 40% were from projectile nails – all while using a contact trip trigger. Inadvertent or unintentional release of nails from nail guns is such a problem that researchers discovered 12% of injuries happened to workers not even using the nail gun.

Most injuries involve puncture wounds to hands or fingers, but serious, even fatal, injuries are also associated with the use of these tools. A dramatic account of a fatal nail gun injury can be found in a news story in the ***Sacramento Bee*****.**

However, there are ways to prevent many injuries. Duke University researchers have found that **using the sequential trigger cuts the injury rate from nail guns in half.**

Productivity Stats

The contact trip trigger does not increase productivity: A recent study measuring productivity in construction found that the contact trip trigger showed no significant difference (less than 1 percent) in productivity compared with the sequential trigger among experienced users. Also, there was no significant difference between the two tools in nail count and placement. Workers did differ in work rates, but **the difference was generally due to the skill of the workers, not the tool**. The study involved journeymen carpenters with an average of 13 years in the trade.

Recommendations

Here's the simple way to test a nail gun: *If a worker can hold the trigger down and bounce or bump the nose of the gun against a surface to fire the tool, that is a contact trip trigger gun. If possible, that type should be set aside and a sequential trigger nail gun should used.*

Injuries can happen because workers can be given nail guns with by-passed safety features or they can engage in unsafe work practices on the jobsite. In many cases, workers are simply handed a nail gun and told to begin work with no training on the dangers of these tools or how to protect themselves and fellow workers.

Providing workers with sequential trigger nail guns and informing/training workers on the hazards of the tool are ways to reduce the incidence of nail gun injuries on worksites.

Get more information about nail guns:

View/download a Hazard Alert card on nail guns.

Hear a podcast about nail gun injuries – and their prevention.

Watch a video about a worker who died from the inadvertent firing of a nail gun.
Death in the Sierra

Watch a video about a by-stander shot in the eye with a nail gun as he passed a construction site. Just Driving Down the Street

For the specific studies mentioned above:

Lipscomb et al. How Much Time Is Safety Worth? A Comparison of Trigger Configurations on Pneumatic Nail Guns in Residential Framing. Public Health Reports. 2008 Issue # 4, July/August 2008.
Full text available at:
http://www.publichealthreports.org/archives/issueopen.cfm?articleID=2061

Lipscomb et al. Prevention of traumatic nail gun injuries in apprentice carpenters: Use of population-based measures to monitor intervention effectiveness. Am J Ind Med. 2008 51: 719–727.

Full text available at:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2574677/?tool=pubmed

Lipscomb et al. Surveillance of nail gun injuries by journeymen carpenters provides important insight into experience of apprentices. New Solutions. 2010. 20: 95-114 2010

Abstract:
http://baywood.metapress.com/app/home/contribution.asp?referrer=parent&backto=issue,7,14;journal,3,50;linkingpublicationresults,1:300327,1