

# Caught-in Hazards

Volume 1 Fast 100 Issue 1C-1

Construction is among the most dangerous industries and in recent years, the Bureau of Labor Statistics found that there are **more than 800 fatal on-the-job injuries to construction workers annually** – more than any other single industry.

**OSHA Standard 1926.21(b)(2)** *The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

- To prevent injuries and possible fatal incidents the first step is to **recognize the potential hazards**.
- Never place yourself in a dangerous area or position.
- Make sure that all guards and covers are placed correctly and not damaged.
- Keep gloves and loose clothing away from moving gears or rotating shafts.

**OSHA Standard 1926.300(b)(2)** *Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard.*

## Remember these important tips to avoid caught-in hazards:

- Look for possible caught-in hazards.
- Avoid removing guards and replace immediately.
- Follow trench safety and cave-in protection rules.
- Be visible by using reflective clothing.
- Never take shortcuts behind, or around heavy equipment.
- Ensure all back-up alarms and horns are working.
- Avoid the swing areas of excavators and cranes.

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# Caught-in Hazards Examples

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**Caught-in hazards** can be found in many different tasks:

Electrical contractors >> working with powered cable feeders and pullers

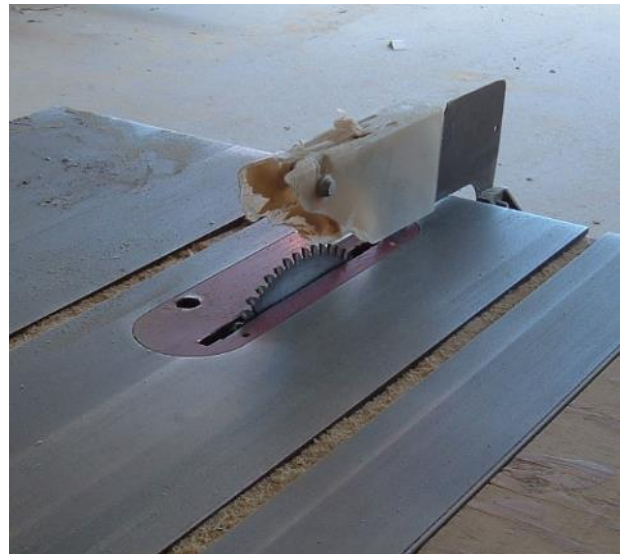
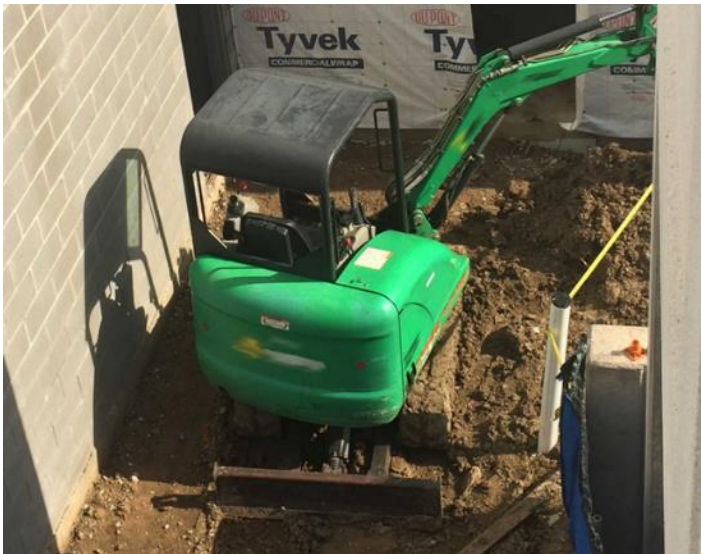
Mechanical technicians >> working inside of tight crawlspaces

Plumbing and pipe-fitters >> using cutting, drilling or digging equipment

Road construction >> performing work or standing near heavy equipment

Utility construction >> working inside of trenches and excavations

**Can you spot the potential caught-in hazard in these photos?**



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According to the Centers for Disease Control and Prevention (CDC), each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment. About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work.

Workers can get particles of dust, metal, wood, glass, concrete, plastic or other hard substances in their eyes. In addition, chemicals, acids, sparks, hot oil, fire and steam are also eye hazards.

**OSHA Standard 1926.28(a)** *The employer is responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees.*

**Impact hazards** are those that result from flying or falling objects, or sparks striking the eye. Eye protection for these hazards are safety spectacles with side shields or goggles.

**Heat injuries** may occur to the eye and face when workers are exposed to high temperatures, splashes of molten metal, or hot sparks. Eye protection for these hazards are safety spectacles with special-purpose lenses and side shields or goggles.

**Chemical injuries** often result from an inappropriate choice of PPE, that allows a chemical substance to enter from around or under protective eye equipment. Eye protection for these hazards are goggles, face shields and eyewash stations.

**OSHA standard 1926.102(a)(1)** *Employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.*

- Safety glasses must be rated ANSI Z87.1.
- Prescription lenses must also be rated ANSI Z87.1 or safety glasses will be required over your prescription glasses.

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In addition to the physical hazards that can be found in construction, there are many health hazards that workers should be aware of for their own protection. Most workers have heard of asbestos but may not understand why it should be a concern.

*OSHA Standard 1926.1101 covers all construction work involving asbestos containing materials including demolition, removal, repairs, maintenance, or renovation, and installation of products containing asbestos.*

## Why is asbestos so dangerous?

According to OSHA, asbestos is known to cause cancer in humans and can cause chronic lung disease and other health hazards.

Workers may not know they are contaminated because symptoms of these health hazards and even cancer may take many years to develop following exposure to the asbestos containing material.

## Where can asbestos be found?

Asbestos can be found in many area including pipe insulation, floor tiles, roofing tiles, boiler insulation and siding.

If you aren't sure if it contains asbestos **do not disturb it!**

- Never enter into a restricted asbestos area. Read and **follow warning signs** or barricades.

*OSHA Standard 1926.1101(e)(2) states that regulated areas shall be demarcated [barricaded or marked].*

- When asbestos is disturbed it breaks down into tiny fibers that can easily be inhaled into the lungs.
- Only workers who are specially trained and equipped can install, remove, or disturb asbestos containing materials.
- Proper protective equipment must be worn at all times, depending on the type of activity performed.



Powered industrial trucks, commonly called **forklifts** or lift trucks, are used in many industries, primarily to move materials. They can also be used to raise, lower, or remove large objects or smaller objects on pallets, in crates, or other containers. Note, according to OSHA, over-the-road haulage trucks and earth-moving equipment that has been modified to accept forks are not considered powered industrial trucks.

**OSHA Standard 1910.178** covers the requirements for forklifts of all types including rough terrain forklifts, telescoping or boom forklifts, and industrial forklifts. For other mechanized equipment such as loaders, graders, and excavators look to OSHA Standard 1926.600.

## Only trained and certified operators allowed!

- The first and most important rule to follow with forklifts – get trained!
- Many injuries to both the operator and their co-workers occur because the user of the forklift was not trained in the specific model and type of forklift they tried to use.

**OSHA Standard 1910.178(l)(1)(i)** states *the employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this [standard].*

- Safe operating procedures depend on the specific type of lift. Not all forklifts work the same.
- Always remain a safe distance from forklifts in use and keep away from the swing area of the forklift.
- Never stand on or under the forks of the lift.
- Never use a forklift to raise or lower people unless it is designed and equipped for that use.
- Always pay attention to horns and back-up alarms from all heavy equipment, including forklifts.
- If operating any heavy equipment, always use seatbelts.

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## OSHA investigates Edmond forklift accident

Story



SUN FILE PHOTO

Investigation continues in forklift deaths

## LESSONS LEARNED

Many injuries to both the operator and their co-workers occur because the user of the forklift was not trained in the specific model and type of forklift they tried to use.

*Emergency personnel responding to a fatal incident involving two construction workers killed when the forklift tipped over. Incidents like this can often be prevented by following proper training and taking caution when working around forklifts*  
News Article: <http://bit.ly/1CMCzRI>  
[www.edmondsun.com](http://www.edmondsun.com)

**OSHA Standard 1910.178(l)(1)(i)** states *the employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this [standard].*

*Two additional pieces of heavy equipment attempt to upright this forklift after the operator tipped it over. Fortunately no one was injured. Incidents like this can happen to the most experienced operators. Never attempt to use equipment you have not been trained to operate.*



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Aerial Lifts are useful pieces of equipment with specialized features, uses, and unique potential hazards. Extensible **boom lifts** are very helpful when you need to access heights without the expense of a crane or set-up required to use a scaffold. **Articulating boom lifts** are especially useful when needing to access difficult to reach areas and interior locations with high ceilings and odd angles.

**OSHA Standard 1926.453(b)(2)(ii)** *Only authorized persons [designated by the employer] shall operate an aerial lift.*

In addition, **OSHA Standard 1926.453(b)(2)(iv)** *Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.*


➤ **Only trained and authorized operators can use aerial lifts!**

- Employees must receive training in the safe operation of the lifts so they will understand and avoid unsafe conditions that could lead to injuries.

➤ **Common hazards found with aerial lifts include:**

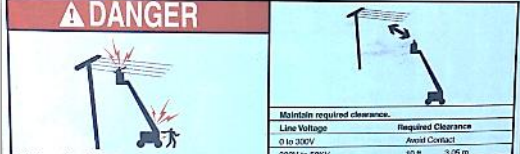
- Electrocution from accidental contact with energized wires
- Tip-over hazards from driving on step or unstable surfaces
- Collisions or struck-against hazards
- Fall hazards from improper use of the lifts and failure to use proper fall protection

**Fall Hazards**



Occupants must wear a safety belt or harness in accordance with governmental regulations. Attach lanyard to anchor provided in platform.

**⚠ DANGER**



Electrocution Hazard  
Death or injury can result from contacting electric power lines.  
Always contact the electric power line owner. The electric power shall be disconnected or the power lines moved or insulated before machine operations begin.

Line Voltage	Required Clearance	Avoid Contact
0 to 200V	10 ft	3.05 m
300V to 500V	15 ft	4.60 m
600V to 2000V	20 ft	6.10 m
3000V to 5000V	25 ft	7.62 m
5000V to 7500V	35 ft	10.67 m
7500V to 10000V	45 ft	13.72 m
over 1000 KV	see operator manual	

➤ **Always look for overhead power lines and electricity lines feeding adjacent buildings and structures. Danger signs should be posted warning aerial lift operators of potential hazards.**



# Aerial Lift Incident

Volume 1 Fast 100 Issue 6C-2

## LESSONS LEARNED



Mark Douglas  
@Douglas680NEWS

Follow

One man dead, another hurt when this skyjack tipped over this morning. Update from police in @680News at 9:30.



News Article: [news.nationalpost.com](http://news.nationalpost.com)  
<http://bit.ly/1Ew9db8>

FAVORITE  
1



6:22 AM - 21 May 2015



! DANGER	
	<b>Tip-over Hazard</b> Altering or disabling limit switches can result in machine tip-over. Machine tip-over will result in death or serious injury.
	Do not alter or disable limit switch(s).  31060 C

### ➤ Avoid tip-over hazards!

- Always use **proper fall protection** when operating an aerial lift.
- **Never alter or disable warning devices** or limit switches – they are there to help avoid tip-over hazards.
- **Survey the area** where the lift will be used before moving or driving the lift to identify and avoid potential hazards such as curbs, pot-holes, excavations, or floor holes.

**OSHA Standard 1926.453(b)(2)(iv)** *Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.*

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In 2015 OSHA released a new construction standard to address a hazard that takes the lives of construction workers each year: **Confined Spaces**.

## OSHA Standard 1926 Subpart AA covers **Confined Spaces in Construction**

### ***Confined Space – an area that:***

- 1. Is large enough for a worker to enter it,***
- 2. Has limited means of entry or exit, and***
- 3. Not designed for continuous occupancy.***

- Confined spaces may appear to be safe but can contain invisible hazards such as dangerous fumes, vapors, or insufficient oxygen.
  - **Never enter a confined space unless you have the proper training, equipment, and procedures!**
  - **Determine if confined spaces have a potentially hazardous atmosphere** before entering by using special air testing equipment.
- Never assume that an open top pit is safe to enter, even if it is not labeled as a confined space. Pits, manholes, and tanks under construction could still pose dangers.
- **Permit-required confined spaces** are confined spaces that have any hazard such as:
  - hazardous atmosphere – such as low oxygen or a toxic gas
  - potential for engulfment or suffocation – a risk of drowning or being buried
  - a layout that might trap a worker through converging walls or a sloped floor
  - or any other serious safety or health hazard

Permit-required confined spaces require workers to take safety measures such as rescue equipment to safely remove someone out of the space without entering.

# Extension Ladders

Volume 1 Fast 100 Issue 8C-1

Although one of the most common tools used on a construction site, if improperly used, **Extension Ladders** can lead to serious injuries or even fatal incidents. A research study found that ladders are involved in 20 percent of fall injuries among workers and **81 percent of construction worker fall injuries**.

According to OSHA *“Workers who use extension ladders risk permanent injury or death from falls and electrocutions. These hazards can be eliminated or substantially reduced by following good safety practices.”*

**OSHA Standard 1926.1060(a)** states that the employer shall provide a training program for each employee using ladders and stairways, as necessary... to recognize hazards related to ladders and stairways...

- Remember these important safety precautions when working with extension ladders:
  - **Always visually inspect** all extension ladders before use for any defects such as: missing rungs, bolts, cleats, screws and loose components.
  - **Remove defective ladders from service** immediately.
  - **Never take extension ladders apart** to make two smaller ladders!
  - Extension ladders must be **placed at a safe angle** to avoid sliding or tipping.
  - **Maintain three points of contact** when climbing an extension ladder. Two hands/one foot or two feet/one hand.
  - **Do not overextend** yourself to either side of the extension ladder, this can cause you to lose balance and shift the ladder away from yourself.
  - **Always use the ladder as intended** and follow all manufacturer’s warnings for the specific type of ladder you are trained to use.
  - Place ladders at a **safe angle** and **block the area** with cones or warning signs to avoid displacement in busy areas.

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# Floor Holes

Volume 1 Fast 100 Issue 9C-1

Floor holes are one area where many workers forget to take the necessary safety measures to protect themselves and their co-workers. Examples can be found inside of buildings, on rooftops, and outdoors. Examples include:

- Roof drains
- Concrete penetrations for piping/ducts
- Skylights
- Unfinished stairways
- Pier drilled holes
- Excavations

**OSHA Standard 1926.500(b)** defines a hole as a *gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.*

Floor holes can be guarded or protected by guardrails, covers, and other conventional fall protection methods.

- Inspect walking/working areas and rooftops for potential floor holes, including skylights.
- Ensure roof drains and other penetrations are covered or protected to avoid trip hazards.
- Guardrails used around floor holes must meet specific construction guidelines so as to prevent falls to lower levels and erected on all unprotected sides or edges.

**OSHA Standard 1926.502(b) Guardrail systems** states that *guardrails must have a top rail of 42" high and strong enough to withstand 200lbs of force, mid rails must be 21" high and strong enough to withstand 150lbs of force, and **When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.***

- When used to protect employees, hole covers must be able to support 2x the weight of the employees, equipment, and their materials.
- Covers need to be color coded or marked with the word "Hole" or "Cover."

**OSHA Standard 1926.501(b)(4)** says that *Each employee on walking/working surfaces shall be protected from falling through holes... and from tripping in or stepping into or through holes (including skylights)...*

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## Fifteen-Year-Old Laborer Dies After Falling Through a Skylight - Florida

NIOSH In-house FACE Report 2001-04

### Summary

On January 17, 2001, a 15-year-old male laborer (the victim) died from injuries he sustained when he fell through a skylight to the lower ground level approximately 23 feet, 9 inches below. The company's president allowed the company's handyman to find someone to help him repair leaks in a flat roof over the company's three-sided warehouse. The handyman enlisted the help of his 15-year-old neighbor and brought him to the worksite. Neither the handyman nor laborer had received training in fall protection methods and no means of fall protection had been provided by the employer.



A few examples of floor holes include:

- Roof drains
- Concrete penetrations for piping/ducts
- Skylights
- Unfinished stairways
- Pier drilled hole
- Excavations

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# Extension Cords

Volume 1 Fast 100 Issue 10C-1

Electrical hazards are an area of major safety concerns in construction and account for a large number of injuries and fatalities. Extension cords and GFCIs (Ground Fault Circuit Interrupters) can be found on any construction site and remembering a few safety tips can help prevent serious injuries from happening.

**OSHA Standard 1926.416(a)(1)** states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

Never take electricity for granted! No matter how small the job, always use safe work practices, especially when using electrical tools and equipment.

**OSHA Standard 1926.405(a)(2)(ii)(J)** *Extension cord sets used with portable electric tools and appliances shall be of **three-wire type** and shall be designed for **hard or extra-hard usage**. Flexible cords used with temporary and portable lights shall be designed for hard or extra-hard usage. ... Some examples include types SJ, SJO, SJT, SJTO.*

- Always inspect your electrical tools and extension cords before use.
- Never use extension cords that have broken or missing ground pins – these are there for your safety!
- Use only properly rated extension cords for a construction site.
- Never run cords through windows or doors where they could be pinched or damaged.
- Remove frayed, damaged, or severely kinked extension cords from use immediately.

**OSHA Standard 1926.405(a)(2)(ii)(I)** *Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided. Flexible cords and cables may pass through doorways or other pinch points, if protection is provided to avoid damage.*

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*Never use extension cords that have broken or missing ground pins!*



*Common temporary set-up of electrical panel with GFCI outlets found on a construction site.*

According to OSHA, a GFCI (Ground Fault Circuit Interrupter) *“is a fast-acting circuit breaker designed to shut off electric power in the event of a ground-fault within as little as 1/40 of a second.”*

- Use GFCIs on any construction site to reduce the potential of electrical shocks due to a ground fault.
- Always test GFCIs before use by using the test and reset buttons. If found defective do not use that GFCI.

**OSHA Standard 1926.404(b)(1)(ii) Ground-fault circuit interrupters.** *...outlets on construction sites... shall have approved ground-fault circuit interrupters for personnel protection.*

Never take electricity for granted! No matter how small the job, always use safe work practices, especially when using electrical tools and equipment.

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# Underground Utilities

Volume 1 Fast 100 Issue 11C-1

Trenching and excavation work poses many hazards such as cave-ins, equipment struck-by incidents, potential falls, and striking underground utilities.

Hazards posed by striking buried underground utilities include property damage, injury, electrocutions, and even explosions.

In order to prevent these potential hazards it is important to follow all applicable excavation and trenching safety requirements. In addition to OSHA rules, workers should be aware that there may be specific state, municipal, or local rules for **“Call before you dig”** where the work is being done.

**OSHA Standard 1926.651(b)(1)** states that *the estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.*

- Before trenching or excavation work takes place workers must estimate the location of any buried underground utilities by contacting the appropriate service.
- Each state has specific guidelines for call before you dig.
- **Call 811** from anywhere in the country **a few days prior to working** on excavations or trenches and the call will automatically be routed to the local one call center.

**OSHA Standard 1926.651(b)(2)** says that *utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation.*

- Always wait the specific time required by the locate service.
- Always **respect the markings and flags** placed by the locating service.
- Probe, hand dig, and/or pot hole using shovels when approaching the painted/flagged areas.

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# Utility Color Codes

Volume 1 Fast 100 Issue 11C-2

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- **Call 811** from anywhere in the country a **few days prior to working** on excavations or trenches and the call will automatically be routed to the local one call center.
- Prior to excavation and calling before you dig some states require contractors to **“white line”** the area **proposed** for **excavation**.
- **“White line”** the area by painting arrows, dashes, dots, or lines in the area the crew will be digging before the locate service arrives.

**OSHA Standard 1926.651(b)(2)** says that *utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation.*

COLOR CODE FOR MARKING UNDERGROUND UTILITIES
PROPOSED EXCAVATION
TEMP SURVEY MARKINGS
ELECTRIC – POWER
GAS – OIL – STEAM
TELCO – COMMUNICATIONS
POTABLE WATER
RECLAIMED WATER
SEWER – DRAIN LINES

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# Back Injury Prevention

Volume 1 Fast 100 Issue 12C-1

Despite all of the equipment, tools, and machinery that is used in construction, manual labor is still needed to get most work done. What this means is that every worker is exposed to potential injuries to their back by simply doing the normal every day tasks they often don't think about. According to the Centers for Disease Control (CDC): "In construction, 25 percent of injuries are back injuries... [and] Every year, a back injury causes 1 in 100 construction workers to miss work - usually missing about 7 workdays, but sometimes more than 30."

**OSHA Standard 1926.21(b)(2)** says that *the employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

Tasks that can cause or aggravate an existing back injury include:

- Bending, stooping, or squatting
- Lifting materials from the floor
- Pushing heavy materials
- Placing materials overhead
- Shoveling, twisting, or awkward body positions

**OSHA Standard 1926.25(a)** *During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.*

- Housekeeping is an important part of preventing back injuries – always make sure work areas are free of clutter and possible trip hazards.
- Cut down on carrying materials whenever possible by having them delivered close to where they will be used.
- Use material handling tools like carts, dollies, pallet jacks, and forklifts, if possible, to limit manual lifting.
- Consider new tools and devices to eliminate the need for bending and stooping, like tools with modified or extended handles.

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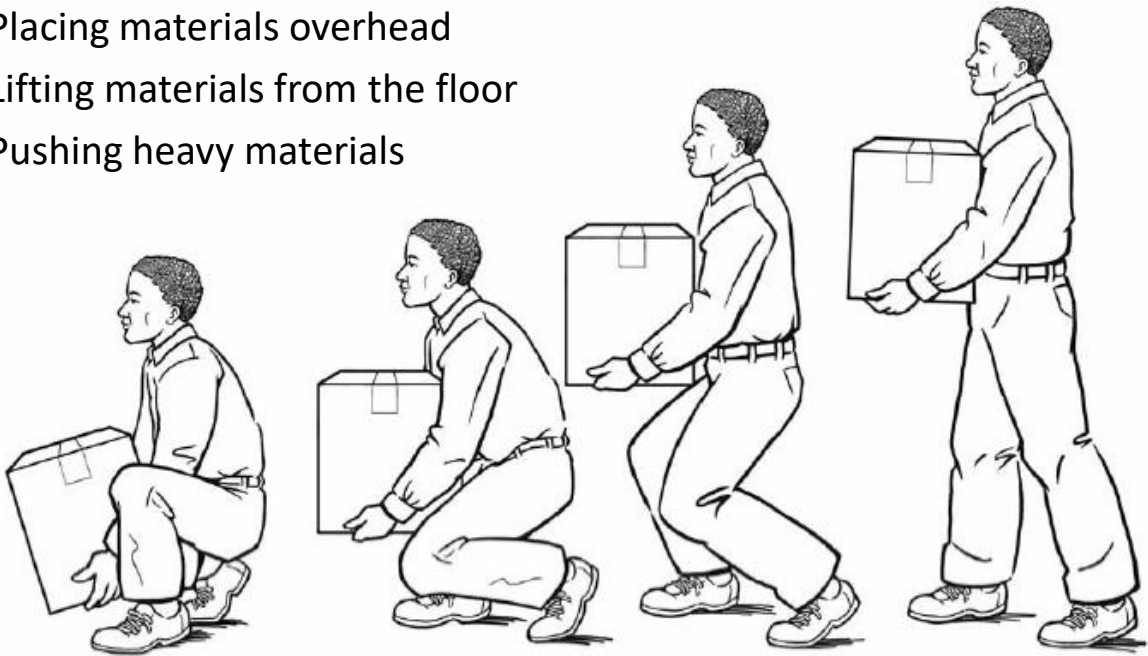
# Proper Lifting

Volume 1 Fast 100 Issue 12C-2

Despite all of the equipment, tools, and machinery that is used in construction, manual labor is still needed to get most work done. What this means is that every worker is exposed to potential injuries to their back by simply doing the normal every day tasks they often don't think about. According to the Centers for Disease Control (CDC): "In construction, 25 percent of injuries are back injuries.

Tasks that can cause or aggravate an existing back injury include:

- Bending, stooping, or squatting
- Placing materials overhead
- Lifting materials from the floor
- Pushing heavy materials



*Example of proper lifting/setting technique according to CDCs "Simple Solutions Ergonomics for Construction Workers."*

- Cut down on carrying materials whenever possible by having them delivered close to where they will be used.
- When you must lift or carry materials: 1) Keep the load as close to your body as you can. 2) Try not to twist, turn your whole body instead. 3) Lift with your legs, not your back. 4) Lift the load using a solid two-handed grip. 5) Lift and lower materials in a smooth steady way, try not to jerk the lift.

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In construction, the potential for injury begins upon arrival at the job site. Construction hazards can be present even before a worker exits their vehicle or when driving around the site.

Workers should practice safe procedures when driving all types of vehicles and construction equipment to avoid creating hazards to themselves and their co-workers. Backing up equipment or vehicles can be especially dangerous if workers fail to follow safe operating procedures.

Remember these tips to keep workers safe when driving on a site:

- Use designated construction entrances and access areas when exiting and entering the job sites.
- All vehicles that will be used must be inspected to assure that they are in safe operating condition and free of apparent damage that could lead to an accident.
- Notify the appropriate person and be certain that any damage or defect is corrected before the vehicle is used.
- Remove from service any motor vehicle that is found to be defective or has faulty safety devices.
- Vehicles to transport employees must have seats secured for the number of workers required.
- Seat belts must be provided and used by all workers using vehicles and earthmoving equipment such as loaders, dozers, and off-highway trucks.
- Never use a vehicle with a damaged seatbelt!
- Many states have strict rules against transporting personnel in the back of a pickup truck. Always follow regulations and your sites safety procedures for transporting co-workers on a site.
- Prevent backing incidents by making sure back-up alarms are working, checking the area behind you before reversing, never backing up without having a clear view, and using a highly visible and well-trained spotter.

# Using a Spotter

Volume 1 Fast 100 Issue 13C-2

Workers should practice safe procedures when driving all types of vehicles and construction equipment to avoid creating hazards to themselves and their co-workers. Backing up equipment or vehicles can be especially dangerous if workers fail to follow safe operating procedures.

Prevent backing incidents by making sure back-up alarms are working, checking the area behind you before reversing, never backing up without having a clear view, and using a highly visible and well-trained spotter.

## Vehicles Causing the Most Backover Fatalities

*in order of fatality incidents*

- Dump Truck
- Semi/Tractor Trailer
- Truck
- Forklift
- Garbage Truck
- Pick-up Truck

OSHA Integrated Management Information System Data



*Back up*



*Back, turn left*



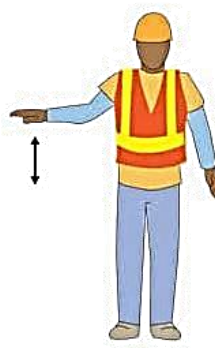
*Back, turn right*



*Move forward*



*Distance left to back*



*Slow down*



*Stop*

*Suggested Spotting Signals – OSHA.gov*

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Electrical hazards can be found on every construction project. Examples:

- Overhead powerlines
  - Damaged tools or extension cords
  - Improperly insulated equipment
  - Faulty wiring or missing ground pins
  - Unsafe work practices
  - Exposed energized wires in electrical panels or outlets
- Never use metal ladders when working with or near energized electrical equipment.

**OSHA Standard 1926.1053(b)(12)** says that *ladders shall have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized electrical equipment...*

**OSHA Standard 1926.416(a)(1)** states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

- Workers must be protected from energized electrical parts!
- Covers should be in place and locked, if necessary, to avoid accidental contact by persons not qualified to work on electrical equipment.
- Openings in electrical panels should be covered, guarded, or protected to prevent accidental shocks or electrocution.

**OSHA Standard 1926.300(a)** Condition of tools. *All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.*

- Never use damaged or defective electrical tools!
- Always inspect your electrical tools before use.
- Never attempt to repair electrical tools or equipment unless you are qualified for the work.

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Eye and face protection is extremely important but often taken for granted. Remember to always wear protection for your eyes and when needed also for your face to avoid a potentially permanent injury. Hazards where face protection may be required are found when doing tasks like:

- Welding
- Grinding with hand-held or heavy duty table grinder
- Using a chop saw to cut concrete or rebar
- Operating a chainsaw
- Pouring, washing with, or spraying chemicals or materials

**OSHA Standards 1926.102(a)(1)** says that *employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.*

Never risk danger to your face and eyes even for just a few minutes of welding, cutting, or grinding. The damage can happen quickly and be permanent! Always wear face and eye protection that is designed for safety protection and rated as required by OSHA regulations.

**OSHA Standard 1926.102(a)** says that **(2)** *eye and face protection equipment required by this Part shall meet the requirements specified in American National Standards Institute, Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection.* And **(6)** says that *they shall provide adequate protection against the particular hazards for which they are designed.*

- Safety glasses aren't always enough – sometimes you need both the **safety glasses to protect your eyes AND a face shield to protect your face.**
- Always follow the manufacturer's recommendations for the specific face shield.
- Use the type of face shield suited for the specific task.
- Mesh face shields are great for cutting tasks where large particles could strike your face.
- Clear plastic/acrylic shields are better for tasks where small particles, splattering, or sparks could strike the face.

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# Carbon Monoxide

Volume 1 Fast 100 Issue 16C-1

Carbon monoxide (CO) is a poisonous, colorless, odorless, and tasteless gas. CO can be found in construction areas where workers may be burning common materials such as wood, coal, or oil and using fuels such as gasoline or kerosene.

**OSHA Standard 1926.57(a)** *Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed [hazardous] limits...*

- Carbon monoxide (CO) is a toxic gas because it damages the blood's ability to carry oxygen throughout the body. CO is non-irritating and can overcome a worker without warning.
- Workers may not realize they are being exposed to a high level of CO in the air they are breathing.
- Leave the area and tell your supervisor immediately if you feel dizzy, drowsy, or are experiencing nausea!

According to OSHA, “Many people die from CO poisoning, usually while using **gasoline powered tools and generators in buildings or semi-enclosed spaces without adequate ventilation.**”

- Follow all instructions and warnings for gasoline, diesel, and kerosene powered equipment and tools. Maintain equipment and tools that can produce CO in good working condition to reduce CO formation.
- Use tools powered by electricity or compressed air in enclosed areas whenever possible.
- Open windows and doors in enclosed spaces to avoid CO buildup.
- Report any situation where there may be a chance of CO accumulation.
- Equipment such as gasoline powered forklifts or even propane radiant heaters used indoors can also be a source of CO.
- Even working outdoors with gas powered equipment such as leaf-blowers, powered trowels, and similar tools could expose you to CO dangers after a prolonged use.

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# Excavators, Loaders, and Graders

Volume 1 Fast 100 Issue 17C-1

Heavy equipment is needed on almost every construction project and workers often become complacent to the potential dangers of this machinery.

Construction workers should remember that working with and around heavy equipment puts them at risk for struck-by, caught-in, and other hazards. Workers should always ensure that they only operate equipment that they have been trained and authorized to use. In addition, keeping heavy equipment in good working condition is good business and can often prevent serious or even fatal incidents.

**OSHA Standard 1926.602** covers the *requirements for earthmoving equipment such as scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment.* In addition, **OSHA Standard 1926.20(b)(4)** says that *The employer shall permit **only** those employees qualified by training or experience to operate equipment and machinery.*

- Horns and back-up alarms must be installed and working!
- Operators need to inspect their equipment to ensure all safety devices and alarms are functional.

**OSHA Standard 1926.602(a)(9)(i)** *All bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be **equipped with a horn**, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. The horn shall be **maintained in an operative condition.***

- Never move or operate earthmoving or compacting equipment which has an obstructed view to the rear unless the equipment has a back-up alarm or another worker is used as a spotter!
- Seat belts must be provided and used by all workers using earthmoving equipment such as loaders and excavators.

**OSHA Standard 1926.602(a)(2)(i)** *Seat belts shall be provided on all equipment covered by this section...*

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## Machine operator killed on Sunshine Circle

Michael P. Mayko, Staff Writer Updated 11:03 pm, Sunday, January 8, 2012



Photo: Stephen Krauchick



IMAGE 1 OF 5

The operator of a mini-excavator working at a Bridgeport Housing Authority-owned site was killed Sunday afternoon when he was ejected from his seat and pinned against the house by the equipment.

*As reported in this article published by ctpost.com "The chief said it appears the operator was not wearing a seat belt and was digging uphill when he was ejected from the excavator. The machine then rolled backwards, pinning him between the equipment and the house." <http://bit.ly/1OqbV59>*

**OSHA Standard 1926.602(a)(2)(i)** *Seat belts shall be provided on all equipment covered by this section...*

- Seat belts must be provided and used by all workers using earthmoving equipment such as loaders and excavators.

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# Preventing Eye Injuries

Volume 1 Fast 100 Issue 18C-1

- Each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment. About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work.
- The majority of these injuries result from small particles or objects striking or abrading the eye. Examples include metal slivers, wood chips, dust, and cement chips that are ejected by tools, wind blown, or fall from above a worker. Some of these objects, such as nails, staples, or slivers of wood or metal penetrate the eyeball and result in a permanent loss of vision.
- Large objects may also strike the eye/face, or a worker may run into an object causing blunt force trauma to the eyeball or eye socket.
- Chemical burns to one or both eyes from splashes of industrial chemicals or cleaning products are common. Thermal burns to the eye occur as well.

**OSHA Standard 1926.102(a)(1)** *Employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.*

- Never risk your safety or that of your co-workers; when hammering, using chisels, or similar activities wear proper safety glasses or goggles designed for impact hazards!
- Always wear safety goggles or other safety eyewear when using sprayers or handling any chemicals or materials.
- Using cutting or grinding tools such as chop saws, concrete saws, bench saws, and hand held grinders can be extremely dangerous to your eyes.
- If you get dust or particles in your eyes NEVER RUB them, it will make the injury worse and can cause permanent damage.
- If you get anything in your eyes, especially chemicals, use clean water to flush your eyes clear of the material and immediately seek medical attention.

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According to the U.S. Bureau of Labor Statistics, in recent years, more than 200 workers die annually as a result of fires and explosions. Workers need to recognize potential fire hazards and take every safety precaution to avoid potentially deadly situations on their job sites.

**OSHA Standard 1926.152(g)(8)** says that *there shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable liquids.* And **1926.152(g)(9)** says that *conspicuous and legible signs prohibiting smoking shall be posted.*

- Fire prevention is each worker's responsibility!
- Be alert to your activities and avoid creating fire hazards.
- Only smoke in designated areas.

**OSHA Standard 1926.150(a)(1)** *The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.*

- Know where fire extinguishers are located at your work site.
- Report any missing, damaged, or spent fire extinguishers immediately.
- Be familiar with the parts of a fire extinguisher and how to tell if it has been discharged.
- Never attempt to use a fire extinguisher unless you have been trained to do so!
- Always use the correct containers for using, storing, or transporting fuel.
- Report any fires or possible fires immediately!

# Inspecting Extension Ladders

Volume 1 Fast 100 Issue 20C-1

Ladders are involved in 20 percent of fall injuries among workers and **81 percent of construction worker fall injuries**.

The inspection of an extension ladder is a very important step to avoid serious or even deadly injuries. OSHA requires that employers ensure ladders are inspected on a periodic basis. However, even with periodic inspections it is still part of every worker's job to be sure that the ladder they are about to use is in safe working order.

**OSHA Standard 1926.1053(b)(15)** *Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.*

## **Remember these important safety tips when inspecting extension ladders to help prevent injuries!**

- Always visually inspect ladder feet to ensure that foot pads and feet assembly are present and in safe condition. Damaged or missing feet pads can cause you to slip or lose balance and suffer a deadly fall.
- Never attempt to repair a ladder! Do not use wire, screws, bolts, duct or electrical tape as a way to fix the ladder; instead tag it and remove it from service.
- Inspect the rungs, rails, lock (dawgs), rope, and pulley assembly of an extension ladder and be sure that all parts work properly.
- It is very important to make certain that the rope and pulley are working and that the ladder locks (dawgs) do not slip!
- Ladder inspections should include making sure that labels are readable and haven't been painted over or damaged.
- Check the rungs and steps for mud, grease, or dirt to avoid potential slip/fall hazards.
- Follow the manufacturer's recommendations for proper inspection and use of the specific ladder.
- Remove any ladder from service that is found to be defective!

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Ladders are involved in 20 percent of fall injuries among workers and **81 percent of construction worker fall injuries**.

The inspection of a step ladder is a very important step to avoid serious or even deadly injuries. OSHA requires that employers ensure ladders are inspected on a periodic basis. However, even with periodic inspections it is still part of every worker's job to be sure that the ladder they are about to use is in safe working order.

**OSHA Standard 1926.1053(b)(15)** *Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.*

**Remember these important safety tips when inspecting step ladders to help prevent injuries!**

- Always visually inspect ladder feet to ensure that foot pads and feet assembly are present and in safe condition. Damaged or missing feet pads can cause you to slip or lose balance and suffer a deadly fall.
- Never attempt to repair a ladder! Do not use wire, screws, bolts, duct or electrical tape as a way to fix the ladder; instead tag it and remove it from service.
- Inspect the top cap, all steps, side rails, and locking braces on a step ladder before using.
- Loose locking braces or spreaders can cause the ladder to wobble and become unstable.
- Ladder inspections should include making sure that labels are readable and haven't been painted over or damaged.
- Check the rungs and steps for mud, grease, or dirt to avoid potential slip/fall hazards.
- Follow the manufacturer's recommendations for proper inspection and use of the specific ladder.
- Remove any ladder from service that is found to be defective!



# Poisonous Plants

Volume 1 Fast 100 Issue 21C-1

According to OSHA, approximately 85 percent of the general population will develop an allergy if exposed to poison ivy, oak or sumac. Workers need to recognize the hazards of and avoid contact with potentially harmful plants.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where *harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.*

- Preventing contact with harmful plants is the greatest safety precaution that workers can take.
- Harmful plants such as poison ivy, poison oak, and poison sumac release a harmful oil called urushiol which is highly allergic to most humans.
- Avoid direct contact with the plant as well as indirect contact by touching tools or clothing that has been contaminated by the oil or sap of the plant.
- Wear the proper personal protective equipment (PPE) when working outdoors and in areas where contact with harmful plants is possible. Long pants, shirts with sleeves, gloves and work boots can prevent accidental contact with poisonous plants.
- Wash tools and clothes with warm soapy water to reduce contact and spreading of the harmful oil.
- Never burn plants or brush piles that may contain poison ivy, poison oak, or poison sumac.
- Inhaling the smoke from burning harmful plants or small particles from cutting/chopping can cause severe lung reactions!
- Wash your skin with soap and water if you come in contact with a poisonous plant.
- If you do have a reaction to the harmful plant avoid scratching and bursting the blisters which can lead to infection.

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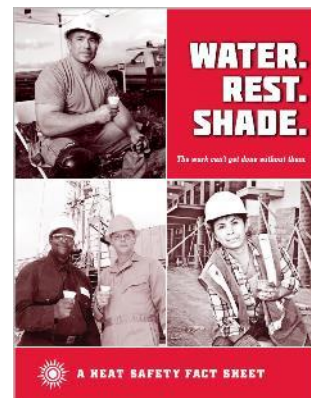
# Preventing Heat Stress

Volume 1 Fast 100 Issue 22C-1

Heat is a serious hazard to construction workers. Not only when workers are outdoors but also during indoor activity the body builds up heat and can struggle to get rid of extra heat.

Workers need to be aware of their specific limitations and remember that sometimes their body may not cool off fast enough. Factors that can increase the chance of heat stress include:

- High temperature and humidity
- Not drinking enough water
- Direct sun exposure (with no shade) or extreme heat
- No breeze or wind
- Physical activity without breaks
- Use of bulky protective clothing and equipment



**OSHA Standard 1926.21(b)(2)** *The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

**Water. Rest. Shade.** California's State OSHA program has created a great way to remember three important ways to **prevent heat stress**.

- Water – workers need to start drinking water before arriving at the job site. This is a great way to get the body hydrated and ready for hard work.
- Keep drinking water! Start the day out hydrated and then continue to fuel your body with water.
- If the temperature is high and the humidity is high OSHA recommends about four cups of water per hour.
- Rest – during periods of high heat and high humidity short breaks in the shade are a great way to let the body release some of that extra heat.
- Wear loose, light clothing, and avoid direct sunlight when possible.

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# Recognizing Heat Stress

Volume 1 Fast 100 Issue 22C-2

Heat is a serious hazard to construction workers. Not only when workers are outdoors but also during indoor activity the body builds up heat and can struggle to get rid of extra heat.

Factors that can increase the chance of heat stress include:

- High temperature and humidity
- Not drinking enough water
- Direct sun exposure (with no shade) or extreme heat
- No breeze or wind
- Physical activity without breaks
- Use of bulky protective clothing and equipment



*Free sign from  
mysafetysign.com*

Recognize the signs of these heat stress illnesses:

**Heat cramps** are usually experienced as muscle spasms or cramping in the stomach, arms and the back of the legs or calves.

**Heat exhaustion** symptoms include headaches, dizziness, weakness, wet skin, confusion, nausea, or vomiting.

**Heat stroke is deadly!** Recognize heat stroke symptoms which can include red, hot and dry skin, confusion, fainting, and convulsions.

Workers should follow these emergency steps:

- **Heat cramps** – drink more water and take frequent breaks, if available drink a healthy sports beverage that contains electrolytes.
- **Heat exhaustion** – 1) immediately move the affected worker from the hot area and give liquids to drink. 2) Cool the worker with cold compresses to the head, neck, and face or have the worker wash his or her head, face and neck with cold water. 3) Take the worker to a clinic or emergency room for medical evaluation and treatment.
- **Heat stroke** – if a worker is showing signs of heat stroke, especially if they stop sweating and have hot dry skin, 1) immediately call 911 or emergency services 2) move the worker to a cooler area 3) cool the worker by removing outer clothing and fanning the worker and apply wet towels or rags on their body.

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Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

- Inspect your work area before starting for signs of ants.
- Wear light-colored, smooth-finished clothing to cover as much of the body as possible.
- Keep work areas clean. Insects may be attracted to discarded food.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Fire ants attack anything that disturbs their mound (nest). Avoid disturbing their mounds!
- Fire ants not only bite but also sting. They are aggressive and inject venom that causes a burning sensation.
- After being bitten, red bumps form at the sting site and usually after a day or two become white fluid-filled pustules.
- If attacked, leave area immediately and brush them off with the a gloved hand or by using a cloth.
- Seek immediate medical attention if an insect bite or sting causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.
- The venom from bees and ants can be extremely toxic to some people and even prove fatal.
- If workers are aware that they have a severe allergy to biting or stinging insects they should consider wearing a medical warning bracelet or necklace or carry a wallet card.

Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders, with the majority of these deaths from bee stings.

- Inspect your work area before starting for signs of bees or wasps.
- Wear light-colored, smooth-finished clothing to cover as much of the body as possible.
- Keep work areas clean. Insects may be attracted to discarded food.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- When a bee stings, its stinger, the venom sac and other parts of the bee's body are pulled out and left behind, killing the bee.
- Bee stingers should be removed as soon as possible since the venom sac remains attached when the bee flies off and can continue injecting venom.
- A wasp retains its stinger and it can sting many times. Wasp stings also carry a small amount of venom that may cause irritation and infection.
- Seek immediate medical attention if an insect bite or sting causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.
- If workers are aware that they have a severe allergy to biting or stinging insects they should consider wearing a medical warning bracelet or necklace or carry a wallet card.
- Workers with a history of severe allergic reactions to insect bites or stings should carry an epinephrine auto-injector and consider warning their immediate co-workers before starting work.



# Black Widow Spiders

Volume 1 Fast 100 Issue 24C-1

Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Black widow spiders are identified by the pattern of red coloration on the underside of their body.
- They can often be found on sites containing undisturbed areas such as woodpiles, under eaves, fences, and other areas where debris has accumulated.
- Bites usually occur when humans come into direct contact with their webs.
- A bite from a black widow can be recognized by the two bite marks it makes in the skin.
- The venom produces pain at the bite area and then can spread to the chest, abdomen, or entire body.
- If you are bitten by a black widow spider:
  - Clean the bite area with soap and water.
  - Apply ice to the bite area to slow absorption of the venom.
  - Seek medical attention immediately!
- Seek immediate medical attention if any insect bite causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.



Photo credit – Michael McDonald. Black Widow Spider. <https://www.flickr.com/photos/62047567@N00/2593164670/>  
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# Brown Recluse Spiders

Volume 1 Fast 100 Issue 24C-2

Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Brown recluse spiders have a dark brown, violin-shaped mark on their upper body and are also known as violin spiders or fiddle backs. They also have 3 pairs of eyes, instead of the usual 4 pairs other spiders have.
- The brown recluse spider prefers dark, sheltered areas.
- The bite of a brown recluse spider is poisonous. Tissue at the area of the bite dies and eventually sheds and can become severely infected.
- If you are bitten by a brown recluse spider:
  - Clean the bite area with soap and water.
  - Apply ice to the bite area to slow absorption of the venom.
  - Seek medical attention immediately.

Seek immediate medical attention if any insect bite causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.



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Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Workers outdoors may be exposed to diseases spread from the bites of infected ticks.
- Ticks may carry bacteria, parasites or viruses, including Lyme disease.
- Ticks may be found in wooded areas, high grass, or thick brush.
- Ticks are seen during the spring, summer and fall, but in warmer areas can be active year round.
- Check skin and clothing for ticks daily.
- If bitten by a tick it should be removed as soon as possible.
- To remove a tick follow these steps:
  - Using tweezers grasp the tick firmly, as close to your skin as possible.
  - Pull the tick's body away from your skin with a steady motion.
  - Clean the area with soap and water.



Photo Credit – John Tann. Tick. <https://www.flickr.com/photos/31031835@N08/6368335425/>

Photo Credit – Fairfax County. Tick Removal. <https://www.flickr.com/photos/fairfaxcounty/7209178238/>

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Tools are vital to any construction trade and power tools are especially important. Unfortunately, electrical tools can pose significant hazards. Workers should be sure that they are familiar with the specific hazards of the tools they use including hazards such as:

Electrical shock      Cuts and amputations      Eye injuries

Injuries with tools often take place when workers fail to use them as intended, remove guards designed for their own safety, or forget to inspect them before using. Workers should be trained and reminded to follow safe work practices every time they use their tools.

**OSHA Standard 1926.300(a)** says that *all hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.*

- Always inspect your electrical tools and extension cords before use.
- Inspect tools for any damage such as cut or frayed cords, cracks, or signs of electrical damage.
- Ensure that tools are not covered in paint, grease, or dirt that can create a hazard or hide a serious defect.

**OSHA Standard 1926.302(a)(1)** *Electric power operated tools shall either be of the approved double-insulated type or grounded in accordance with Subpart K of this part.*

- Only use electrical tools that have a proper grounding pin or are designed with double insulated protection.

**OSHA Standard 1926.300(b)(1)** *When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.*

- Inspect guards and safety devices before using the tool.
- Never remove or pin back guards on circular saws or other tools.
- Always use the proper attachments, handles, and grips provided by the manufacturer!

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# Cottonmouth Snakes

Volume 1 Fast 100 Issue 26C-1

For certain workers there can be a very real opportunity to encounter venomous snakes. Any of the following work could expose individuals to the dangers of snakes:

- Forestry
- Landscaping
- Tree Trimming
- Grounds Keep
- Site Clearing
- General Housekeeping
- Road Construction
- Response to Natural Disasters

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

**Cottonmouth snakes** can be large, usually about four to five feet long. Adult cottonmouth snakes have a dark tan, brown, or nearly black, skin color usually with black or dark brown cross bands. Younger cottonmouth snakes will often have a more visible cross banded pattern of brown or orange with a yellow tail.



Cottonmouth snakes can be found in the Southeastern states. Workers may find cottonmouth snakes in or around water such as in slow-moving and shallow lakes, streams, and marshes. Cottonmouths can give a painful and even fatal bite. The cottonmouth snake will defend itself when threatened and does not scare easily. When threatened, cottonmouths will stand their ground by coiling their bodies and displaying their fangs.

**Remember these tips** to avoid and reduce dangers from snakes:

- **Watch** where you place your hands and feet when removing debris and taking care of housekeeping outside. Consider wearing **heavy gloves** especially when working outdoors and dealing with brush, leaves, or piles of lumber. Consider wearing **boots** at least 10 inches high especially if working near water areas where snakes may be present.
- Remember snakes often bite only when threatened. If you **see a snake, step back** and allow it to proceed.
- **If bitten, call 911 immediately! Pay attention** to the color and shape of the snake's head to help with treatment. Have someone take a photo, if possible.
- Keep bite victims calm and reduce movement to slow possible spread of venom. Lay victim down so bite is below level of the heart, cover the bite with a clean, dry dressing. **NEVER cut the wound or attempt to suck out the venom.**

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# Copperhead Snakes

Volume 1 Fast 100 Issue 26C-2

For certain workers there can be a very real opportunity to encounter venomous snakes. Any of the following work could expose individuals to the dangers of snakes:

- Forestry
- Landscaping
- Tree Trimming
- Grounds Keep
- Site Clearing
- General Housekeeping
- Road Construction
- Response to Natural Disasters

**OSHA Standard 1926.21(b)(4)** says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

**Copperhead snakes** vary in color from reddish to golden tan with hourglass-shaped colored bands on their body. Adult copperheads are usually 18–36 inches long. Copperheads are often found in wooded areas, forests, among rocks, or near sources of water like swamps, rivers, streams or ponds. Copperhead snakes are not usually aggressive and will often freeze in place and remain motionless until the threat passes.



Workers are more likely to be bitten when they unknowingly step on or very close to a copperhead. Copperheads can be found in Eastern states as far west as Texas.

**Remember these tips** to avoid and reduce dangers from snakes:

- **Watch** where you place your hands and feet when removing debris and taking care of housekeeping outside. Consider wearing **heavy gloves** especially when working outdoors and dealing with brush, leaves, or piles of lumber. Consider wearing **boots** at least 10 inches high especially if working near water areas where snakes may be present.
- Remember snakes often bite only when threatened. If you **see a snake, step back** and allow it to proceed.
- **If bitten, call 911 immediately! Pay attention** to the color and shape of the snake's head to help with treatment. Have someone take a photo, if possible.
- Keep bite victims calm and reduce movement to slow possible spread of venom. Lay victim down so bite is below level of the heart, cover the bite with a clean, dry dressing. **NEVER cut the wound or attempt to suck out the venom.**

*Photo Credit – Patrick Feller. Southern Copperhead. <https://www.flickr.com/photos/nakrns/4595374273/>*

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**Coral snakes** have a distinct color pattern where **red bands touch yellow bands**.

A common phrase to remember how to tell a venomous coral snake is *“Red touches yellow, kill a fellow. Red touches black, friend of Jack.”*

Workers may find coral snakes hiding in leaf piles or burrows in the ground.



Coral Snake

Coral snakes will almost always attempt to flee from a threat and bite only as a last resort. Coral snakes can be found in wooded, sandy, or marshy areas of the Southern United States.

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*Photo Credit – Ralph Arvesen. Coral Snake. <https://www.flickr.com/photos/rarvesen/8451778802/>*

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**Rattlesnakes** make a distinct warning sound using their tails as when they feel threatened.

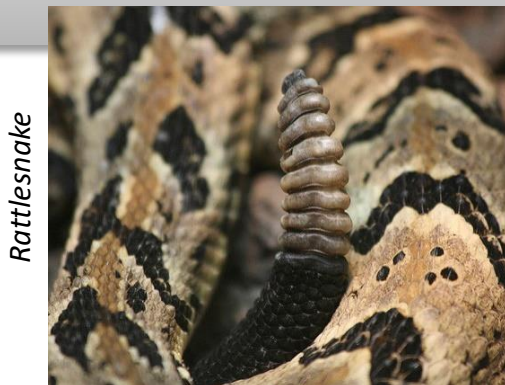
There are many species of rattlesnakes in the United States and are the most recognizable type of snake.

Rattlesnakes may be found sunning themselves near logs, boulders, or open areas.

Found in almost all work areas outdoors, rattlesnakes can be encountered across the United States including the mountains, prairies, deserts, and beaches.

**Remember these tips** to avoid and reduce dangers from snakes:

- **Watch** where you place your hands and feet when removing debris and taking care of housekeeping outside. Consider wearing **heavy gloves** especially when working outdoors and dealing with brush, leaves, or piles of lumber. Consider wearing **boots** at least 10 inches high especially if working near water areas where snakes may be present.
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Rattlesnake

Photo Credit – Ed Schipul. Rattlesnake Rattle. <https://www.flickr.com/photos/eschipul/2480606032/>

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Construction is among the most dangerous industries and in recent years, the Bureau of Labor Statistics found that there are **more than 800 fatal on-the-job injuries to construction workers annually** – more than any other single industry. Fall hazards can be found in a variety of activities:

- Working from ladders
- Work on roof tops, near skylights, or floor holes
- Near excavations or pier hole
- On scaffolding, scissor, or boom lifts
- Using makeshift platforms or scaffold-like surfaces including buckets
- Inside of attics or overhead crawlspaces
- During road construction on bridges and overpasses

**OSHA Standard 1926.501(b)(1)** states that *Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.*

- Workers must recognize possible fall hazards especially when working at heights above 6' from a lower level. In general construction activities fall protection is required when working at heights above 6' from a lower level.
- If unprotected sides and edges exist a guardrail may be an option to prevent fall hazards.
- Workers should never be exposed to a fall hazard without proper fall protection in place!
- Fall hazards at ground level must be protected.
- Barricades, temporary barriers, and warning lines may help alert workers to possible hazards.
- Danger, warning, and caution signs must be used properly to warn workers of the potential fall hazards present.
- When working on scaffolds employees must have fall protection, such as guardrails, installed when they are more than 10' above a lower level.

**OSHA Standard 1926.451(g)(1)** states that *Each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level.*



## Can you spot the potential fall hazards in these photos?



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When workers think of personal protective equipment (PPE) it often is focused on hard hats, safety glasses, or gloves. However, leg and foot protection is equally important and should not be missed. Workers can be exposed to leg or foot injuries from tasks, activities, or areas such as:

- Falling or rolling objects
- Exposure to hot substances or electrical hazards
- Walking on slippery or wet surfaces or surfaces with sharp objects like nails
- Operating tools such as tampers or jack hammers
- Pouring, washing with, or spraying chemicals
- Lifting or working with heavy objects such as barrels

**OSHA Standard 1926.95(a)** says that *protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained...* In addition, **OSHA Standard 1926.95(d)(2)** says that *the employer is not required to pay for non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, provided that the employer permits such items to be worn off the job-site.*

- Basic steel toe or hard toe work boots should be considered when performing common construction activities such as lifting heavy objects. Steel or hard toe shoes must meet specific standards for protection.
- In addition to toe protection, using some tools such as jack hammers and tampers may require the addition of metatarsal protection. Metatarsal guards protect the bones on the top of the feet.
- Consider using foot protection designed for muddy, water soaked, or wet environments such as water proof rubber boots or boot covers and chest waders.
- Boot covers or chemical resistant rubber boots should be worn when working with wet concrete or cement and similar chemicals.
- Be sure to check that your boots are labeled “slip and oil resistant” when walking on slippery or wet surfaces.

Construction workers or those with physically demanding jobs may be frequently stressed about work-related injuries, chronic pain, physical demands the job requires, co-worker and supervisor relationships or personal issues that affect their ability to fully focus on the job putting themselves and their co-workers at risk. Demands of the job, the pressure to provide for one's family, and concern about losing employment prevent many from seeking help which increases their risk for injury, mental distress, depression and anxiety.

**OSHA Standard Section 5(a)(1)** *Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.*

## STRESS PREVENTION AND MANAGEMENT

- Manage the workload and set priority levels for tasks with a realistic work plan.
- Eat nutritiously, avoid excessive junk food and caffeine.
- Avoid alcohol and recreational drugs, and don't smoke.
- Get enough sleep and rest.
- Outside of work, do activities that are pleasurable.
- Exercise regularly, the body can fight stress better when it is fit and exercising is often an immediate form of stress relief.
- Identify the specific source of job stress and come up with targeted ideas to eliminate or reduce the exact stressor. Management should be open to hearing ideas from workers that will make the work environment less stressful for employees.
- Speak up at work if something is causing stress – often, management will be unaware of the situation and that is the reason nothing has been done to fix it.
- Learn to recognize the early warning signs for stress reactions and seek help if needed.

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Common symptoms of stress may include anger, irritability, physical or emotional tension, fear and anxiety about the future, difficulty making decisions or communicating thoughts, trouble concentrating, difficulty remembering instructions, being numb to one's feelings, headaches, back pains or stomach problems, loss of interest in normal activities, increased use of alcohol and drugs, loss of appetite, sadness and/or crying, sleep problems, inability to relax when off duty, colds or flu-like symptoms, and/or unnecessary risk taking.

## CAUSES OF JOB STRESS THAT WORKERS AND EMPLOYERS SHOULD RECOGNIZE

- **The Design of Tasks.** Heavy workload, infrequent rest breaks, long work hours and shiftwork; hectic and routine tasks that do not utilize workers' full potential.
- **Management Style.** Poor communication, dictatorship-style management, no worker involvement in decision-making on the job.
- **Interpersonal Relationships.** Social environment at work that lacks support or the inability to get support from co-workers and supervisors when needed.
- **Work Roles.** Conflicting job expectations, uncertainty about what is expected, too much responsibility.
- **Career Concerns.** Job insecurity, lack of opportunity for promotion, too many changes at work without proper preparation given to workers to adapt.
- **Environmental Conditions.** Unsafe or unpleasant work conditions such as crowding, noise, air pollution, ergonomic problems or a hostile work environment.

Construction workers should remember that working with and around heavy equipment puts them at risk for struck-by, caught-in, and other hazards. Dump trucks, haulage equipment, and articulating dump trucks pose these hazards as well. In addition, workers should always ensure that they only operate equipment they have been trained and authorized to use.

**OSHA Standard 1926.602** covers *the requirements for earthmoving equipment such as scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment.*

- Dump trucks, their operators, and personnel standing or working nearby are at risk during dumping operations.
- When the bed is raised, there is an increased chance of the truck tipping, especially when driving over uneven or soft ground.
- Always clear the areas around the dumping site and have the operator lower the bed as soon as possible.
- Operators must always watch for potential overhead power lines before raising the bed!
- Operators must be protected during loading operations by means of a canopy or cab shield.

**OSHA Standard 1926.601(b)(6)** says that *all haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a **cab shield and/or canopy** adequate to protect the operator from shifting or falling materials.*

- Crushing and caught-in hazards are serious! Dump trucks have many areas where caught-in hazards are possible including under the bed, in-between the cab and body, the canopy, or the tailgate.
- If service, maintenance, or other work must be done under a raised bed, the bed must be supported by a device strong enough to support the load.
- Never get under a raised dump bed without safety devices to prevent an incident.
- Personnel can suffer serious injury if allowed under an open tailgate. Depending on the model of truck the tailgate can weigh nearly a half of a ton.

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# Preventing Fall Injuries

Volume 1 Fast 100 Issue 31C-1

According to recent fatal injury statistics (BLS.gov), there are more than 600 fatal falls annually. Many workers may be surprised to hear that about 2 out of every 3 are falls from less than 20 feet high. Workers should be very aware of their work at any height.

**OSHA Standard 1926.501(b)(1)** *"Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling...*

- Never work near unprotected skylights, sides, or edges.
- Supervisors and workers should perform a walk-around inspection of their site before starting work to find any possible fall hazards.
- All workers using man lifts such as telescopic boom lifts or other types of aerial lifts should have training prior to use.
- Fall protection as required by the manufacturer of the lift must be worn when working on articulating and extensible boom lifts to avoid being thrown out of the basket of the lift.
- Workers need fall protection when working near any unprotected side or edge which is 6 feet or more above a lower level.
- All workers need to have training to recognize and avoid potential fall hazards.
- Never stand on the top step of a step ladder.
- Always face the ladder when climbing up or down the ladder and working.

**OSHA Standard 1926.1053(b)(13)**  
*The top or top step of a stepladder shall not be used as a step.*



*OSHA Pocket Card for fall prevention awareness.*

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Scissor lifts are an excellent alternative to ladders and manually propelled scaffolds. They provide a safe and stable work platform when used in accordance with manufacturer's recommendations.

- **Only trained and authorized operators can use scissor lifts!** Employees must receive training in the safe operation of the lifts so they will understand and avoid unsafe conditions that could lead to injuries.
- Common hazards found with scissor lifts include:
  - Electrocution from accidental contact with energized wires
  - Tip-over hazards from driving on steep or unstable surfaces
  - Collisions or struck-against hazards
  - Fall hazards from improper use of the lifts
- **Always look for overhead power lines and electricity lines** feeding adjacent buildings and structures. Danger signs should be posted warning scissor lift operators of potential hazards.
- **Avoid tip-over hazards!**
  - **Never alter or disable warning devices** or limit switches – they are there to help avoid tip-over hazards.
  - **Survey the area** where the lift will be used before moving or driving the lift to identify and avoid potential hazards such as curbs, pot-holes, excavations, or floor holes.
  - Never use a scissor lift on uneven surfaces.
- Never sit or climb on the edge of the basket or use planks, ladders, or other devices on an scissor lift.
- Ensure guard rails, safety chains, and gates are closed and locked for proper fall protection when operating a lift.
- Many scissor lifts are equipped with controls that can be used from the ground so you can maneuver the lift through tight areas safely.

**OSHA Standard 1926.452(w)(5)** *Scaffolds shall be stabilized to prevent tipping during movement.* **OSHA Standard 1926.452(w)(6)** *Employees shall not be allowed to ride on scaffolds unless... the surface on which the scaffold is being moved is within 3 degrees of level, and free of pits, holes, and obstructions.*

# Scissor Lift Incidents

Volume 1 Fast 100 Issue 32C-2

Scissor lifts are an excellent alternative to ladders and manually propelled scaffolds.

They provide a safe and stable work platform when used in accordance with manufacturer's recommendations.



- **Only trained and authorized operators can use scissor lifts!** Employees must receive training in the safe operation of the lifts so they will understand and avoid unsafe conditions that could lead to injuries.
- **Avoid tip-over hazards! Survey the area** where the lift will be used before moving or driving the lift to identify and avoid potential hazards such as curbs, pot-holes, excavations, or floor holes. Never use a scissor lift on uneven surfaces.



*Image from a fatality investigation where a 42-year-old part-time laborer was killed when the scissor lift he was operating elevated and pinned him against the header of an interior doorway. NIOSH In-house FACE Report 2003-01*



*Images from a fatality investigation where a painter died when his elevated scissor lift tipped and fell over after he moved it into a storm drain. MIFACE Investigation Report: #13MI091*

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# Hand Tools

Volume 1 Fast 100 Issue 33C-1

Tools are part of every construction job and hand tools are needed for almost any task. However, hand tools, when used improperly or not kept in good condition, can also result in very serious injuries. Workers should be sure that they take good care of their hand tools and avoid common injuries such as:

- Severe cuts that could require stitches
- Scrapes and bruises that can end up as skin infections
- Eye injuries from chipping or chiseling
- Electrical shocks from using improperly insulated tools for electrical work

**OSHA Standard 1926.301(a)** says that *employers shall not issue or permit the use of unsafe hand tools.*

**OSHA Standard 1926.301(d)** *The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.*

- Hand tools have to be inspected before use. Look for any damage such as cracks in handles, sharp edges, or splintering. Make sure that tools are not covered in paint, grease, or dirt that can create a hazard or hide a serious defect.

**OSHA Standard 1926.301(b)** *Wrenches, including adjustable, pipe, end, and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.*

- Never use rusted, cracked, or warped tools!
- Wrenches that are warped, rusted, or sprung can result in breaking or slippage that lead to serious hand injuries.
- Spades, shovels, and other long handled tools should not be used unless in good working condition.

**OSHA Standard 1926.301(c)** *Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.*

- Always use the proper attachments, handles, and grips provided by the manufacturer!
- Never use impact tools that have mushroomed heads. They can chip and send pieces flying off as projectiles.

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# Job Hazard Analysis Intro

Volume 1 Fast 100 Issue 34C-1

Job Hazard Analysis (JHA) is a way to help workers focus on accident prevention by writing down the steps, possible hazards, and controls for any specific job. A job hazard analysis can help workers and their supervisors find hazards before they turn into accidents.

JHA is sometimes called by different names including:

- ✓ Pre-Task Hazard Analysis
- ✓ Job Task Analysis
- ✓ Pre-Job Plans
- ✓ Job Safety Analysis (JSA)
- ✓ Pre-Task Planning
- ✓ Safety Task Analysis

➤ A job hazard analysis is an exercise in detective work. The goal is to discover the following:

- What can go wrong?
- How can injuries happen?
- What would cause an accident to happen?
- How likely is it that the hazard will occur?

**OSHA Standard Section 5(a)(1)** *Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.*

- A specific work task can be separated into a series of simple steps. For each step hazards should be identified.
- As steps required to complete a job or task are identified it is important to think about the types of hazards. Consider these common types of hazards and be sure they are included in the JHA:

- Struck Against
- Struck By
- Contact With
- Contact By
- Caught In
- Caught On
- Caught Between
- Fall - Same Level
- Fall to Below
- Overexertion
- Exposure

More examples of tasks or hazards that lead to accidents include:

- Working at heights, slippery surfaces, exposed moving machinery parts, fires, explosion, noise, electricity, toxic emissions, corrosive chemicals, low oxygen, repetitive tasks, heavy lifting, overhead work, rigging activities, use of heavy equipment, or working with powder actuated tools.

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# Job Hazard Analysis (JHA)

Volume 1 Fast 100 Issue 34C-2

Job Hazard Analysis (JHA) is a way to help workers focus on accident prevention by writing down the steps, possible hazards, and controls for any specific job. A job hazard analysis can help workers and their supervisors find hazards before they turn into accidents.

- Job Hazard Analysis is sometimes called by different names and many companies have their own forms and processes - the basic idea is to find hazards and prevent injuries.
- Workers and supervisors are the best sources for identifying hazards in the work they perform.
- For each step in a task the hazards should be identified, written down or checked off.
- Every hazard discovered has to have a safety control or accident prevention method written down.
- JHAs are often done at the start of a new job, and may be required daily.
- A few minutes used to write a good JHA can save hours or days lost to an injury.
- A specific work task can be separated into a series of simple steps. For each step hazards should be identified.
- A job hazard analysis is an exercise in detective work.

For each hazard written it is important to take the next step and write down a way to reduce, eliminate, or control the hazard. Consider these ideas as a few examples safety controls:

- Safety handles and guards for tools and equipment available?
- Can you move the work to ground level or prepare on the ground and lift it to a safe area?
- Are the right tools, materials and equipment being used?
- Is there a lift, or scaffold available instead of ladders?
- Are electrical or other power sources able to be switched off?

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# Excavation Requirements

Volume 1 Fast 100 Issue 35C-1

Trenching and excavation work poses many hazards such as cave-ins, equipment struck-by incidents, potential falls, and striking underground utilities.

**OSHA Standard 1926.650(b)** *"Excavation" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.*

- OSHA regulations consider any digging activity as excavating.
- Call 811 from anywhere in the country a few days prior to working on excavations or trenches.
- Workers must be protected from rocks, debris, loose soil, or other materials that could fall into the excavation while they are working.
- Scale/scrape or knock down loose rocks from the sides of excavations and trench to prevent them from falling onto workers.
- Set spoil piles 2' back from the edges of the excavation to create a safer work area.

**OSHA Standard 1926.651(j)(1)** *Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face...*

- Water saturated trenches and excavations are extremely dangerous for those working inside of them.
- Never work in unprotected trenches or excavations that have water accumulating or are water saturated.
- Water pumps or other devices should be used to control water seeping into trenches and excavations. All water control devices must be inspected and maintained.

**OSHA Standard 1926.651(h)(1)** *Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. OSHA Standard 1926.651(h)(3)* *...Excavations subject to runoff from heavy rains will require an inspection by a competent person.*

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# Surface Encumbrances

Volume 1 Fast 100 Issue 35C-2

Trenching and excavation work poses many hazards such as cave-ins, equipment struck-by incidents, potential falls, and striking underground utilities.

**OSHA Standard 1926.650(b)** *"Excavation" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.*

Excavations done on or near roads, near buildings and other structures may put workers at additional risks from **"surface encumbrances."** Surface encumbrances could be any existing structure that could be made unstable by the excavation work. Examples include:

- Excavating underneath curbs, sidewalks, or roads
  - Excavating near power, utility poles, or trees
  - Excavating near a residence, building, wall, or fence line
- Always make sure that surface encumbrances are supported or braced to protect workers.

**OSHA Standard 1926.651(a)** *Surface encumbrances. All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.*



*The concrete road could be considered a surface encumbrance. Note the excavation under the road requires support.*

Photo Credit – Gordon Werner. Jackson at First Hill. <https://www.flickr.com/photos/gordonwerner/11034175433/>  
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Electrical hazards are an area of major safety concerns in construction and account for a large number of injuries and fatalities.

Never take electricity for granted! No matter how small the job, always use safe work practices such as:

- ✓ Pay attention to Electrical Danger and Warning signs around the job site.
- ✓ Use properly insulated tools if working with electricity.
- ✓ Wear the right type of gloves or other personal protective equipment when working with electricity.
- ✓ Notify managers of electrical hazards when found.
- ✓ Don't work on electrical equipment unless you have been trained, are qualified, and equipped!

**OSHA Standard 1926.416(a)(1)** states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

- Always determine where possible energized or “hot” electrical lines and parts are before work.
- Never work around energized lines, dig where buried lines are located, or touch “hot” electrical parts without proper protection and training.
- Use insulated gloves that are designed, tested, inspected and rated for electrical work and for the correct voltage.

**OSHA Standard 1926.416(a)(2)** *In work areas where the exact location of underground electric powerlines is unknown, employees using jack-hammers, bars, or other hand tools which may contact a line shall be provided with insulated protective gloves.*

- Avoid contact with exposed electrical parts and report electrical hazards immediately.

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# Electrical Equipment

Volume 1 Fast 100 Issue 36C-2

Electrical hazards are an area of major safety concerns in construction and account for a large number of injuries and fatalities. Never take electricity for granted!

**OSHA Standard 1926.416(a)(1)** states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

- Recognize electrical hazards such as exposed electrical parts in electrical panels or damaged or frayed electrical cords.
- Ensure exposed electrical equipment is guarded, covered, or locked to prevent accidental contact.
- Avoid contact with exposed electrical parts and report electrical hazards immediately.

**OSHA Standard 1926.403(i)(2)(i)** *...live parts of electric equipment operating at 50 volts or more shall be guarded against accidental contact by cabinets or other forms of enclosures...*

- Never attempt to work on energized electrical equipment.
- Only qualified, trained, and equipped persons should work on electrical equipment.
- If using tools on electrical parts they must be properly insulated and should be rated for the specific electrical voltage expected.
- Use only the proper tools for the job! Fuse pullers are not channel locks!

**OSHA Standard 1926.416(d)** *Fuses. When fuses are installed or removed with one or both terminals energized, special tools insulated for the voltage shall be used.*

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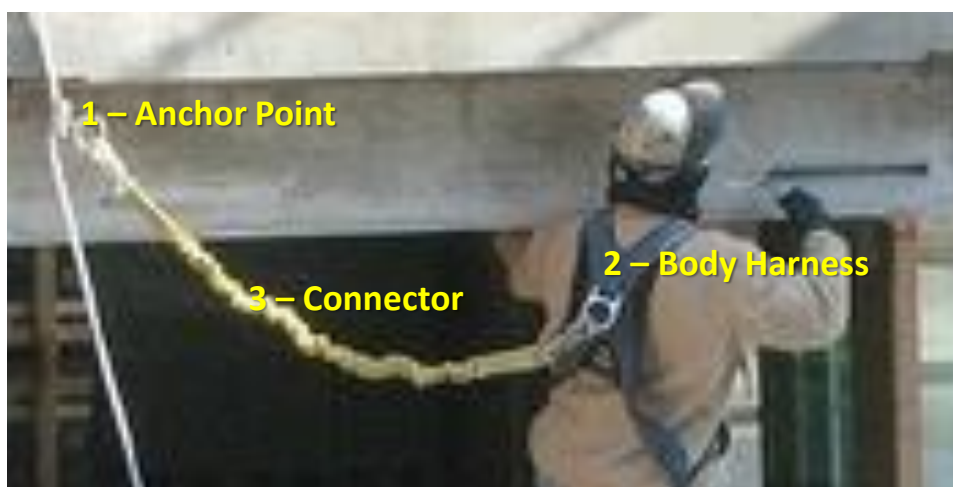
# Fall Arrest Systems

Volume 1 Fast 100 Issue 37C-1

Fall hazards are recognized as one of the “OSHA Big Four” which account for the majority of fatalities in the construction industry.

**OSHA Standard 1926.503(a)(1)** *The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.*

- Personal Fall Arrest Systems (PFAS) typically consist of an Anchor Point, a Body Harness, and a Connector such as a lanyard.
- Workers must be trained in fall protection and the specific types of Personal Fall Arrest Systems they will use on the job.
- Fall arrest systems must be inspected before each use.
- Inspections of fall arrest systems should include looking for any signs of damage, excessive wear, rust, or chemical damage.
- Any fall arrest system equipment found to be defective must be removed from service immediately!



Workers must be trained in fall protection and the specific types of Personal Fall Arrest Systems they will use on the job. Training topics can include:

- How to put on harnesses
- Limitations of fall protection equipment
- How to inspect their equipment
- What is a safe anchor or “tie-off”

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# Inspecting Fall Arrest Systems

Volume 1 Fast 100 Issue 37C-2

Fall hazards are recognized as one of the “OSHA Big Four” which account for the majority of fatalities in the construction industry.

**OSHA Standard 1926.502(d)(21)** *Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.*

## Personal Fall Arrest Systems (PFAS) must be inspected before each use.

- Workers should look for any signs of damage on connectors, clips, carabiners, or the webbing of the lanyards, or ropes used.
- Excessive wear, worn-out, or frayed items should be removed from service immediately!
- Rusted components, webbing that has been burned or soaked in chemicals or paint must not be used.
- Inspections should include looking for any signs of damage, excessive wear, rust, or chemical damage.
- Any fall arrest system equipment found to be defective must be removed from service immediately!
- Inspections should be documented using an inspection tag or other documentation.
- Workers must be trained in fall protection and the specific types of Personal Fall Arrest Systems they will use on the job.

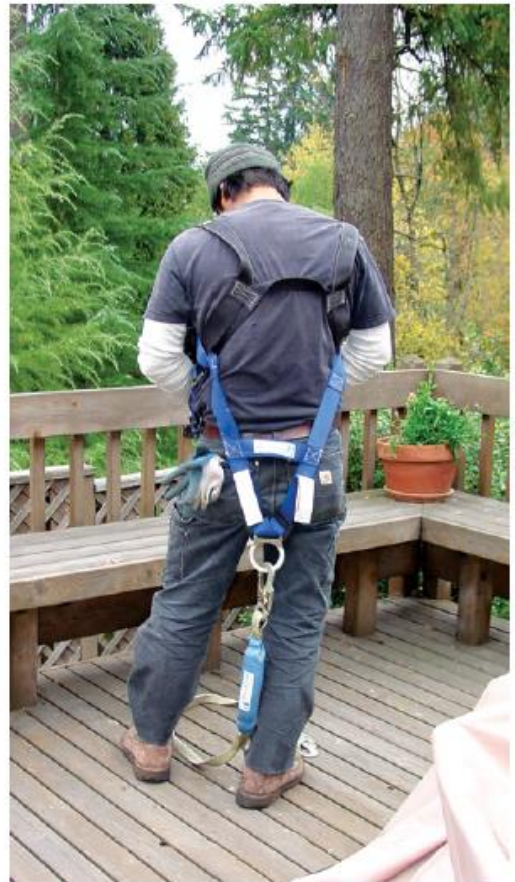


Photo: Renee Stapleton, Oregon OSHA

You can't assume employees know how to protect themselves from falls. This one put his personal fall-arrest gear on upside down.

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The flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. According to the CDC, most experts believe that the flu is spread when people who already have the virus cough, sneeze or talk near others. The flu can also sometimes be spread by touching a surface that has the flu virus on it, and then touching one's face. Someone can be contagious 1 day before they develop flu symptoms and up to 5 to 7 days after becoming sick.

Flu season starts around October and lasts until May, but most flu activity occurs in the months of **December, January and February** every year.

The flu usually comes on suddenly, with these symptoms:

- Fever (but not everyone with the flu will have a fever)
- Chills
- Runny nose
- Stuff nose
- Headache
- Fatigue
- Nausea
- Cough
- Muscle aches
- Sore throat

The flu can make anyone sick, even those people that usually seem strong and healthy. Employees should get their flu shot annually to help protect themselves against this illness and also to prevent unexpected lost time from work.

Most people who get the flu will recover in a few days and almost always within two weeks, but some people may develop complications, like pneumonia, that can end up being life-threatening, which is why it is important to **take the flu seriously** and not continue to 'work through it'.

Most people with the flu do not need medical care or antiviral drugs. If you get sick with flu symptoms, in most cases, you should **stay home** and **avoid contact with other people** except to get medical care.

If you have the flu, stay home and recover. **Do not go to work** and risk infecting your co-workers.

If flu symptoms do not subside, seek medical attention if any of these symptoms occur: difficulty breathing, severe vomiting, confusion, chest pain.

The flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. According to the CDC, most experts believe that the flu is spread when people who already have the virus cough, sneeze or talk near others. The flu can also sometimes be spread by touching a surface that has the flu virus on it, and then touching one's face. Someone can be contagious 1 day before they develop flu symptoms and up to 5 to 7 days after becoming sick.

Flu season starts around October and lasts until May, but most flu activity occurs in the months of **December, January and February** every year.

According to the CDC, **prevention is better than cure** when it comes to any illness, including the flu. Every year, on average, 5% - 20% of the population gets the flu and this costs billions of dollars annually.

The flu can make anyone sick, even those people that usually seem strong and healthy. Employees should get their flu shot annually to help protect themselves against this illness and also to prevent unexpected lost time from work.

## TIPS TO REMEMBER DURING THE FLU SEASON:

- Get the flu vaccine annually.
- The CDC recommends everyone 6 months and older receive a yearly flu vaccine as the first and most important step in protecting against the flu.
- Encourage those around you to get the flu vaccine.
- Practice good health habits, wash hands often.
- Avoid touching your eyes, nose or mouth.
- Avoid close contact with others that are sick.

**Remember to “Take 3” actions to fight flu this season**

- ① **Get your Flu Vaccine**  
Also available in mist
- ② **Take preventative actions**
- ③ **Take antivirals**  
  
if you get the flu, as prescribed by your doctor.

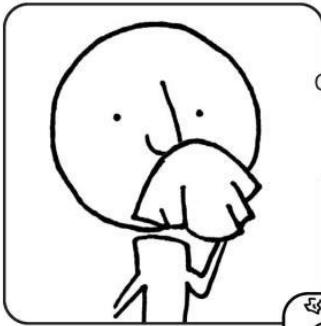
# Cover Your Cough

Volume 1 Fast 100 Issue 38C-3

**Stop the spread of germs that make you and others sick!**

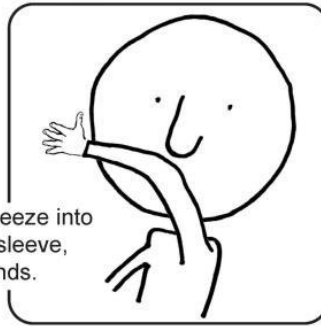
# Cover your Cough

If you have the flu, stay home and recover. **Do not go to work** and risk infecting your co-workers.



Cover your mouth and nose with a tissue when you cough or sneeze

or  
cough or sneeze into your upper sleeve, not your hands.



Put your used tissue in the waste basket.

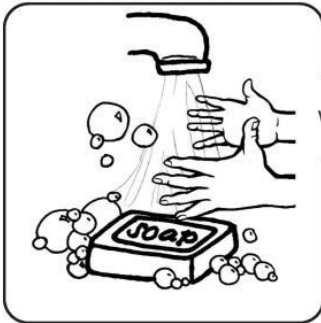


## STOP THE SPREAD OF GERMS AT WORK

Avoid close contact with sick people  
Stay home and away from others when you're sick  
Avoid touching your eyes, nose, or mouth

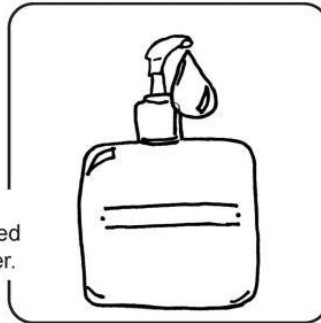
# Clean your Hands

after coughing or sneezing.



Wash hands with soap and warm water

or  
clean with alcohol-based hand cleaner.



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10P40-1428

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Although one of the most common tools used on a construction site, if improperly used, step ladders can lead to serious injuries or even fatal incidents. A research study found that ladders are involved in 20 percent of fall injuries among workers and **81 percent of construction worker fall injuries**.

Remember, always use the ladder as intended and follow all manufacturer's warnings for the specific type of ladder you are trained to use.

**OSHA Standard 1926.1060(a)** states that *the employer shall provide a training program for each employee using ladders and stairways, as necessary... to recognize hazards related to ladders and stairways...*

Remember these important safety precautions when working with step ladders:

- Always visually inspect all step ladders before use for any defects such as: missing/broken rungs, bolts, cleats, screws and loose components.
- Remove defective ladders from service immediately.
- Never stand on the top rung or step of the step ladder. This makes the ladder very unstable and prone to tip over!
- Never use a step ladder folded against a wall or other area. This can cause them to slip out from under you!
- Never face away from the step ladder! This can easily cause you to fall!
- Never overreach on a step ladder!
- Always read the ladders warning labels and follow the manufacturer's recommendations for use.
- Make certain that the ladder is rated for the correct type of use such as rugged, or industrial which are the most common for construction/industrial projects.
- Only use a ladder that is rated to support the weight of your body and your tools.

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# Step Ladder Hazards

Volume 1 Fast 100 Issue 39C-2

Can you spot the potential step ladder hazards in these photos?



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- Only use a ladder that is rated to support the weight of your body and your tools.

# Preventing Fall Injuries

Volume 1 Fast 100 Issue 31C-1

According to recent fatal injury statistics (BLS.gov), there are more than 600 fatal falls annually. Many workers may be surprised to hear that about 2 out of every 3 are falls from less than 20 feet high. Workers should be very aware of their work at any height.

**OSHA Standard 1926.501(b)(1)** *"Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling...*

- Never work near unprotected skylights, sides, or edges.
- Supervisors and workers should perform a walk-around inspection of their site before starting work to find any possible fall hazards.
- All workers using man lifts such as telescopic boom lifts or other types of aerial lifts should have training prior to use.
- Fall protection as required by the manufacturer of the lift must be worn when working on articulating and extensible boom lifts to avoid being thrown out of the basket of the lift.
- Workers need fall protection when working near any unprotected side or edge which is 6 feet or more above a lower level.
- All workers need to have training to recognize and avoid potential fall hazards.
- Never stand on the top step of a step ladder.
- Always face the ladder when climbing up or down the ladder and working.

**OSHA Standard 1926.1053(b)(13)**  
*The top or top step of a stepladder shall not be used as a step.*



*OSHA Pocket Card for fall prevention awareness.*

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# Hand Protection

Volume 1 Fast 100 Issue 41C-1

More than 500,000 employees are sent to the emergency room annually for hand injuries. Although many hand injuries are preventable, workers should be alert to common dangers and the ways that gloves can prevent hand injuries. Workers can be exposed to hand injuries from tasks, activities, or areas involving the following:

- Exposure to hot substances, sparks, flames, or electrical hazards
- Handling asbestos-containing materials, lead-based paints, or human or animal wastes
- Work with sharp tools, knives or duct work
- Handling sharp materials such as sheet metal or glass
- Pouring, washing, or spraying chemicals or materials
- Handling materials with protruding nails

**OSHA Standard 1926.95(a)** says that *protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained...*

- Workers need to recognize hazards to their hands when working with sharp tools or knives.
- Proper handling of sharp materials such as sheet metal or glass is important but may not be enough to prevent cuts, abrasions, or even amputations.
- New glove technology is available and workers may be able to use metal mesh, Kevlar, or other forms of specially coated gloves to handle glass, sheet metal, or even when performing fine work such as using knives.
- Workers handling asbestos-containing materials, lead-based paints, or other contaminated materials may need to use gloves specific to the type of chemical. Not all chemical resistant gloves are safe to use with all materials!
- Pouring concrete, washing brickwork or masonry, or spray coating and staining cement may require chemical resistant gloves.
- Work with hot substances, sparks or flames requires the use of heavy duty leather or fire retardant material.
- Work with potentially energized or live electrical equipment will require gloves that are rated for a specific voltage range.

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According to the U.S. Bureau of Labor Statistics, in recent years, more than 200 workers die annually as a result of fires and explosions. Workers need to recognize potential fire hazards and take every safety precaution to avoid potentially deadly situations on their job sites.

**OSHA Standard 1926.152(g)(8)** says that *there shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable liquids.* And **1926.152(g)(9)** says that *conspicuous and legible signs prohibiting smoking shall be posted.*

- Fire prevention is each worker's responsibility!
- Be alert to your activities and avoid creating fire hazards.
- Only smoke in designated areas.

**OSHA Standard 1926.150(a)(1)** *The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.*

- Know where fire extinguishers are located at your work site.
- Report any missing, damaged, or spent fire extinguishers immediately.
- Be familiar with the parts of a fire extinguisher and how to tell if it has been discharged.
- Never attempt to use a fire extinguisher unless you have been trained to do so!
- Always use the correct containers for using, storing, or transporting fuel.
- Report any fires or possible fires immediately!



Electrical hazards are an area of major safety concerns in construction and account for a large number of injuries and fatalities.

Never take electricity for granted! No matter how small the job, always use safe work practices such as:

- ✓ Pay attention to Electrical Danger and Warning signs around the job site.
- ✓ Use properly insulated tools if working with electricity.
- ✓ Wear the right type of gloves or other personal protective equipment when working with electricity.
- ✓ Notify managers of electrical hazards when found.
- ✓ Don't work on electrical equipment unless you have been trained, are qualified, and equipped!

**OSHA Standard 1926.416(a)(1)** states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

- Always determine where possible energized or “hot” electrical lines and parts are before work.
- Never work around energized lines, dig where buried lines are located, or touch “hot” electrical parts without proper protection and training.
- Use insulated gloves that are designed, tested, inspected and rated for electrical work and for the correct voltage.

**OSHA Standard 1926.416(a)(2)** *In work areas where the exact location of underground electric powerlines is unknown, employees using jack-hammers, bars, or other hand tools which may contact a line shall be provided with insulated protective gloves.*

- Avoid contact with exposed electrical parts and report electrical hazards immediately.

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# Struck-by Hazards

Volume 1 Fast 100 Issue 40C-1

Struck-by hazards can come from a variety of activities, work environments, and tasks such as:

- Working on or near roads, bridges, or highways
- Working below elevated structures such as scaffolds or where cranes are lifting materials overhead
- Using compressed air, pneumatic tools, or powder actuated tools
- Working near heavy equipment such as excavators, backhoes, or cranes
- Working inside of trenches or excavations
- Working as a rigger, or near rigging, lifting, or materials handling operations
- Using hand tools such as chisels, hammers, or wire clippers

**OSHA Standard 1926.102(a)(2)** *The employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects.*

Remember these tips to recognize and avoid possible struck-by hazards:

- Workers must be trained and familiar with the use of power tools including pneumatic, electrical, and powder actuated tools.
- All safety devices, guards, and switches should be kept in place and used to prevent accidental discharge of the tool.
- Workers in trenches and excavations should be in visible line-of-sight of equipment operators to avoid being struck by the equipment.
- Workers should wear high visibility clothing such as safety vests to make them visible to equipment operators, site, or road traffic.
- Equipment with obstructed views to the rear should be equipped with audible alarms and working horns.

**OSHA Standard 1926.451(h)(1)** *In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects... When the falling objects are too large, heavy or massive to be contained or deflected... the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.*

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# Nail Guns

Volume 1 Fast 100 Issue 40C-2

Struck-by hazards can come from a variety of activities, work environments, and tasks such as using compressed air, pneumatic tools, or power actuated tools.

**OSHA Standard 1926.302(b)(3)** *All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool 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.*

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Struck-By



Photo Credit – Don Hankins. OUCH!!! Bad nail gun. <https://www.flickr.com/photos/23905174@N00/498906682/>  
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# Struck-by Road Hazards

Volume 1 Fast 100 Issue 40C-3

Struck-by road hazards can come from a variety of activities, work environments, and tasks such as working on or near roads, bridges, or highways, working near heavy equipment such as excavators, backhoes, or cranes and working as a rigger, or near rigging, lifting, or materials handling operations.

**OSHA Standard 1926.21(b)(2)** *The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

- Personnel working on or near roads must be protected from struck-by hazards from traffic.
- Barricades, traffic control signs, cones, and other barriers should be correctly set up in accordance with specific State requirements.
- Workers in trenches and excavations should be in visible line-of-sight of equipment operators to avoid being struck by the equipment.
- Equipment with obstructed views to the rear should be equipped with audible alarms and working horns.



- Workers should wear high visibility clothing such as safety vests to make them visible to equipment operators, site, or road traffic.

Photo Credit – U.S. Army Corps of Eng. <https://www.flickr.com/photos/usacehq/5937286657/>

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- Handling asbestos-containing materials, lead-based paints, or human or animal wastes
- Work with sharp tools, knives or duct work
- Handling sharp materials such as sheet metal or glass
- Pouring, washing, or spraying chemicals or materials
- Handling materials with protruding nails

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- Workers need to recognize hazards to their hands when working with sharp tools or knives.
- Proper handling of sharp materials such as sheet metal or glass is important but may not be enough to prevent cuts, abrasions, or even amputations.
- New glove technology is available and workers may be able to use metal mesh, Kevlar, or other forms of specially coated gloves to handle glass, sheet metal, or even when performing fine work such as using knives.
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In addition to the physical hazards that can be found in construction, there are many health hazards that workers should be aware of for their own protection. Lead poses a possible hazard that workers need to be aware of and recognize. Lead can be found in many areas and tasks such as painting, metal scrap cutting and recycling, building renovation, bridge work, demolition, battery manufacturing, ceramic work, soldering and plumbing.

**OSHA Standard 1926.62(l)(1)(ii)** *The employer shall train each employee who is subject to exposure to lead... or who is subject to exposure to lead compounds which may cause skin or eye irritation. And* **OSHA Standard 1926.62(l)(1)(iii)** *The employer shall provide the training program as initial training prior to the time of job assignment...*

**Why is lead so dangerous?** According to OSHA, **lead harms the brain, nervous system, blood, and kidneys.** Low levels of lead in the blood may cause learning and behavioral problems in children under age six. And some harmful effects of lead are permanent.

Workers may not know they are contaminated because symptoms of these health hazards may take time to develop following exposure to the lead containing material. In addition, workers that come in contact with lead during demolition, paint removal, or even welding or grinding operations could accidentally take lead home on their clothes and expose their families.

- Never enter a contaminated area without the proper training and equipment.
- Only workers who are specially trained and equipped can work with or perform removal or demolition work with lead containing materials.
- Never leave a contaminated area without following the correct safety procedures including clothing removal, washing, and tool clean-up.
- Proper protective equipment must be worn at all times.
- Workers that handle lead containing materials may have to go through blood-level testing before and after the work to make sure they haven't absorbed lead into their body.

Construction workers should remember that working with and around heavy equipment puts them at risk for struck-by, caught-in, and other hazards. Cranes pose these hazards and many more.

Crane operators require specialized training. Workers rigging the load to be moved, and those guiding or working as a spotter must also be specially trained in their specific duties and tasks.

- Crane operators and all personnel working near or with the crane must be protected from possible overhead power lines.
- A hazard assessment must be performed and the amount of voltage of the overhead power lines must be determined before any activity with the crane.
- Barricades, safe work zones, and designated persons may have to be used to ensure the crane does not come too close to an overhead power line.
- Crushing and caught-in hazards are serious! Cranes have many areas where caught-in hazards are possible.

**OSHA Standard 1926.1424(a)(2)(i)** says that *the company must train each employee assigned to work... how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.*

- Workers must be aware of the “swing radius” of the crane and not position themselves where the crane can cause them to be struck by or pinched between any moving or rotating areas. Warning signs and barricades must be placed and workers should recognize these areas.
- Workers and the public must be protected from potential falling loads and potential tip-over of the crane!
- A safe route for the movement of the load should be set up before the operator lifts and moves the load.
- Only trained and authorized persons should be near the load.

# Trench Cave-in Incident

Volume 1 Fast 100 Issue 44C-1

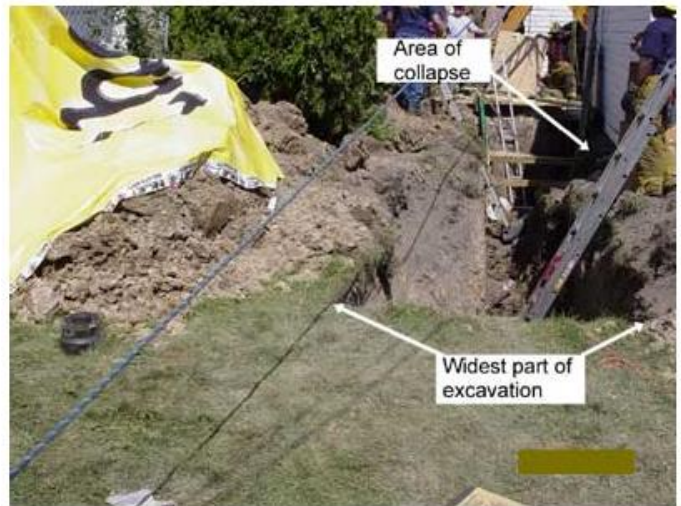


Workers doing activities in and around trenches and excavations must be alert to the real possibility of a trench cave-in. In most situations a cave-in is likely to happen and workers should be aware of the specific type of protection they need to keep them safe while working in a trench or excavation. The most important rule is to **never enter an unprotected excavation or trench!**

**OSHA Standard 1926.652(a)(1)** *Each employee in an excavation shall be protected from cave-ins by an adequate protective system...*

## **NIOSH Michigan Case Report: 05MI084**

A 24-year-old worker died when he was buried under a wall of the trench he was working in. The excavation had no cave-in protection. The excavation wall and part of the sidewalk next to the concrete garage floor collapsed onto him while he was attempting to attach a new PVC pipe. One coworker was also caught in the collapse. Two other workers on-site, neighbors who heard their calls for help, and firefighters who arrived on the scene were able to get the coworker safely from the excavation. However, the other worker died and his body was recovered from the excavation about 8 hours after the wall collapsed.



*Scene of a fatal trench cave-in after cave-in protection was installed to safely remove the deceased worker.*



*Two views of the scene of a fatal trench cave-in. Notice there is no protection in place to avoid cave-in hazards.*

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# Cave-in Protection

Volume 1 Fast 100 Issue 45C-1

Working inside of trenches and excavations is very dangerous. Workers die on the job every year when they are caught in an excavation or trench cave-in.

- The first rule is to **Never enter an unprotected trench or excavation!**
- All excavations and trenches must be inspected by a Competent Person before workers enter them.
- Excavations more than 5 feet deep must have cave-in protection.
- A safe way to enter the excavation or trench is required when it is 4' or deeper.

**OSHA Standard 1926.652(a)(1)** *Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section except when: (i) Excavations are made entirely in stable rock; (ii) Excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.*

Before workers enter an excavation or trench it must be inspected by a Competent Person and there must be protection from cave-in. Cave-in protection could be provided using any of the systems mentioned below:

- "Sloping (Sloping system)" excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins.
- "Benching (Benching system)" excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- "Shoring (Shoring system)" a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
- "Trench box or trench shield (Shield system)" means a structure that is able to withstand a cave-in and protect workers inside the shield or box. This is an option for almost all soil conditions and excavations and must be installed by trained personnel following the manufacturer's specifications.

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According to the U.S. Bureau of Labor Statistics, in recent years there are more than 800 injuries annually involving floors, walkways, and ground surfaces. OSHA issues hundreds of citations to companies for violations of poor housekeeping and OSHA lists housekeeping on their top 100 most frequently cited list. Workers should do their part to help avoid and prevent injuries and incidents by practicing good housekeeping on every job and at every worksite.

**OSHA Standard 1926.25(a)** says that *during the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.*

- Always remove or hammer down nails from scrap lumber and other debris.

**OSHA Standards 1926.252(c)** *All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.*

- During construction, separate waste or scrap materials from the immediate work area to avoid creating trip and slip hazards.
- Keep areas clear as the work progresses.
- Store pipe, conduit, rebar, and other rolling materials away from aisles and walk ways to avoid creating trip hazards.

**OSHA Standard 1926.252(a)** says that *whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, an enclosed chute of wood, or equivalent material, shall be used.*

- Use designated waste bins, recycle bins, and metal scrap containers.
- When disposing of waste or materials on a multistory construction site use chutes or designated drop-off zones to avoid possible fall hazards.



Proper guardrails are an essential requirement for safety on many job sites.

- Guardrails must be constructed properly.
- Guardrails must be able to stand up to construction use and prevent someone from falling!
- Damaged or broken guardrails must be repaired or replaced immediately upon discovery. Guardrails must be maintained throughout all phases of work on the site.

**OSHA Standard 1926.501(b)(1)** *Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.*

- Guardrails typically consist of a top rail, a mid rail and a toeboard.
- Top rails must be constructed at a height of 42" (plus or minus 3") and must be able to withstand 200 lbs of force downward and outward in the direction of the hazard or fall area.

**OSHA Standard 1926.502(b)** *states that guardrails must have a top rail of 42" high and strong enough to withstand 200lbs of force, mid rails must be 21" high and strong enough to withstand 150lbs of force.*

- Mid rails must be installed at a height of 21" or mid-way between the surface and the top rail and must be able to withstand 150 lbs of force.
- Toeboards must be at least 3.5" high and designed to withstand 50 lbs of force.
- Toeboards are an important part of falling object protection for workers on the lower levels of the construction site.

**OSHA Standard 1926.502(j)(1)** *Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface...*  
**1926.502(j)(2)** *Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds...*  
**1926.502(j)(3)** *Toeboards shall be a minimum of 3 1/2 inches (9 cm) in vertical height from their top edge to the level of the walking/working surface.*

OSHA may make inspections to any commercial or residential jobsite and rarely will advance notice be provided. These inspections may cover the entire workplace or construction area, or just a few operations.

**OSHA Standard 1926.3(a)(1)** states that *any authorized representative shall have a right of entry to any site of contract performance ... to inspect or investigate the matter of compliance with the safety and health standards...*

## During the Inspection:

- Be cooperative.
- Do not evade questions or try to hide anything.
- Answer questions truthfully, but do not speculate.
- Do not be sarcastic or argumentative.
- Take notes, measurements and photos.
- If possible, fix any violation immediately.
- Do not volunteer information, answer only the questions asked.

Why OSHA may select a company for inspection:

1. Imminent Danger
2. Fatal or Catastrophic Accidents
3. Employee Complaints
4. Program Inspections
5. Special Emphasis Programs
6. Follow-up Inspections

## WHEN AN OSHA COMPLIANCE OFFICER ARRIVES ON SITE:

- Notify the person responsible for the site such as the supervisor, manager, project superintendent or owner.
- Request identification, write down the Compliance Officer's name and ID number, and ask which area office they represent. The purpose of the inspection should be stated by the Compliance Officer before or during an opening conference at the beginning of the visit.
- During the walk-around inspection, the Compliance Officer is permitted to take notes and photographs and shall comply with the safety and health rules required on the job site. A manager should escort the Compliance Officer at all times. A company representative should take notes and photos of all inspection activities.
- Employees may be interviewed or written statements may be requested.
- A closing conference will be arranged to allow the Compliance Officer to review any violations observed and refer to applicable OSHA standards. Instructions on follow-up procedures will be provided at the end of the inspection.

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Bucket trucks (sometimes called cherry pickers) are an excellent tool used in many industries. Bucket trucks provide a safe and stable work platform in a variety of situations and when used in accordance with specific recommendations from the manufacturers.

It is important to note that all bucket trucks come with specific manufacturer operator manuals for the particular model and type of bucket truck. **If the operator manual is not available the device should not be used!**

*OSHA Standard 1910.67(c)(2)(ii) states only trained persons shall operate an aerial lift. And OSHA Standard 1926.21(b)(2) says that the employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

Common hazards found with bucket trucks:

- Electrocutation from accidental contact with energized wires.
- Tip-over hazards from setting up on steep or unstable surfaces and not using supports.
- Collisions or struck-against hazards from traffic on roads.
- Fall hazards from improper use of the lifts.

Safety precautions when working with bucket trucks:

- Only trained and authorized operators can use bucket trucks!
- Stand firmly inside the lift and never sit or climb on the edge of the bucket or use boxes or other items to get additional height.
- Look for overhead power lines and electricity lines before and during operation.
- Survey the area, set outriggers or supports if available, and traffic control.
- **Use fall protection every time when working in the bucket!**
- Use the right fall protection for the specific type of bucket truck and follow the manufacturer's recommendations!

According to the federal Department of Transportation (DOT) a “work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles.” Highway, road, street, bridge, tunnel, utility, and other workers for the highway infrastructure are exposed to hazards from outside and inside the work zone.

**OSHA Standard 1926.200(g) Traffic signs. (g)(1) Construction areas shall be posted with legible traffic signs at points of hazard. (g)(2) All traffic control signs or devices used for protection of construction workers shall conform to Part VI of the MUTCD, 1988 Edition, Revision 3, or Part VI of the MUTCD, Millennium Edition, incorporated by reference in Sec. 1926.6.**

- Workers need to be visible to any potential traffic and heavy equipment.
- Safety vests may need to be worn with hard hats to help the worker stand out and be visible to traffic.
- Work zones need to be clearly identified both for the safety of the workers and the public.
- Federal and State standards regulate the type of signs, barricades, barriers or channeling devices.
- Posted speed, type of work, and time of day are all factors that workers should know when required to establish work zones.
- Workers should obey the requirements of the work zone including wearing the correct safety equipment.
- Report damaged barriers, signs, missing cones or traffic control devices immediately and replace them as soon as possible.
- Flaggers must be properly trained and equipped with the correct tools to perform the work.
- Flagger stations should be located so that that an errant vehicle has additional space to stop without entering the work space.

# Flaggers for Work Zones

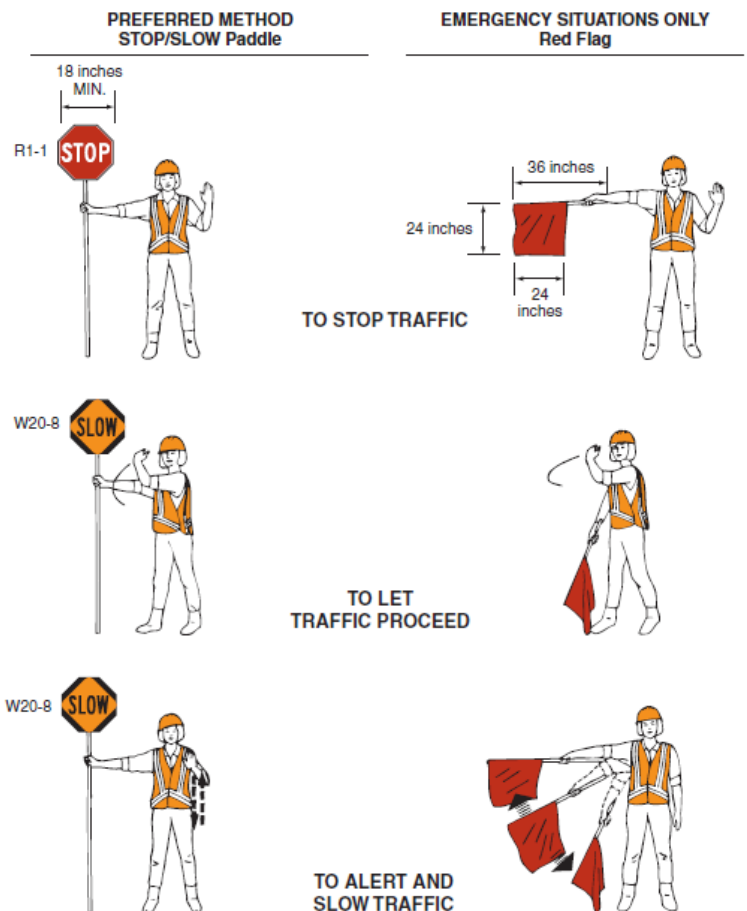
Volume 1 Fast 100 Issue 50C-2

According to the federal Department of Transportation (DOT) a “work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles.” Highway, road, street, bridge, tunnel, utility, and other workers for the highway infrastructure are exposed to hazards from outside and inside the work zone.

**OSHA Standard 1926.201(a) Flaggers.** Signaling by flaggers and the use of flaggers, including warning garments worn by flaggers, shall conform to Part VI of the Manual on Uniform Traffic Control Devices (1988 Edition, Revision 3, or the Millennium Edition), incorporated by reference in Sec. 1926.6.

- Certain work zones will require the use of flaggers or flag-men.
- Flaggers must be properly trained and equipped with the correct tools to perform the work.
- Flagger stations should be set up correctly according to the traffic control requirements.
- Flagger stations should be located so that that an errant vehicle has additional space to stop without entering the work space.
- The flagger should identify an escape path to use to avoid being struck by an errant vehicle.

Figure 6E-3. Use of Hand-Signaling Devices by Flaggers



From the Manual on Uniform Traffic Control Devices (MUTCD)

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# Preventing Cold Stress

Volume 1 Fast 100 Issue 51C-1

Anyone working in a cold environment may be at risk for cold stress. This could include an indoor workplace like cold storage or an outdoor job in construction or agriculture. Prolonged exposure to cold and/or freezing temperatures while on the job may cause serious health problems such as trench foot, frostbite and hypothermia. In extreme cases, exposure to cold temperatures can lead to death.

*Although OSHA does not have a specific standard that covers working in cold environments, under the **Occupational Safety and Health Act (OSH Act) of 1970**, employers have a duty to protect workers from recognized hazards, including cold stress hazards, that are causing or likely to cause death or serious physical harm in the workplace.*

Risk factors for cold stress include:

- Overexposure to cold temperatures
- Increase wind speed, and the wind chill effect
- Wet clothing and/or wet skin
- Dressing improperly for the weather
- Exhaustion
- Health conditions such as high blood pressure, hypothyroidism, diabetes or asthma
- Poor physical conditioning
- Inadequate training on how to work safely in cold temperatures

## **IMPORTANT TIPS TO PREVENT COLD STRESS:**

- Wear proper clothing for cold, wet and windy conditions.
- Take frequent short breaks in warm dry shelters.
- Schedule work for the warmest part of the day.
- Avoid exhaustion or fatigue.
- Keep extra clothing handy in case clothes get wet.
- Drink warm, sweet beverages and avoid drinks with caffeine or alcohol.
- Eat warm, high-calorie foods.
- Use the buddy system – work in pairs so that one worker can recognize danger signs.
- Stay dry in the cold because moisture or dampness, even from sweating, can increase the rate of heat loss from the body.

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# Recognizing Cold Stress

Volume 1 Fast 100 Issue 51C-2

Anyone working in a cold environment may be at risk for cold stress. This could include an indoor workplace like cold storage or an outdoor job in construction or agriculture. Prolonged exposure to cold and/or freezing temperatures while on the job may cause serious health problems such as trench foot, frostbite and hypothermia. In extreme cases, exposure to cold temperatures can lead to death.

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## COMMON TYPES OF COLD STRESS:

**Hypothermia** is when the normal body temperature (98.6°F) drops to less than 95°F. Exposure to the cold causes the body to lose heat faster than it can be produced. Hypothermia can occur at temperatures above 40°F if one is chilled from rain, sweat or cold water.

Symptoms: uncontrollable shivering, loss of coordination, confusion, and slurred speech. First Aid: Move the worker to a warm, dry area, remove wet clothing and replace with dry clothing, wrap the entire body in layers of blankets and seek medical attention immediately.

**Frostbite** occurs when body tissues freeze and can occur at temperatures above freezing due to wind chill and may result in permanent damage or amputation. Frostbite typically occurs on fingers, toes, nose and ears.

Symptoms: numbness, red skin that may develop gray/white patches, skin feels hard, sometimes blisters. First Aid: Protect area by wrapping loosely in dry cloth. Do not rub the affected area, do not apply snow or water, do not break blisters and do not attempt to re-warm the area. Seek medical attention immediately.

**Trench Foot** is injury to the feet caused by exposure to wet and cold conditions. Wet feet lose heat 25x faster than dry feet and workers can get trench foot in temperatures as high as 60°F if feet are constantly wet.

Symptoms: Tingling, pain, swelling, cramps, numbness and blisters. First Aid: Remove wet shoes/boots and socks, dry the feet, avoid walking, keep feet elevated and seek medical attention.

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Signs are an important part of work area safety that protect workers, visitors and the general public. If there is a potential hazard, signs must be visible at all times.

**OSHA Standard 1926.200(a)** *Signs (...) required (...) shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazards no longer exist.*

**Signs** are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist. All safety signs should be visible and legible. If an active sign is vandalized, becomes rusted, or is coming off the affixed location, it must be replaced immediately. Any sign that is no longer relevant should be covered or removed immediately.

**RED >> DANGER >> where immediate hazard exists**  
**YELLOW >> CAUTION >> to warn of potential hazards**  
**ORANGE >> WARNING >> barricades or notices**

- Danger signs indicate that there is an immediate threat and special precautions are necessary. Red should be the main color on the top of a black and white Danger sign.
- Don't assume everyone is aware of clear and present danger, signs are important! Use Danger signs to mark hazardous areas to prevent potential serious injuries to employees and others that could be in the area at any time.
- Caution signs warn against potential hazards or caution against unsafe practices, that if not avoided, could result in minor or moderate injury. Caution signs are yellow and black to ensure they are easily visible.
- Warning signs indicate a potentially hazardous situation.
- Safety Instruction signs are used to provide information, procedures or instructions.
- Notice signs are often blue and provide information that is considered important but not directly hazardous (example: security or hygiene).

# Barricades

Volume 1 Fast 100 Issue 52C-2

Barricades are an important part of work area safety that protect workers, visitors and the general public. If there is a potential hazard, signs must be visible at all times and when necessary, appropriate barricades must be in place.

**Barricade** means an obstruction to deter the passage of persons or vehicles. Barricades should be inspected daily (or more often) to ensure they are still in place and working as intended.

## Examples of Barricades



- A barricade outlines or blocks a dangerous area and warns of a boundary not to be crossed to ensure employee and public safety. It is an obstruction to deter the passage of persons or vehicles.
- Tapes, screens, cones, rope, wire, chains or signs can be barricades if set up properly.

(\*1) Photo Credit – Ryan McKnight. Road construction.. <https://www.flickr.com/photos/branderguard/14356903028/>

(\*2) Photo Credit – Grant Hollingworth. Construction zone. <https://www.flickr.com/photos/granth/390755991/>

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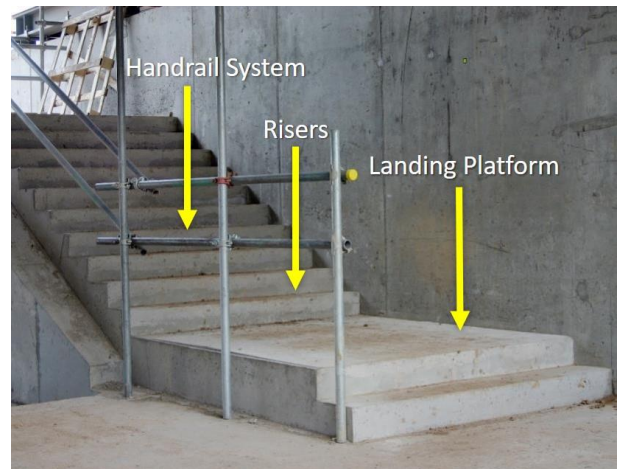
Stairways are a very common walking surface on construction worksites as they are being built and then during the construction phase as they used to move materials from one level to another. Employers must take measures on their jobsites to protect workers from slip, trip and fall hazards on any walking/working surface and workers have a responsibility to use stairways correctly, as intended.

**OSHA Standard 1052(c)(1)** *Stairways having four or more risers or rising more than 30 inches (76 cm), whichever is less, shall be equipped with at least one handrail and one stairrail system along each unprotected side or edge.*

- Each flight of stairs having at least 4 risers must be equipped with stair rail systems and/or handrails.
- Unprotected sides and edges of stairway landings shall be provided with guardrail systems. Stairways under construction should have safety barricades in place.

Employers are responsible for ensuring all stairways that are in use on the job site are safe. Workers should alert management to any unsafe issues or potential hazards noticed on or near stairways.

The majority of stairway incidents occur when a worker is not paying attention, they are rushing and they are not watching their footing.



- Never carry a load with both hands while going up or down the stairs.
- Keep loose tools and trash off of the stairways to prevent tripping hazards.
- Never run up or down the stairs and avoid distractions like trying to get a co-workers attention or looking at your cell phone.
- Report any situation in which there is insufficient lighting provided on any job site stairway, indoors or outdoors.

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# Emergency Action Plans

Volume 1 Fast 100 Issue 54C-1

Workplace emergencies can happen on any jobsite and may have the potential for severe injury to workers and even extreme property damages. Emergency Action Plans provide site-specific procedures so workers know what is expected and what to do in the event of an emergency.

**OSHA Standard 1926.35(a)** *The emergency action plan shall be in writing and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies. 1926.35(e)(3) For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan.*

Site-specific emergency action plans (EAP) must be in place for every jobsite. The EAP should be in easy-to-read type and posted in multiple locations across the jobsite so every worker has the opportunity to review as needed.



The basic EAP that is posted should include:

- Address and description of the site location
- Emergency response numbers for 911, fire department, police, emergency responders
- Name and address of nearest medical facilities
- Map to nearest medical facilities

- Everyone on the job site should be aware of the Emergency Action Plan and familiarize themselves with the posted evacuation diagrams.
- All employees should know how to report an emergency situation.
- All employees must be aware of their role during any emergency situation. Most workers will follow evacuation or shelter-in-place safety procedures but some will have safety facilitator, medical rescue or critical operations roles.
- When working indoors, emergency exits should be clearly labeled, lighted and visible at all times. Emergency exits should NEVER be blocked, even temporarily.
- Great tip! A copy of the most current EAP should be kept in every fleet vehicle.

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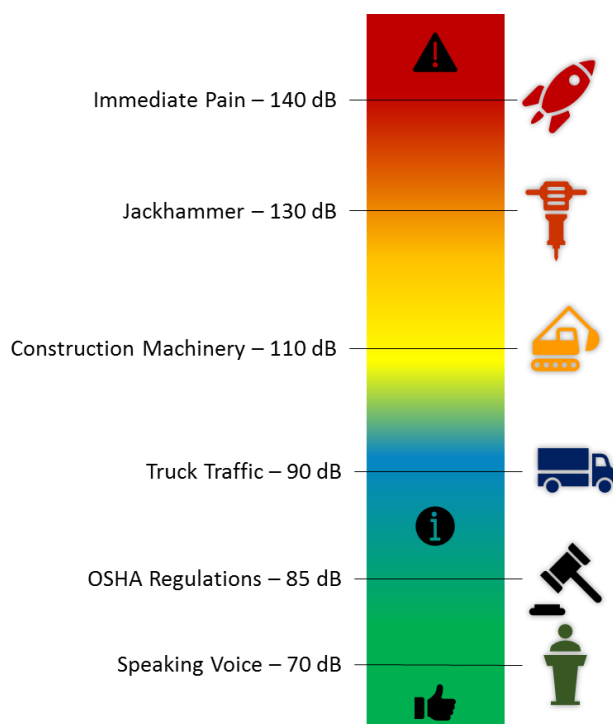
# Hearing Protection

Volume 1 Fast 100 Issue 55C-1

U.S. businesses pay more than \$1.5 million in penalties annually for not protecting workers from noise, and hearing loss directly impacts the quality of life not only for those workers but also their families.

**OSHA Standard 1926.52(b)** *When employees are subjected to sound levels exceeding those in Table D-2 of this section, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, **personal protective equipment** as required in Subpart E, shall be provided and used to reduce sound levels within the levels of the table.*

- OSHA regulations state that 85 decibels (dB) is the action level where workers may need to use hearing protection.
- Hearing protection must be provided for the level and/or range of noise that workers will be exposed to during their work hours.
- The best hearing protection is a solution that is worn properly by the worker every single time they are exposed to loud noise on the job.
- Never improvise hearing protection by stuffing cotton, tissue, wax or other items into your ears.
- When choosing hearing protection, consider the employee's hearing needs on the job, their current hearing ability, convenience, ease of use, the work environment and the compatibility with any other PPE the worker may need to wear.
- Where noise levels are extremely dangerous or potential impact noise levels are present workers may have to wear two layers of hearing protection such as a combination of ear plugs and ear muffs.



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# Respiratory Protection

Volume 1 Fast 100 Issue 56C-1

The use of respirators, even simple ones like dust masks, is serious and requires workers to understand the types of hazards they could be exposed to, the specific type of respirator needed, how to use the respirator, and its limits. Failure to follow all the requirements to properly wear a respirator can prove to be dangerous and potentially deadly.

**OSHA Standard 1910.134(d)(1)(i)** *The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.*



The respiratory protection standards for Construction are the same as for General Industry set forth in Standard 1910.134.



- Respirators protect the user by either filtering contamination from the air or supplying clean air from another source.
- Some respirators use specialized cartridges and filters. Workers should know how to identify the type of filters and how to install or replace these filters or cartridges.
- Respirators must be kept in a clean and sanitary condition.
- Respirators must be stored properly to avoid damage. Pack and store respirators safely to prevent deforming the facepiece and exhalation valve.
- Always use the proper respirator for the specific task and situation.
- Never use a respirator unless you have been properly authorized, fit-tested, and trained.
- Workers must know how to properly put on and wear their respirator.

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Welding and cutting are hot work techniques used to bond, cut, solder, or form metals at high temperatures. Specific precautions must be taken during this high-hazard work to prevent personal injury and workplace damage.

Important points to remember to avoid electric shock:

- Operators should be insulated properly from the work and from the ground.
- Never touch the electrode or metal parts of the electrode holder with skin or wet clothing.
- Always wear dry gloves that are in good condition.
- Only qualified technicians should attempt to service or repair welding equipment.
- Inspect the electrode holder before work. Ensure the welding cable and electrode holder insulation remain in good condition. Repair or replace damaged insulation before use.
- Remember, even when not turned on, welding equipment can still have 20 to 100 volts at the welding circuit. Even a shock of 50 volts or less can be enough to cause injury.

**OSHA Standard 1926.352(d)** *Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.*

- Leather and flame-resistant treated cotton clothing is recommended in welding environments.
- Welding leathers are recommended when vertical or overhead welding is required.
- Don't roll up sleeves or pant cuffs as sparks or hot metal can get into the folds and burn through the clothing.
- Even when wearing a helmet, always wear safety goggles with side shields or goggles to prevent sparks or debris from hitting the eyes.
- Heavy, flame-resistant gloves should always be worn when performing hot work.
- Wear ear protection if working in an area with high noise levels.
- Welding areas require adequate ventilation. In certain areas, mechanical ventilation such as a fan, exhaust system or exhaust hoods may be needed to remove potentially dangerous fumes and gases from the work area.

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# Head Protection

Volume 1 Fast 100 Issue 58C-1

Hard hats, if worn properly and consistently, can protect crew members from falling or flying objects, electrical shock hazards and unintentional hard hits against fixed objects.

**OSHA Standard 1926.100(a)** *Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.*

- Always be aware of any possible hazards to your head.
- Not every hard hat is the same! The type of protection provided can be very different depending on the type of hard hat.
- OSHA requires hard hats to meet special requirements and be marked with ANSI Z89.1.
- Workers exposed to electrical hazards must wear the appropriate head protection for the type of electrical hazard.
- Inspect your hard hat daily for signs of damage.
- Some hazards to the head may require workers to use hard hats designed for impacts to the sides as well as the top of the head.
- Workers need training to recognize the types of hazards requiring head protection, how to properly wear and maintain their head protection, and when to replace it.
- Make sure your hard hat fits properly! If your hard hat is too large or too small, even if it meets all the requirements, it will not protect you properly.
- Hardhat accessories must not compromise the safety elements of the protective helmet.
- Always replace a hard hat if it has sustained any kind of impact, even if damage is not noticeable. Replace hard hats if they have cracks or show signs of damage.



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**Lockout** refers to the act of placing a physical barrier, such as a lock, cover or chain, that prevents a machine or equipment component from being turned on or activated. **Tagout** is the application of a label or tag placed near the lockout that alerts others to the lockout status of the equipment. **Lockout and Tagout should always be used together to maximize safety.**

*OSHA Standard 1926.702(j) No employee shall be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged. Tags shall read Do Not Start or similar language to indicate that the equipment is not to be operated.*



Types of hazardous energy include:

1. Chemical – chemicals stored in pipes, tanks, and/or under pressure.
2. Pneumatic – trash compactors, compressors, lifting equipment.
3. Thermal – extreme heat from heating elements or furnaces or cold energy from refrigeration units or compressed gases.
4. Electric – electrical equipment wired or operated by cord and plug.
5. Mechanical – stored energy in rotating or moving parts or conveyor belts.
6. Other – such as x-ray, radiation, laser, microwave, or radio frequency.

- Failure to properly lockout and tagout equipment can result in injuries to the workers who are servicing, repairing, or adjusting the equipment.
- Recognize when equipment is locked out, tagged out, or both – look for tags, signs or locks at startup points, switches, valves, or control panels.
- Never tamper with or remove a lockout or tagout device!
- Only personnel that have received specific training and follow the correct procedures are authorized to perform lockout tagout.
- Identify and label all sources of hazardous energy at the work site.
- When there is the potential for more than one worker to be servicing the same equipment that requires lockout tagout procedures to be in place, it is best for each worker to have their own lock and tag on the equipment to ensure the safety of each individual is maintained.

# Hazard Communication

Volume 1 Fast 100 Issue 60C-1

Hazard Communication is a specific OSHA phrase that deals with the hazards of chemicals in the workplace.

**HCS** is the Hazard Communication Standard which is an OSHA standard with a goal to ensure employers and workers know about chemical hazards and how to protect themselves.

OSHA's Hazard Communication standard is important to workers because it enforces the idea that **workers have a right to know about:**

- What chemicals are in the areas you will be working in?
- What are the hazards of those chemicals?
- How to protect yourself from those hazards.

**OSHA Standard 1910.1200(g)(8)** *The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).*



- Workers need to know what chemicals are in their workplace, especially if they have to use them as part of their job.
- An important part of the OSHA Standard on HCS is that chemical manufacturers and importers must develop a Safety Data Sheet or SDS for each hazardous chemical they produce or import.
- SDS's contain valuable information about the hazards of chemicals and how to protect yourself. An SDS must be kept for each chemical at the job site.
- Never use chemicals in containers that are not properly labeled.
- Report to the manager or supervisor any containers that are found without proper labels.
- If the labels become damaged or removed notify the manager or supervisor immediately.

**IMPORTANT** → **OSHA Standard 1926.59** *The requirements applicable to construction work under this section are identical to those set forth at 1910.1200.*

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Pneumatic tools, powered by compressed air, can be a useful and portable addition to electrical tools on construction sites. The air compressors that power pneumatic tools must be used correctly to ensure the safety of all workers on the job site. All workers who are authorized to use pneumatic tools should be trained on safe tool operation as well as inspection, compressed air hazards, proper PPE requirements and tool storage.

- Getting hit by an attachment or fastener that flies off can cause serious injury. → Always use a safety clip or retainer to prevent attachments from being ejected during tool operation.
- A hose that becomes disconnected while still under high pressure can whip around wildly and strike workers in the area. → Ensure all hose connections are secured by positive locking devices to prevent accidental disconnection during use.
- Electrical contacts within the air compressor motor or pressure switch can spark, creating a risk for fire or explosion. → Operate air compressors in a well-ventilated area away from combustible materials.
- Overheating can occur when ventilation openings on the air compressor are blocked. → Don't place objects on or against the air compressor that could restrict airflow.

**OSHA Standard 1926.302(b)(4)** *Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.*

- Pneumatic tools can be noisy so it is important to wear **hearing protection** when using air powered tools or when working in the area where they are used regularly.
- **Eye protection** is required, and **head and face protection** is recommended for crew members working with pneumatic tools.
- **Gloves** should be worn when using pneumatic tools to protect your hands.
- **Dust masks** should be used when using tools that create dust and fumes in the work area that may be hazardous.
- If pneumatic tools are used in areas where others are working consider adding **screens or shields** to protect other employees from flying fragments, chips, dust and excessive noise.

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# Bloodborne Pathogens

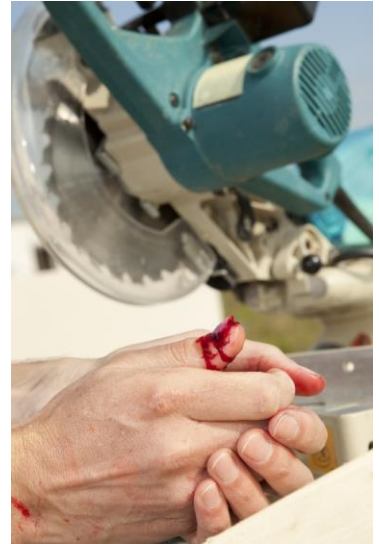
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**Bloodborne pathogens are infectious, disease-causing microorganisms in blood and bodily fluids.** Workers in many occupations, including construction, are at risk for exposure to bloodborne pathogens. In fact, any person that is administering first aid has the opportunity to be exposed to bloodborne pathogens.

The three most common bloodborne pathogens are:

- Hepatitis B Virus (HBV)
- Hepatitis C Virus (HCV)
- Human Immunodeficiency Virus (HIV)

Bloodborne pathogens can be transmitted by ingestion, through blood and certain bodily fluids. In the workplace, bloodborne pathogens may be transmitted from an infected person via needlesticks, human bites, cuts, abrasions, or through mucous membranes (eyes and nose).



- Treat all blood and certain body fluids as if they were known to be infectious with bloodborne pathogens.
- Avoid direct or indirect contact with anyone else's blood and body fluids.
- Always wear disposable gloves when providing first aid care.
- Avoid touching your eyes, nose and mouth during or after providing first aid care.
- Dispose of sharps in designated sharps containers immediately after use. Sharps are usually used needles but could include any contaminated broken glass, razors, or utility knives.
- Remove disposable gloves without contacting the soiled part of the gloves and dispose of them immediately in a proper container.
- Thoroughly wash your hands (and any other areas) immediately after providing care.
- All equipment, tools, PPE, working surfaces and floors must be thoroughly cleaned and decontaminated after exposure to blood or bodily fluids.
- If you think you may have been exposed to bloodborne pathogens, seek immediate follow-up care.

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# Scaffolding

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Scaffolding is a temporary structure used on indoor and outdoor work sites as a walking or working surface for work crews to assist in maintenance, construction, and repair. When constructed and used properly, scaffolds provide a safe platform to complete work at heights and areas that would be otherwise difficult to reach.



**OSHA Standard 1926.451(g)(1)** states *each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level.*

While working at heights of 10 feet or more on scaffolding, employees must wear personal fall protection, such as a body harness, and/or ensure a guardrail is in place.

- Employees shall not climb cross braces or end frames, unless end frames are designed to be climbed.
- An access ladder, stair tower or equivalent safe access shall be provided for all scaffolding.
- Do not use ladders or makeshift devices on top of scaffolds to increase height.
- Employees are prohibited from working on scaffolds covered with snow, ice, or other slippery materials, except to remove these substances.
- Do not jump on planks or platforms.
- Do not load a scaffold in excess of its rated working load.
- Do not move any scaffold while employees are on them.
- Do not mix scaffold components or force pieces to fit together when building the scaffold. This can severely compromise the strength of the scaffolding system.
- Lock casters and wheels when scaffold is in place.

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Respirable crystalline silica dust is created during normal construction activities when cutting, sawing, grinding, drilling or crushing any material that has silica like concrete, brick and stone. These super-fine silica particles are released into the air and workers are in danger of inhaling these silica dust and developing serious health conditions as a result.



**OSHA Standard 1926.1153(c)(2)** *For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust. For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust.*

To limit exposure to harmful silica dust, these control methods can provide a safer work environment:

- Apply water to a saw blade when cutting materials or use tools equipped with an integrated water delivery system.
- Use tools equipped with shrouds and commercially available dust collection system.
- Install local ventilation or use vacuums to collect dust.
- Avoid working in dusty work environments whenever possible and wear a respirator when needed/required.
- Wet dust before sweeping it up or vacuum dust instead of sweeping it.
- Do not eat or drink near dusty work areas.
- Park cars and trucks away from the work area so they will not be covered with silica dust.
- Shower (if possible) and change into clean clothes before leaving the worksite to prevent carrying silica dust away from the work site.

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# Winter Driving Safety

Volume 3 Fast 100 Issue 3H-1

Stay safe this winter holiday season by planning ahead and making good choices when traveling. When preparing to travel, be aware of current and forecasted weather conditions. Get your car ready for cold weather before winter arrives and ensure it is well-equipped for the road conditions.

Remember the three P's of Safe Winter Driving:

**PREPARE** for the trip >> **PROTECT** yourself >> **PREVENT** crashes on the road

## Winter Driving Safety Tips

- Speed limits are based on normal road conditions, so reduce your speed when there is ice or snow.
- Stay at least 200 feet back if you are behind a snow plow.
- Bridges, ramps and overpasses freeze first, so use extreme caution.
- Know how to safely maneuver a vehicle if skidding on ice occurs.
- Maintain at least three times the normal following distance when driving on snow and ice.
- Be aware of 'black ice' which is a nearly invisible layer of ice that can develop on roads and cause a driver to rapidly lose control. Black ice is especially common at night.
- Avoid travel during winter weather advisories.
- Avoid fatigue, get plenty of rest before the trip and if driving, stop at least every three hours and rotate drivers if possible.
- Do not text or become otherwise distracted while driving.
- Consider joining AAA or another travel club for roadside and travel assistance if it becomes unexpectedly needed.
- Plan your route ahead of time; tell friends or family your travel route and expected arrival time.
- Carry a cell phone; ensure it is always charged. Carry a small first aid kit.
- Use a wintertime formula in your windshield washer. Keep gas tank full to avoid ice in the tank and fuel lines.

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