

# CONN-OSHA QUARTERLY

Connecticut Department of Labor - Division of Occupational Safety and Health

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## Nail Gun Safety

By Darlene Cookson, Occupational Safety Officer

Nail guns are responsible for an estimated 37,000 emergency room visits each year and the hospitalization of more construction workers than any other tool-related injury.

### Types of Injuries

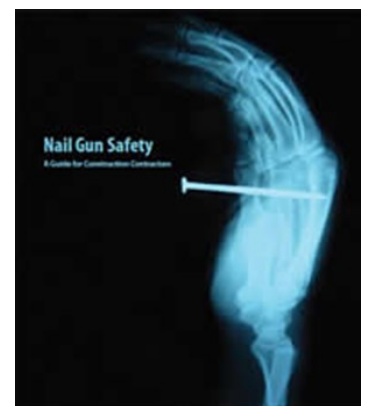
The most common nail gun injuries occur in the hand, fingers, knee, thigh, foot, toes and eyes causing damage to tendons, joints, nerves, and blindness. Less common are injuries to the body's forearm, wrist, head, neck, and trunk. The most common nail gun injuries result from accidental fires, double-fires, blowouts, and misses.

- Accidental fires can happen if the trigger of a gun with a contact actuation trigger is being held squeezed and the safety contact tip gets knocked or pushed into a person or material by mistake.
- Double fires occur if you push too hard on a contact trigger or are nailing in an awkward spot, and a second nail comes out too fast for you to react.
- Blowouts are when the nail goes through the material and ricochets off a hard piece of metal or other material, causing the nail to exit in a different direction. (use clamps to hold wood together to keep hand clear of potential hazard)
- Misses occur when rushing and not taking careful aim with the nail gun resulting in the nail hitting a body part or another individual (nails can go completely through the material being nailed)

### Take Care Selecting the Fastening Tool

To prevent nail gun injuries, care should be taken when selecting your power-driven fastening tool. Consider the following:

1. The material that fasteners are being driven through and into (lumber, sheathing, shingles, siding, underlayment, metal, concrete, etc.),
2. The type of fasteners (nails, staples, and pins),
3. The Actuation System (sequential actuation or contact actuation)
4. Other considerations include how the tool performs and how the actuation system influences performance, safety requirements, and training requirements.



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The two primary types of actuation systems used are sequential actuation and contact actuation.

**Sequential actuation systems** fire a nail when the safety contact and trigger are activated in a specific order. The typical sequence requires pushing the safety contact tip into the work piece then squeezing the trigger to discharge a nail, release both and re-activate both to fire another nail. **This is the safest type of nail gun.**

**Contact actuation systems** fire a nail when the safety contact and trigger are activated in any order. A contact trigger mechanism carries **TWICE** the risk of a sequential trigger, even after considering user experience and training.

**WARNING:** With contact actuation, if the trigger is activated and the workpiece contact is activated, whether intentionally or accidentally, the tool will discharge a fastener. **KEEP YOUR FINGER OFF THE TRIGGER WHEN A FASTENER IS NOT BEING DRIVEN.**

To tell the difference between the two actuation systems, remember, if you can "bump nail" by holding the trigger down and bouncing the nose against a nailing surface, that is a contact actuation trigger gun.

**Pneumatic nail guns** are regulated under OSHA's pneumatic power tools standard, 29 CFR 1926.302(b). Provisions of this standard that are relevant to nail guns are:

(b)(1) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the device from accidentally becoming disconnected. For example, a quick disconnect with a pull-down sleeve meets this requirement.

(b)(3) All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi pressure at the tools shall have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.

(b)(5) Do not exceed the manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings.

(b)(6) The use of hoses for hoisting or lowering tools is prohibited.

## Personal Protective Equipment (PPE)



Hearing protection is necessary when operating a nail gun. Noise levels created by nail guns can vary depending on the workpiece, the air pressure, and the work setting. Levels can range from

90 dB to more than 136 decibels, and loud short burst can contribute to hearing loss.

Additionally, when a nail misfires, it can send chips of material flying, so it is necessary to wear protective eyewear. Protective eyewear should be impact resistant. A "+" sign after the ANSI Z87.1 on the safety glass's frame indicates that the lens is meant to provide impact protection. Other PPE that is recommended are safety shoes and hard hats.

## Training

Training new and experienced workers about the causes of nail gun injuries and specific steps to reduce them can be beneficial in reducing injuries and near misses. Refer to the OSHA/NIOSH publication, [\*Nail Gun Safety, A Guide for Construction Contractors\*](#) for additional information regarding topics to be covered in a training program.

## Best Practices

1. Read manufacturer's tool manual before operating the tool; always keep it available on the jobsite.
2. Have new/limited experience employees use sequential trigger mechanism.
3. Color-code nail guns for ease in identifying trigger type.
4. Inspect tools and power sources before operating
5. Keep hands at least 12 inches away from nailing point. Use clamps when necessary to hold pieces of wood together.
6. Wear all necessary PPE (eye, hearing, safety shoes, hard hat)
7. Provide extra time/ precautions to complete tasks when working in awkward position.
8. Use hammer when working in a tight space or for work at face or head height.
9. Consider using scaffolds instead of ladders when working at heights with a nail gun.
10. Disconnect compressed air when leaving nail gun unattended, when fixing a jam/maintenance, or when traveling up/down ladder.

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## Important Don'ts

1. Never shoot toward yourself or a co-worker.
2. Never walk around with finger on the trigger.
3. Never nail into knots or metal joinery.
4. Never use a defective tool.
5. Never bypass or disable nail gun safety features, triggers, or contact springs.
6. Never lower nail gun from above, drag the tool by the hose, nor pull on hose if it gets caught on something.
7. Never use nailer with non-dominant hand.
8. Never clean, clear jams, or perform maintenance on nailer connected to compressed air.



## *Farewell to Carlotta Johnson*

Carlotta Johnson retired from CONN-OSHA on March 1, 2024. She spent 26 years on CONN-OSHA's Administrative Team. Before joining CONN-OSHA, Carlotta worked for CIGNA.

Carlotta worked closely with her colleagues and the program's Director. During the decades she was employed by CONN-OSHA, Carlotta took a great deal of pride editing the documents she reviewed to ensure that they were presentable. For example, the CONN-OSHA Quarterly editorial team benefited from her careful review of the layout of this publication.

Carlotta liked her work. During her retirement she plans to spend more time with her family. We wish Carlotta well. We miss seeing her when we come to the office.



## Focus Four for Health

*By Richard Crans, Occupational Hygienist*

OSHA developed the Focus Four initiative in 1994 to raise awareness regarding the four leading safety hazards in the construction industry that can result in serious injury or death. This initiative is commonly recognized as the "Fatal 4" or the "Focus 4."

The hazards identified are Falls, Struck-By, Electrocutation, and Caught In-Between. The idea is to bring attention to these four common serious hazards seen regularly on construction sites, find methods of recognition, and work toward the prevention of related serious injuries. The initiative was originally developed for the construction industry. Because many of the same hazards exist in workplaces outside of construction, an emphasis on these hazards has increased awareness and had a positive impact in many work settings.

When an injury occurs on the job its effect is typically immediate. That is often not true for occupational illnesses. Poisoning from carbon monoxide or another substance can have immediate effects, but many occupational illnesses are chronic in nature, and it may take months or years for an illness to develop.

Following the successful template of OSHA's Focus 4, the American Industrial Hygiene Association (AIHA) recently proposed a similar program to raise awareness of four common health hazards. The four hazards identified were selected based on the potential severity of the health impact, the extent of workers who may be impacted, general awareness of the hazard, and the availability of solutions employers can choose from. This new Focus Four for Health initiative was created for the construction industry. However, similar to safety hazards, they are applicable to a wide range of worksites.

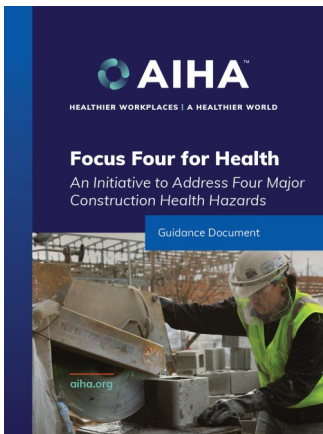
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### How to Subscribe

Contact [robert.hunt@ct.gov](mailto:robert.hunt@ct.gov) and in the subject line type "Subscribe" and then provide your e-mail address in the body of the message.

The Focus Four for Health priorities the AIHA identified are:

1. Manual material handling
2. Noise
3. Air contaminants
4. High temperatures



The practical steps employers can take to recognize and control these health hazards are discussed in the AIHA guidance document: [\*Focus Four for Health, An Initiative to Address Four Major Construction Health Hazards\*](#). There is also extensive information on these topics on [OSHA's website](#).

## Manual Material Handling

Workers engaged in manual material handling tasks may be exposed to occupational hazards such as lifting and lowering heavy items, bending, reaching overhead, pushing, and pulling heavy loads, working in awkward body postures, and performing the same or similar tasks repetitively. Workers with exposure to these risk factors may develop musculoskeletal disorders (MSDs) such as muscle strains, lower back and shoulder injuries, carpal tunnel syndrome, tendinitis, and others. The number and severity of work-related MSDs can be reduced by introducing ergonomic solutions. Ergonomics is the science of fitting jobs to people.

## Noise

Repeated exposure to loud noise damages the nerve endings in the inner ear, resulting in permanent hearing loss that cannot be corrected. Noise-induced hearing loss limits your ability to hear high frequency sounds and understand speech, seriously impairing your ability to communicate. Noise-induced hearing loss, the most common work-related illness, is completely preventable. Exposure to excessive noise can be controlled by using quieter machines, isolating the noise source, limiting worker exposure, or using effective hearing protection.

## Air Contaminants

Many work tasks generate air contaminants. For example, dusts, such as respirable crystalline silica,

may be created when materials are disturbed by cutting, grinding, drilling, sanding, or when dry materials are mixed. Metal fumes, such as lead fumes, may be generated during hot operations such as welding and torch cutting. Vapors may accumulate when solvents such as acetone evaporate into the air. The incomplete burning of any material containing carbon may produce carbon monoxide gas. Inhaling these contaminants may lead to short- or long-term health effects depending on the toxicity of the material and the extent of exposure. Inhalation exposure to air contaminants can be controlled with local exhaust ventilation, dilution ventilation or the use of respiratory protection.

## High Temperatures

Millions of workers are exposed to heat. Although illness from exposure to heat is preventable, every year, thousands of workers become sick from occupational heat exposure, and some cases are fatal. Occupational risk factors for heat illness include heavy physical activity, warm or hot environmental conditions, lack of acclimatization, and wearing clothing that holds in body heat. Heat-related illnesses can be prevented when workers have the chance to acclimatize and have access to water, rest, and shade.

These health hazards have a few things in common. Generally, they lack reliable warning indicators of an imminent injury or illness until it's too late. Because of this, workers should be made aware of the potential life impact of these serious illnesses and employers should address the Focus Four for Health hazards when they conduct a Job Hazard Analysis (JHA). A thoughtful JHA, combined with proper planning can prevent the likelihood of serious illness resulting from exposure to each of these four hazards.

The CONN-OSHA consultation program is available as an on-site resource to help employers address these health hazards and develop JHAs.

### [Requesting a Consultation](#)

To learn more or request your free consultation from CONN-OSHA:

Call us at 860-263-6900, or visit our [webpage](#)

Save the  
**DATE**

## Virtual Training Schedule



<p><b>Fall Protection</b></p> <p>5/7/24</p>	<p>This class is being held in support of the National Safety Stand-Down to Prevent Falls in Construction! Falls are among the most common causes of serious work-related injuries and deaths. OSHA requirements for the various fall protection options will be covered. The special requirements for scaffolding and residential construction will also be touched upon.</p>
<p><b>Heat Illness</b></p> <p>6/18/24</p>	<p>Millions of U.S. workers are exposed to heat in their workplaces. Although illness from exposure to heat is preventable, every year, thousands become sick from occupational heat exposure, and some cases are fatal. Employers should create plans to protect workers from developing heat-related illnesses. Information presented in this session will help employers and workers recognize and evaluate the occupational risk factors for heat illness and to develop effective ways to control heat risk.</p>
<p><b>Trenching and Excavation</b></p> <p>7/10/24</p>	<p>Studies show that excavation work is one of the most hazardous types of work done in the construction industry. Injuries from excavation work tend to be of a very serious nature and often result in fatalities. The primary concern in excavation-related work is a cave-in. Cave-ins are much more likely to be fatal to the employees involved than other construction-related accidents. This workshop will provide an overview of 29 CFR 1926.650 - 652, Excavations, including the role of the competent person.</p>
<p><b>OSHA Reporting and Recording Requirements</b></p> <p>8/6/24</p>	<p>The purpose of this workshop is to introduce the requirements and procedures related to OSHA Injury &amp; Illness Recordkeeping, including the electronic reporting of injuries and illnesses requirements. The class will help develop skills to accurately report occupational injuries and illnesses. Resources and reference materials will be provided. If you are responsible for completing the documents required by this rule (OSHA 300, OSHA 300A and OSHA 301), or if you supervise the person that completes the forms, or if you are a safety committee member, this class is a must.</p>
<p><b>New England Roundtable</b></p> <p><i>Every Wednesday of the Month</i></p>	<p>Bringing business together to network and share ideas in the occupational safety and health community. The roundtable meetings are held from 9:00 am to 10:15 am every Wednesday. For more information on the New England Roundtable visit: <a href="https://oshaedne.com/roundtables">oshaedne.com/roundtables</a></p>

[Visit this link for more info and to sign up.](#)

## Hazard Corner: Nail Gun Injuries and Construction Worker Fatalities

According to the OSHA/NIOSH publication: [Nail Gun Safety: A Guide For Construction](#), severe nail gun injuries have led to construction worker deaths. The incidents described below represent three of these fatalities.

### Case 1

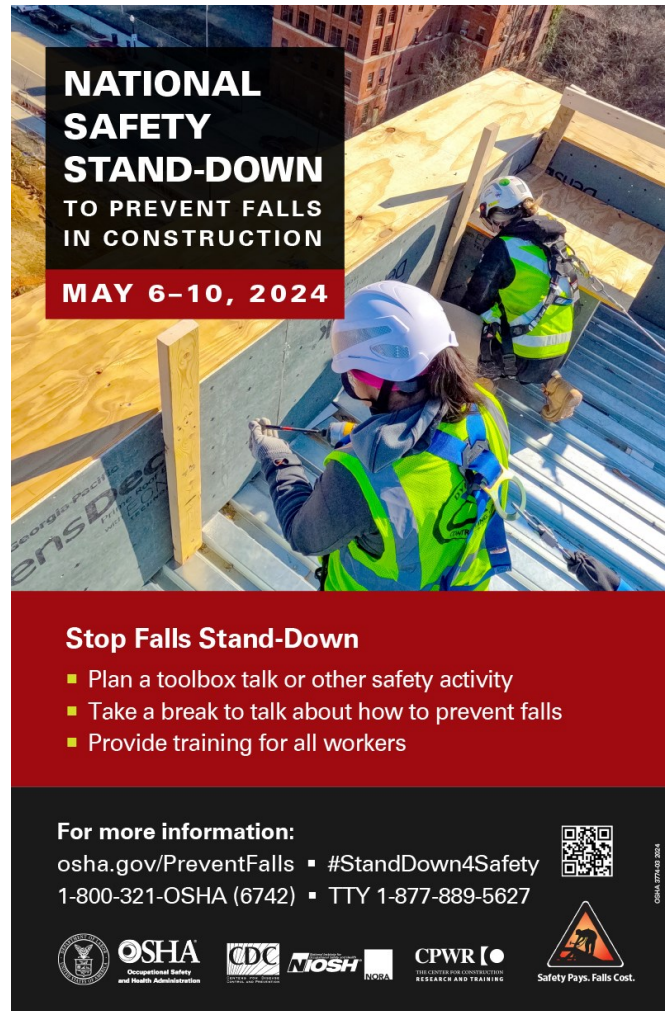
A 26-year-old construction worker died following a nail gun accident. He was framing a house when he slipped and fell. His finger was on the contact trigger of the nail gun he was using. The nosepiece hit his head as he fell, driving a 3-inch nail into his skull. The nail injured his brain stem, causing his death. The safety controls on the nail gun were found to be intact. Death and serious injury can occur using nail guns—even when they are working properly.

### Case 2

An employee was installing sheet rock backing. While climbing a 7-8-foot A-frame ladder, he shot himself in the chest with a nail gun. The employee sustained a fatal puncture wound to the right side of chest.

### Case 3

An 18-year-old construction worker collapsed while handling a power-actuated nail gun and died shortly after. A puncture wound was found on the front of his left chest. After reviewing autopsy results, information from a visit to the scene, examination of the alleged tool, interrogation of witnesses and the X-ray of the body, the conclusion was accidental death due to the unusual ricochet of a nail. A nail fired from the deceased's nail gun had deflected off the wall and struck him on the front of the chest.



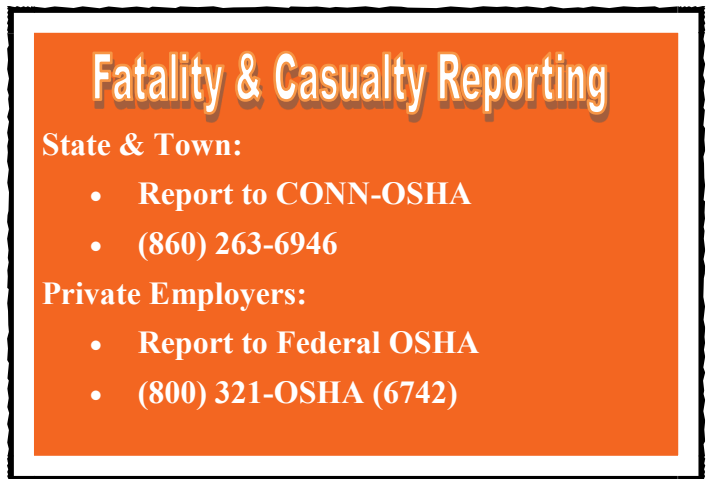
**NATIONAL SAFETY STAND-DOWN TO PREVENT FALLS IN CONSTRUCTION**  
**MAY 6-10, 2024**

**Stop Falls Stand-Down**

- Plan a toolbox talk or other safety activity
- Take a break to talk about how to prevent falls
- Provide training for all workers

**For more information:**  
osha.gov/PreventFalls ▪ #StandDown4Safety  
1-800-321-OSHA (6742) ▪ TTY 1-877-889-5627

Logos: OSHA, CDC, NIOSH, CPWR, Safety Pays. Falls Cost.



**Fatality & Casualty Reporting**

**State & Town:**

- Report to CONN-OSHA
- (860) 263-6946

**Private Employers:**

- Report to Federal OSHA
- (800) 321-OSHA (6742)



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