This tool box safety talks book was designed for construction supervisors to use on the job site and as a training tool in conjunction with employee safety briefings. The talks are not intended to be a substitute for an employer’s own safety program or to be a complete authority on the subjects discussed.

While Builders Trust hopes that these talks will be helpful, each employer, and not Builders Trust, is responsible for establishing and maintaining a good safety program and communicating proper safety procedures to employees.

While every precaution has been taken in the preparation of this publication, neither the authors nor Builders Trust of New Mexico shall have any liability to any persons or entity with respect to any loss or damages caused directly or indirectly by the information contained herein. The contents of this Blueprints for Safety book should not be construed as legal advice or opinion on specific facts or circumstances.

Foreword
You can make a difference regarding your job safety. Having safety talks on your construction sites is key to your construction safety program. Used properly, these talks can be an effective method for teaching workers safety awareness and for conveying the importance that your company places upon safety. However, it is up to you to make these topics interesting so that your workers will think about safety and remember the topics that you discuss. Make sure to give examples of how to perform your jobs safely; include a few examples of injuries to workers who didn’t.

Points For The Presenter
You are the key to making these Safety Talks most effective. A few points to remember when preparing and presenting your talks are below.

- Hold meetings regularly, such as once a week. Regular meetings convey the feeling that the safety meetings are a valuable, regular part of the job.
- Choose subject matter for your talks appropriate to the specific project. Nothing will lose the audience faster than a topic everyone knows to be irrelevant to their particular work.
- Spend enough time prior to the meetings to familiarize yourself with the subject to be presented.
- Use the printed material as a guide for speaking, rather than merely reading it. If portions must be read, make an effort to inject some feeling into it to avoid a dry, monotone delivery.
- Concentrate on the single subject contained in the specific week’s Safety Talk. Do not let the discussion ramble.
- Where possible, use examples from personal experience to illustrate key points. Ask the audience for examples from their personal experience.
- When available, use training aids or graphic material, such as Safety Posters, to dramatize the discussion.
- Attempt to encourage the group to participate in the discussion. Participation breeds involvement, a major goal in a successful safety program.
- Be sure to limit each meeting to no more than 5 or 10 minutes. Short presentations prove to be the most successful. Any unfinished discussions can be continued to the next meeting if necessary.
- Summarize the main points of the Talk and of any discussion. Positive approaches and conclusions should be used whenever possible.
We encourage you to photocopy and complete an attendance record (see next page) for each safety meeting to document your safety efforts.
# Safety Meeting Attendance Record

**Date:**  

**Discussion Leader:**  

**Location:**  

**Safety Topic(s):**  

## EMPLOYEE SIGN-OFF

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Overview
Thousands of construction workers are exposed to the hazards from asphalt on a daily basis. Asphalt is a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes.

For Discussion...
Description of hazard. The primary danger from hot mix asphalt is thermal burns. Asphalt fumes may also cause eye, skin, and respiratory tract irritation. Workers who are exposed to asphalt fumes have reported headaches, rashes, cough, breathing problems, asthma, bronchitis, and skin irritation.

Safety and health requirements
Consult your company’s Emergency Action Plan for asphalt hazards first aid. This should include first aid for eyes, skin, inhalation, and fumes.

Eyes — If any hot material is splashed into a worker’s eyes, flush eyes immediately with fresh water and then take the worker to a doctor.

Skin — If any hot material gets on your skin, cool affected area in cold water as soon as possible to stop further damage. If ice is available, pack ice on the asphalt adhering to the skin. Do not try to remove the solidified bitumen material from the skin in any way. Get to a doctor as soon as possible.

Inhalation — Move the employee to fresh air right away. Call a doctor.

Fumes — To protect against the potential hazards of asphalt fumes, your company can treat it as if it were on the list of gases, vapors, fumes, dusts, and mists included in OSHA 29 CFR 1926.55. OSHA does not have a specific standard for asphalt fumes, so follow the listing of safe work practices below.

• Implement administrative/engineering controls whenever feasible. New paving equipment manufactured after July 1, 1997 will incorporate ventilation systems to reduce asphalt fumes by 80% under an agreement with equipment manufacturers and OSHA.

• When such controls are not feasible to achieve the desired results, personal protective equipment (PPE) or other protective measures can be used to keep employee exposure to air contaminants within the limits suggested.

Always ensure that you are equipped with the proper PPE such as respirators, heavy-duty gloves, splash goggles or effective safety glasses, long pants and sleeves, and boots.

Questions
1. Have you been shown a copy of your company’s Emergency Action Plan with regard to asphalt hazards?
2. Do all asphalt workers on your jobsite wear proper personal protective clothing? What is the proper PPE?
3. What should you do if hot asphalt fumes become intolerable on your job site?
4. How important is it to obtain professional medical care in case of any injury due to asphalt hazards? Why?
AWARENESS OF BLOODBORNE PATHOGENS

Overview
OSHA created a rule several years ago in order to protect workers from exposure to the hepatitis B virus (HBV), the human immunodeficiency virus (HIV), and other “bloodborne pathogens”. Any exposure to bloodborne pathogens can lead to disease or death.

For Discussion...
If you can reasonably anticipate to have skin, eye, or nasal membrane contact with blood, saliva, urine, vomit, or any other bodily fluid that visibly contains blood, or other body fluid, you are “occupationally exposed”. First responders in emergencies are prime candidates who fit into this category. OSHA’s rule limits their exposure. Your employer will take the proper precautions to limit your exposure.

A determination of who is occupationally exposed in your company will allow for the proper steps to be taken in order to protect these workers. Handwashing facilities, and barrels for broken glass are just a couple of ways to limit exposures. Good work practices and personal protective equipment are other means of protection. Posting of signs and labeling containers with the appropriate biohazard sign are also effective.

In addition to the above, you should take further steps to prevent infection whenever you may encounter blood or other body fluids. Other good work practices worth following are listed below:

• Always wash hands immediately after removing gloves or other protective equipment and after any hand contact with blood or potentially infectious fluids.
• Do not bend, break, or re-cap any used blades or sharp item. Never pick up broken glass or metal with your fingers. Use a broom or tongs.
• Dispose of used blades and needles in puncture resistance containers with leak proof sides and bottom. Containers must be properly labeled.
• Do not eat or drink, apply makeup or handle contact lenses in potential exposure areas.
• Do not store food or beverages in refrigerators or cabinets, or on shelves or countertops in these areas.
• Treat all blood and body fluids as if they were infectious.

Always be especially careful around blood and other potentially infectious materials. Use the practices you’ve been taught and guard your health!

Questions
1. What are good work practices for reducing the risk of contact with bloodborne pathogens?
2. Are you at risk on your job site?
3. Name some good rules to remember in order to prevent infection.
CAUGHT IN/BETWEEN HAZARDS

Overview
Back in October of 1994, OSHA implemented its Focused Inspections Initiative for construction sites. A focused inspection concentrates on the four leading causes of death at construction sites: falls from elevation; struck-by, hit-by; caught in/between and electrical hazards. Eighteen percent of all construction related deaths are caused by caught in/between accidents.

For Discussion...
Thousands of stories can be told about caught in/between hazards. What exactly is a “caught in/between” hazard? Here’s one example.

A worker was steam cleaning a scraper. The bowl apron was left in the raised position. The hydraulic apron had not been blocked to prevent it from accidentally falling. The apron fell unexpectedly and the worker was caught between the apron and the cutting edge of the scraper bowl. The apron weighed approximately 2,500 pounds. You already know how the story ends.

When it comes to trenching and shoring, a stairway, ladder, ramp or other safe means of getting out of a trench must be properly located in excavations that are four feet or deeper. And employees must not have to travel more than 25 feet in any direction to reach the ladder.

Additionally, each employee in an excavation must be protected from cave-ins by an adequate protective system designed in accordance with OSHA rules and regulations.

Material handling, storage, use, and disposal. Materials stored in tiers must be stacked, racked, blocked, or somehow secured to prevent sliding, falling, or collapse.

Hand and power tools. When power operated tools are designed to accommodate guards they must be equipped with those guards when in use.

All belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded if the parts are exposed to contact by employees or otherwise create a hazard.

Cranes, derricks, hoists, elevators, and conveyors. Accessible areas within the swing radius of the rear of the crane’s rotating superstructure must be barricaded to prevent an employee from being struck or crushed by the crane.

Mechanized equipment. End-loader buckets, dump bodies, bulldozers and scraper blades, and other similar equipment must be either fully lowered or blocked when being repaired, serviced or when not in use.

When appropriate measures are taken, every caught in/between injury or death can be prevented. Use the proper lockout or block-out or find another creative way to prevent yourself from being killed by these senseless and needless accidents.

Questions
1. Why is the word “focus” used in conjunction with being aware of caught in/between hazards?
2. Which of the above potential risk exposure is present on your current job site?
3. Are workers on your job site advised of any changes that may include any of the above hazards?
4. Who do you report a real or potential hazard to on your job site?
CHAIN SAW SAFETY

Overview
If you use chain saws at your construction site, you are required to instruct employees on their safe use. While there are no specific OSHA construction regulations, there is information from the general industry logging regulations that can, and should be used for the purposes of training as “best practices” for safe chain saw use.

For Discussion...
Chain saw requirements. Each chain saw must be equipped with a chain brake and a protective device to minimize kickback. No kickback device can be removed or otherwise disabled.

Each chain saw must be equipped with a continuous pressure throttle control which will stop the chain when pressure is released.

The saw must be operated and adjusted in accordance with the manufacturer’s instructions.

When fueling your chain saw, stay at least 10 feet from any open flame or other source of ignition. Start your chain saw at least 10 feet from the fueling area.

Pre-operational inspection. Inspect your chain saw before initial use during each workshift. Minimally, a good inspection will include:

- Handles and guards. Ensure they are sound, tight-fitting, properly shaped, free of sharp edges, and in place.
- Controls. Assure proper function.
- Chains. Assure proper adjustment.
- Mufflers. Assure they are operational and in place.

Operational checks. You must use your chain saw only for the purpose for which it was designed. Dull chain cutting edges should be sharpened in accordance with the manufacturer’s specifications.

Start a chain saw on the ground or other firmly supported area and with the chain brake engaged. Drop starting a chain saw is strictly prohibited.

- Be certain of footing before starting to cut, and use the saw in a position or at a distance that ensures proper balance and secure footing; clear away brush or other potential obstacles which might interfere with cutting.
- Never use the chain saw to cut overhead.
- Carry the chain saw to avoid operator contact with the cutting chain or hot muffler.

Remember that chain saws are dangerous. A little common sense and sticking to the safety rules will go a long way to protect you from injury.

Questions
1. What are the chain saw safety requirements?
2. What Personal Protection Equipment is required?
3. What safety inspection should be done prior to using a chain saw?
4. What are some safety rules a worker using a chain saw should follow?
COMMON SENSE AWARENESS

Overview
Job site safety awareness, in general, is an important topic. It enables construction workers to not only understand the hazards associated with construction work, but to maintain a heightened awareness of the existence of those hazards and how to avoid them.

Many job-related injuries are often caused by not really thinking things through before we take on a job task. How often, when we find ourselves doing something a little bit different or unusual on our regular jobs, do we question the method and ask ourselves, “Am I thinking clearly?”

For Discussion...
For example, do we pause and question ourselves when we……

• use an extension cord or tool with a frayed cord or a missing ground prong?
• try to lift something by ourselves when we should ask someone else to help us?
• go up on the roof for “just a minute” without wearing our safety harness?
• climb a ladder trying to carry more than we should by hand?
• use a nailgun or power saw without wearing safety glasses?

Understandably, not every unsafe situation is covered by a safety rule or referenced in an OSHA regulation. Workers must pause and use intelligent common sense to reach a decision about their actions. The alternative may result in an accident to themselves or to someone else. If you seriously consider the consequences of your actions, very few of your actions will result in accidents!

Remember,

Safety First

Questions
1. Why do workers have accidents?
2. How do you define carelessness? Is carelessness preventable?
3. Do accidents just happen or are they caused? Name an accident that “just happened”. How should it have been prevented?
4. Is it wise for entire crews to be aware of each other’s job task? Why?
COMPRessed gAs CYLINDERS

Overview
There are numerous jobs in construction where oxygen and acetylene cylinders are on hand for cutting and welding. The problem is that much of the time these cylinders are improperly stored and handled. If you use these cylinders often it’s easy to be careless with them. They can be dangerous for several different reasons. Lots of the accidents involving cylinders aren’t too serious; a worker might catch a hose with his foot and the unsecured cylinder falls over on his ankle, or a cylinder slips out of a choker and hits someone on the arm. However, every once in a while, a bad accident happens. A valve is knocked off an oxygen cylinder and it takes off like a torpedo, or a misused cylinder explodes and somebody is killed.

For Discussion…
Here’s what we can do (or not do) to help prevent these accidents:

DO keep cylinders upright and secured at all times.

DO use a cradle or cage when hoisting cylinders with a crane.

DO be sure the valve protection caps are on before moving cylinders and while the cylinders are in storage.

DO close the valve on empty cylinders, put on the cap, and mark them “MT.”

DO store oxygen cylinders apart from any fuel/fuel gas cylinders, such as an acetylene, by at least 20 feet.

DON’T store propane cylinders inside any building.

DON’T use cylinders for rollers or supports.

DON’T tamper with the valves or safety devices.

Cylinders are dangerous because of the gas they have inside, and because they hold that gas under extreme pressure (the pressure part is how they can turn into a torpedo!). If they are for welding, they probably have one of two different kinds—either acetylene or oxygen gas. Acetylene is dangerous because it is very flammable and if enough gas were to build up because of a leak, there could be an explosion if a flame was around. The same holds true if the cylinder had propane or some other flammable gas used for heating purposes.

In reference to the oxygen cylinders, their danger lies in fueling a fire in several different ways. If pure oxygen meets oil or grease, a fire will start without a flame due to a chemical reaction.
So, follow the safety rules outlined above, and stay safe and alive!

Questions
1. Are there instances on this job site when compressed gas in cylinders will be used?
2. Why is proper storage for cylinders essential?
3. Why not use cylinders for rollers or supports?
4. What method is best to hoist a cylinder?
CONFINED SPACE ENTRY

Overview
Although most construction work is done in well-ventilated areas under normal circumstances, some of these areas are subject to the accumulation of toxic or flammable contaminants or can develop an oxygen deficiency. Trenches and other enclosed areas at construction sites can be deadly. As defined by OSHA, a confined space in the construction industry is any space having a limited means of getting out, and which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere.

For Discussion...
In order to ensure employee safety in confined spaces, you must (1) be aware of areas where hazardous atmospheres exist or could reasonably be expected to exist (hazard recognition), and (2) comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

Confined or enclosed spaces include, but are not limited to such spaces as storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than four feet deep such as pits, tubs, vaults, and vessels.

Hazardous atmospheres

Some construction rules use the term “hazardous atmosphere” to describe confined space situations. As per (1926.57 – Ventilation), tanks must be tested and, if necessary, ventilated, before employees are permitted to enter them.

In the excavation rule (1926.651), it says that where oxygen deficient atmospheres (containing less than 19.5 percent oxygen) or hazardous atmospheres exist or could reasonably be expected to exist, such as excavations in landfill or other areas where hazardous substances are stored nearby, the atmospheres in the excavation must be tested before employees enter excavations greater than four feet deep.

Many times, the confined space you are entering will not appear to be hazardous. At other times, there may be a distinct odor of toxic atmospheres, arcing of electrical equipment, or the presence of loose material. If you always follow your company’s confined space program and use protective equipment made available to you, then you will be able to work safely even in confined spaces.

Questions
1. How does OSHA define a ‘confined space’?
2. What are some of the ways to recognize hazardous atmospheres on a job site?
3. How can appearances be deceiving?
4. Have you read your company’s confined space safety program?
DEMOLITION SAFETY - PREPARATORY OPERATIONS

Overview

Prior to beginning every demolition job, you should take a number of steps to safeguard the health and safety of your employees. Taking down construction projects can be far more dangerous than putting them up. OSHA requires that before you start the operation, your competent person must complete an engineering survey of the structure.

For Discussion...

An engineering survey provides your supervisors with the opportunity to evaluate the job in its entirety. The precautionary operations involve the overall planning of the job, including the methods for bringing down the structure, the equipment required, and the measures to be taken to perform the work safely, including the protection of the public.

Obviously, the safety of all workers on the job site should be the prime consideration. Potential hazards such as fires, cave-ins, and injuries are the primary targets for engineering surveys.

OSHA expects the following questions to be answered before the actual demolition begins.

1. Has fire, flood, explosion or other cause damaged the structure? If so, are dangerous walls or floors shored or braced?
2. Have any hazardous chemical, gases, explosives, flammable material, or similar dangerous substances been used or stored on the site? If so, have samples been taken and analyzed prior to demolition?
3. Is the proper safety equipment available?

Are all utilities including electricity, gas, water, steam, sewer, and other service lines shut off, capped or otherwise controlled? Do you know the location of utilities that must be kept on during demolition? Do you know where overhead lines are located?

Are you familiar with and has your company planned for all provisions of OSHA’s requirements for medical services and first aid?

Does your company have an Emergency Action Plan for fires, and do you know your assignment? Do you know the evacuation plan and route?

Are all debris drop points guarded by barricades and warning signs?

Demolition job sites are dangerous, so give yourself and your fellow workers all the support and know-how possible to complete the project without accidents. Get employees involved in the preparatory operations, and review all near misses and close calls immediately.
DRESS RIGHT FOR THE JOB

Overview
As employers, we are responsible for requiring the wearing of appropriate clothing in all operations where an employee is exposed to hazardous conditions. OSHA requires the employer to make sure that employees keep their clothing in a sanitary and reliable condition. This includes foot, head, hearing, eye and face, and respiratory PPE, as well as everyday clothing.

For Discussion...
Depending on what we wear, we can either be protected from an accident or literally pulled into one! This will be determined by whether or not we wear the proper clothing at the right time. For instance, gloves should be worn when handling rough materials. However, a worker once suffered a seriously disabled hand injury when the glove he was wearing got caught, and wound around a power drill he was using.

Leave off the decorations. One worker lost a finger when his ring got caught as he fell climbing down from a truck. Things like loose watchbands and key chains, keys on belts, or any item that might hook on something should be avoided.

Too long or too baggy pants may cause you to trip coming down a ladder, even when stepping backwards. Your heel can catch and pull you down. You may not see them much anymore, but cuffs can catch on equipment and cause an accident, too. Work shoes need thick soles and ankle support. Don’t wear your stylin’ boots and sacrifice protection on the job site!

Keep your clothes clean. Dusty or oil soaked clothing can cause skin irritations. Also clothes soaked with oil and grease can result in fatal burns if you happened to be exposed to a spark or flame.

Wear enough clothing in cold weather. Wool is warmer than cotton. Remember the rule that wearing layers is better than one real heavy layer of clothing.

Remember that hard hats and safety glasses keep your brain and your eyes protected! It’s hard to imagine a football player huddling up without a helmet, and you wouldn’t see him lining up dressed in a skindiver’s wet suit, either! Let’s dress right for our jobs, too!

Questions
1. Why wear pants without cuffs on the job?
2. Why should you avoid wearing pants that are too long or too baggy?
3. What jobs do we have where gloves should be worn? Should not be worn?
4. Does your job require special protective clothing?
DRIVING AND PULLING NAILS

Overview
Most of us believe there isn’t much to pounding a nail, but almost everyone who drives nails for a living eventually winds up with a lost fingernail or a bruised finger or thumb. You probably haven’t thought much about safety when it comes to driving and pulling nails. The truth of the matter is many unpleasant things can happen when it comes to this part of the job. A badly hit nail can fly and strike you in the eye, possibly putting your eye out. Loose hammerheads can fly off or you can miss your target and “mash” yourself instead. A cracked handle can push a sliver into your hand and can become infected if you don’t get first aid immediately.

For Discussion…
The best approach is to learn to drive nails quickly and cleanly. First, you need to be assigned to the right person to train you properly. The next step is to be sure the hammer is in good condition. The hammerhead must be set at the proper angle and have a good and tight fit. The handle must be smooth, straight grained, and shaped with a good grip. It should also be the right length and weight to give good balance. Then, consider the hammer face. It should be in good condition and not chipped or worn away from how it was manufactured. Always use the right size hammer for the nail. Using steel shank hammers is basically the same…take the same precautions that were recommended for wooden handled hammers, but remember that the steel shank is pointed (blade-like) and could seriously injure or even cut off a finger!

For starters, drive the nail so that the center of the hammer face always meets the nail head. If it doesn’t, the nail may fly off at the first blow or it may bend with the second blow. It takes some practice to hit a nail right every time. Learn to groove your swing, making the hammerhead glide through the same path to hit the nail head dead center and at right angles every time.

Pulling nails. It seems that a common term used by workers in construction when referring to nails left in boards is “snakes”. Remember that nails left in old form lumber, or in packing crates, or in lumber from wrecking operations are like a snake’s fangs. Pull the nails out immediately or bend them over. It could be you who steps on an exposed nail or rips a tear in your hand while reaching for that used board.

But it’s not always so easy to pull nails, although it’s pretty easy to get hurt. A worker once tried to pull a 40-penny spike with an ordinary claw hammer. When it didn’t come out, he thought that he’d throw his weight into it. Well, the handle broke and his knuckles smashed into the edge of the beam: two knuckles were broken. The proper and much safer way (although it takes a few more seconds) would have been to pull the spike up until he could get a pry bar on it.

Next, place a block of wood under the bar as a fulcrum to increase the height as more of the nail was removed.

For safety purposes, (and to keep all your digits intact), the best way to drive and pull nails is to:

1. Observe someone who has experience in doing it the safe and correct way; and,
2. Practice!

Questions
1. Why learn correct hammer technique?
2. What are the steps for learning correct hammer technique?
3. Have you ever met a nail “snake” in a woodpile?
4. What are the advantages to using the proper hammer for the job?
EAP/JOB SITE EMERGENCY

Overview
EAP — Emergency Action Plan. As per OSHA requirements certain companies, regardless of how safely operations are conducted, must have a plan of action to inform you of what you must do in case of an emergency. If your company has less than 10 employees, the EAP does not have to be written, but in any case, as a minimum, your supervisor will relay the plan of action to you verbally.

For Discussion...
In the case of a minor arm laceration injury to an employee, for instance, first aid can be administered and then the worker can be transported to the hospital. That’s part of a plan. However, if the extent of someone’s injury makes it difficult or dangerous to move the injured worker, then there must be an alternative plan of action for summoning emergency response teams to your job site. A back injury, a head injury, a neck injury, or an unconscious worker are examples of serious injuries. Everyone on the job site needs to be aware of what the alternative plan requires.

Getting to the job site can often make the difference between life and death and therefore, detailed directions must be made clear. A completed emergency checklist should be centrally located and most importantly, employees made certain of its whereabouts. This checklist should include the location of these important items:

1. Nearest landline telephone
2. Nearest rescue squad
3. Nearest hospital
4. Clear and explicit directions to your job site

A competent employee, supervisor, or foreman should outline directions to the job site, the nearest telephone and appropriate phone numbers. It goes without saying that cellular phones have been a tremendous aid to us in many ways, but service can be limited at times and all too often you never know if or when you can get through on a call. That’s why the location of a landline telephone is so important.

When the nearest rescue squad is determined, find out where they are located so exact directions to the job site can be explained. Perhaps you thought it was a hassle trying to find the job site when you were new. Maybe you got lost once or twice on the way in. Imagine trying to explain to emergency services on a 911 call how to get to the site.

After the closest hospital is identified, you may want to mark a local area map with directions. This will alleviate some of the stress that goes along with getting an injured worker to professional medical care quickly.

CLEAR directions are important. The best plan is to have them written out and posted at the landline phone. At the very least, a couple of designated persons on the site should always be responsible to have a copy of the directions with them at all times. Everyone should know who has them and where they keep them on their person (in case they’re the ones who go down!). Remember that medical teams can save lives, but they have to find you first! And the same is true for fires and other emergency rescue services.

Ask your supervisor about your company’s EAP and become familiar with it. Lives could be on the line.

Questions
1. Does our company have a current EAP? Where is it located?
2. Where is the nearest landline telephone on this job site?
3. Who is responsible for notifying authorities in case of an emergency?
ELECTRICAL SAFETY & ACCIDENT PREVENTION

Overview
Protection from electrical hazards is one way to prevent accidents. Electrical accidents on construction sites are almost always caused by unsafe equipment and/or installations, unsafe workplaces caused by environmental factors, or unsafe work practices. According to OSHA, protective methods that may be employed on your job site include insulation, electrical protective devices, guarding, grounding, personal protective equipment (PPE), and safe work practices.

For Discussion...
On construction sites, the most common electrical hazard is electrical shock by a ground fault. OSHA rules require your company to provide either ground fault circuit interrupters (GFCI) for receptacle outlets, or an assured equipment grounding conductor program. Using either method can eliminate ground fault electric shock hazards.

The GFCI, fuses, and circuit breakers are circuit protective devices which automatically limit or shut off current flow during a ground-fault, overload, or short circuit in a wiring system. Fuses and circuit breakers protect conductors and equipment. They prevent overheating of wires and components that could create hazards. They also open the circuit under certain hazardous ground-fault conditions.

It is necessary to check your equipment daily for insulation breakdown. Check for such things as broken or exposed wires and scuffed or frayed insulation on extension cords. You can also wear insulated nonconductive gloves and boots. Nonconductive coatings on tool handles also aid in insulation from electrical shock.

To avoid accidental contact, any live parts of electrical equipment operating at 50 volts or more must be guarded. All entrances to areas with live electrical parts must be marked with warning signs which forbid entrance except by qualified persons.

Grounding protects you from electrical shock, safeguards against fire, and protects electrical equipment from damage. There are two kinds of grounding: (1) service or system ground, where one wire, the neutral conductor, is grounded. This particular type of ground is designed to protect machines, tools, and insulation; (2) equipment ground; this provides a path for current from a tool or machine to the ground. This safeguards the operator in case of a malfunction.

If you work where there are electrical hazards, your employer must provide you with, and train you to properly use electrical personal protective equipment (PPE). The equipment must be appropriate for the body parts that need protection, and for the work being done.

Remember: you must always instruct each employee in the recognition and avoidance of unsafe conditions as well as the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

Questions
1. What are circuit protective devices? Why use them?
2. Is it necessary to be certain that equipment insulation is intact? Why?
3. Why is grounding important? What are the two types of grounding? What protection do they offer?
4. What is non-conductive coating?
5. Does personal protective equipment do any good when working with electrical equipment? Why?
ENVIRONMENTAL ISSUES - SAFETY FOR YOU & THE ENVIRONMENT

Overview
In construction safety, the first thing we think of is worker safety, and rightly so. However, consideration must be given to the environment as well. Our construction work can affect the air, water, and soil. What may harm us can also contaminate our surrounding areas, which ultimately can do us further harm.

For Discussion...
Environmental-related hazards listed below may be found at your job site.

Asbestos. When asbestos-containing material is disturbed, such as during renovation and demolition activities, microscopic fibers are released into the air as a hazardous pollutant. When inhaled, they can become permanently lodged in the body and pose a serious threat to your health.

Lead. When lead is absorbed by the body (generally by inhalation or ingestion) it becomes a toxic metal. It can build up causing nerve, kidney, and reproductive damage, anemia, and in some circumstances, death. Exposure risks can occur during renovations of structures containing lead-based paint unless certain safety measures are taken. If lead-based paint is disturbed during renovations, it may contaminate ground water and soil, presenting hazards.

PCB (Polychlorinated biphenyl). Before 1979, PCBs were used in electrical equipment such as transformers, capacitors, switches, and voltage regulators because they do not readily burn or conduct electricity. Most PCBs are synthetically manufactured. They may harm reproduction and/or growth and cause tumors.

Storm water runoff is any water that is discharged as a result of rain, snow, or other precipitation.

AST (Aboveground storage tank) is a tank whose entire surface area (including the tank bottom) is aboveground and can be visually inspected. Oil spills or leaks into ground waters must be prevented.

UST (Underground storage tank) is a tank (including any pipes) located at least 10 percent underground and is designed to hold gasoline or other hazardous substances.

Wetlands are ground areas that are saturated by water enough to support vegetation suited for saturated soil conditions. These include swamps, marshes, bogs, estuaries, and other inland and coastal areas.

Hazardous substances are corrosive, toxic, ignitable, explosive, or chemically reactive materials that pose a threat to human health and/or the environment; release of these materials into the environment and spills into waters must be prevented.

Hazardous waste is waste material listed as hazardous under EPA regulations or possesses one of these four characteristics: ignitability, corrosivity, reactivity, or toxicity.

Universal waste includes nickel cadmium batteries, mercury-containing thermostats, and hazardous waste pesticides. Work sites must accumulate and send any large quantities to a proper treatment and recycling facility.

Used Oil has been refined from crude oil or is any synthetic oil that has been used and is contaminated by physical or chemical impurities.

Proper work practices are your responsibility and the possibility of emergency response reactions may be a part of your future at your job site. Act now and learn what to do.
ERGONOMICS

Overview
Ergonomics means arranging the environment in which you are working to “fit” you. It is the science concerned with designing and arranging things that people use so that people will interact with their surrounding environment most effectively and safely. On construction job sites, ergonomic principles are being used to help adapt the job to fit the person, rather than force the person to fit the job.

For Discussion...
By redesigning the job task to fit the worker, we can reduce stress and eliminate many potential injuries and disorders associated with the overuse of muscles, repetitive motions, and bad posture.

In construction, your hands, arms, wrists, shoulders, backs, and legs may be subjected to thousands of repetitive twisting, forceful or flexing motions during a typical workday. Many construction jobs can expose you to excessive vibration and noise, eyestrain, repetitive motion, and heavy lifting.

Machines, tools, and the workflow, if poorly designed, can place undue stress on tendons, muscles, and nerves. In addition, temperature extremes may aggravate or increase ergonomic stress. Your ability to recognize ergonomic problems on the construction site is the essential first step in correcting these problems and improving construction worker safety and health.

Three issues are most important in relation to ergonomics for construction workers. These real concerns are listed below along with ways to control them.

1. Back safety and lifting. a) Practice proper lifting techniques, b) get help with large loads, and c) use materials handling equipment.
2. Equipment and tool vibration. a) Use only the force necessary to perform the job; b) hold and use tools properly, and c) rotate tasks and take breaks from tasks during the work day to avoid vibration for too long a period of time.
3. Repetitive motion. a) Perform tasks following proper job procedures at all times, b) select the right tool for the job, and c) rotate the tasks you perform during the work day to avoid a single type of repetitive motion for too long a duration.

Try to use demonstration techniques when training employees about proper performance of jobs.

Questions
1. What is the essential first step in correcting ergonomic problems?
2. What are the three issues that must be controlled for construction workers?
3. Why is it worth it during your lifetime to ask for help when lifting heavy loads?
4. How will ‘arranging’ your job environment be safer for you and help reduce stress?
EXCAVATIONS

Overview
Every year an estimated 75 to 200 deaths and more than 1,000 lost workdays per year occur from trenching accidents. OSHA has special compliance requirements concerning excavations which will help your company eliminate trench cave-ins and other accidents related to this type of work.

For Discussion…
As per OSHA standards, your company’s competent person must inspect all excavations each day for evidence of a situation that could result in: (1) possible cave-ins, (2) indications of failure of protective systems, (3) hazardous atmospheres, and (4) other hazardous conditions. A sudden change at an excavation site could mean disaster for you and for fellow workers. Here are a few important things to be aware of:

• A sudden downpour could fill the trench and/or cause rain-soaked soil to give way.
• A bulldozer or excavator coming too close to your trench could cause a surcharge or overloading and stress cracks at or near the edge of the trench.
• Accidentally striking an underground utility line with a tool could present an immediate electrocution, fire or explosion, and/or flooding hazard.

OSHA rules require your company to train you in the recognition and avoidance of unsafe conditions, the regulations applicable to your work environment, and to control or eliminate any hazards or other exposure to illness or injury.

The OSHA excavation rules apply to all open excavations made in the earth’s surface including trenches. The regulation is in the construction standards at 1926.650-.652 and covers the following points:

Scope and application — The rule applies to all open excavations made in the earth’s surface. Excavations are defined to include trenches.

Specific excavation requirements — This includes surface hazards, underground utilities, getting in and out of the excavation, traffic hazards, hazardous atmospheres, emergency rescue, inspections, and fall protection.

Requirements for protective systems — The rule states that each employee in an excavation must be protected from cave-ins by an adequate protective system designed in accordance with the OSHA regulations for: (1) sloping and benching systems, or, (2) support, shield, and other protective systems.

Exceptions would be if and when:
• Excavations are made entirely in stable rock; or,
• Excavations are less than five feet deep and examination of the ground by a competent person provides no indication of a potential cave-in.

Since excavations are one of the most dangerous hazards in construction, your knowledge of the hazards and constant awareness could make the difference between life and death.

Questions
1. Does your job site have competent persons? Who are they? Should they be on site at all times?
2. Why is rainy or snowy weather a detriment to excavation sites?
3. How should trenches be approached after a storm?
4. What are the hazards that may be found on an excavation site? How can you be protected from harm?
EXTENSION CORDS

Overview
Electricity has long been recognized as a serious workplace hazard. Employees are exposed to such dangers as electric shock, electrocution and fire. Nothing about an extension cord suggests danger. Its harmless looks suggest no inherent danger, there are no moving parts to deal with, and it makes no noise. It helps us by letting us have electricity in almost every place we work on the job site. But let’s not forget that this convenience, if misused, can be extremely dangerous and hurt us or worse.

For Discussion…
Are you using the right kind of extension cord?
We work in rougher conditions than an office or a store, and we need to use a cord that is designed to take the knocks we give out on the job site. In order to follow OSHA regulations and to protect ourselves and our tools, every cord on the job should be marked with SJ, SJ0, SJT, SJTO, S, SO, ST, or STO. If it has a W, that’s alright, too. These letters indicate that the cords are designed for hard service or junior hard service and they’re OK to use on our job sites. These heavy-duty rated cords have been approved and tested by Underwriter’s Laboratories.
The way to check to see if the cord is the right type is to look near the cap end. There will be markings either stamped or printed onto the cord. Flat cords are not an option for construction because they are not designed for hard service.

Are you keeping your extension cords in good condition?
There are some hazards in using extension cords that only you can control. Treat them as part of your safety equipment. Keep them away from sharp edges and avoid running them through doors and windows where they might get pinched or cramped. Don’t hang them from nails or staple them overhead. Take time every day to inspect them for cuts, nicks, and abrasions that may have broken the insulation of the cord. This may cause a short circuit, an electric shock or even a fire.

Does your extension cord have the third pin, or ground prong?
Every extension cord on the job site MUST have the ground pin in place. If you see any with the ground prong clipped off, let your supervisor know right away.

Protect that extension cord you use. Coil it in large loops, not in closely kinked coils. Don’t bend the cord unnecessarily. Don’t try to repair it yourself.

Apply the following rules for the safe use of extension cords:
• Inspect all extension cords at the beginning of each workday to make sure they’re the right kind. Then check for any signs of wear or damage.
• Remove any worn or damaged cords from service immediately.
• Before each use, check the cord for the third prong, or ground pin.
• Handle the cord gently, avoiding strain, kinking, crushing or cutting. String it where it will not be damaged or trampled on.
• Don’t use your extension cords as ropes to raise and lower tools and materials.

Using extension cords on the job makes work quicker and simpler…but only if we use them safely.

Questions
1. Why is an extension cord considered a potential hazard?
2. What steps should be taken prior to using electrical cords?
3. What’s so important about the third pin, or prong?
FALL PROTECTION

Overview
Not surprisingly, falls are the leading cause of construction worker fatalities. Each year between 150 and 200 workers fall to their deaths and 100,000 are injured as a result of falls at construction sites. Contractors such as carpenters, roofers, and structural steel erectors account for half of the fatal falls. Approximately 40% of the serious injuries in the building trades are due to falls from one level to another.

For Discussion...
Knowing and implementing the following rules will help protect you from such a fall.

To whom the rule applies. The OSHA fall protection rule covers most construction workers. Among those who are exempt are inspectors, investigators, or those who assess workplace conditions prior to the actual start of work or after all work is done. Their exposure to fall hazards is for a very short duration, if at all.

The rule identifies the areas or the activities where fall protection is needed. These areas include (1) ramps, runways, and other walkways; (2) excavations; (3) hoist areas; (4) holes; (5) form work and reinforcing steel; (6) leading edge work; (7) unprotected sides and edges; (8) overhand bricklaying and related work; (9) roofing work; (10) precast concrete erection; (11) wall openings; (12) residential construction, and (13) other walking/working surfaces.

What is threshold height? It is that height at which your employer must provide fall protection for the areas or activities described above. That height is six feet for this fall protection rule. At all six foot levels, your employer must provide the equipment and training required to protect you from falling off, onto, or through working surfaces to lower levels.

Selecting equipment. Under the fall protection rule, employers can select fall protection measures and equipment which properly fit the type of work you are doing. The three most common methods of providing fall protection are guardrails, safety nets, or personal fall arrest systems.

Training. Your employer must provide training that is taught by a competent person. This must be done any time you could be exposed to fall hazards. The training must include: (1) recognizing and minimizing fall hazards; (2) procedures for erecting, dismantling or disassembling, maintaining, and inspecting the fall protection equipment you will use, and, (3) an understanding of the OSHA fall protection rules.

What’s contained in the rule? OSHA’s fall protection standard has three elements that are important to you. (1) Situations at your job site that require protection from falling (1926.501); (2) different types of fall protection equipment and systems your employer can use to provide you protection (1926.502); and (3) training requirements (1926.503). Using all the fall protection systems and equipment that your employer provides could save your life and keep you from serious injury. Always use it. It’ll help ensure that you leave the job site safely after work!

Questions
1. Which construction workers are most likely to suffer injury due to falls?
2. Name four of the 13 activities on a construction site when fall protection is mandatory.
3. Fall protection must be provided at what height?
4. What are the three most common forms of fall protection?
5. Is just anyone authorized to provide fall protection equipment training?
FIRE EXTINGUISHERS

Overview
Should a fire ever start on your job site, think first of your safety and the safety of others. Then sound the alarm if available, and alert the fire department. Only try to put out the fire if you have been trained to use extinguishers and if the fire is small or tame enough to be extinguished by a hand-held extinguisher. Other appropriate fire fighting equipment or supplies may be available to you on the job site, i.e., dirt or sand to extinguish a small flame. If you use a fire extinguisher, be sure to use one designed for the nature of the fire at hand. Using the wrong agent on a fire may increase the intensity of the fire.

For Discussion ...
Have you ever taken the time to look closely at your fire extinguishers on site? If you have, you’ve probably noticed that there are operating instructions printed on them. You need to read the instruction labels on these fire extinguishers and become familiar with them.

The common types of extinguishers that we use contain carbon dioxide or dry chemicals. You can find these in our vehicles, mounted on or beside machinery, in the shop, near equipment, and by containers of flammable liquid. Carbon dioxide and chemicals cut off the air supply which is necessary for a fire to burn, and smother it.

Another class of extinguisher contains water. You can locate these types of extinguishers mounted on walls in buildings. These are intended for use on fires involving wood, paper, cloth and rubbish where the effect of water will squelch the fire. They should not be used on burning liquids such as gasoline. The burning liquid will float on the water causing the fire to spread. They should not be used on live electrical equipment since water is a good conductor of electricity.

Fire extinguishers should be labeled with the classes of fires they extinguish. The labels should indicate either ABC, or A (paper/trash), or B (liquid), or C (electrical). Multi-purpose (ABC) extinguishers are encouraged and will handle all fires. When using a typical extinguisher, follow the “PASS” method. To correctly use a fire extinguisher, hold it upright, then:

- Pull the pin: stand 8’ or 10’ from the flame.
- Aim at the base of the fire.
- Squeeze the handle.
- Sweep back and forth at the base of the fire shooting out the extinguishing agent.

Don’t aim high at the flames.
You won’t be able to put out the fire that way.
Remember that most extinguishers have a very limited operation time, approximately 8 to 10 seconds, so you have to act quickly and spray properly at the base of the fire, not at the smoke or the flames.

Questions
1. What type(s) of extinguisher is located in your work area?
2. What use is the fire extinguisher intended for?
3. How do you operate it?
4. What is the “PASS” method?
FIRST AID & MEDICAL TREATMENT

Overview
OSHA’s construction regulation for medical services and first aid state that provisions for prompt medical attention due to injuries or illnesses must be made prior to starting a project. OSHA has its requirements, but even without the OSHA compliance issue, it just makes good sense to provide emergency services and supplies to your employees. First aid, including appropriate supplies and/or other medical services must be reasonably accessible at every construction job site. When OSHA says “reasonably accessible” they’re referring to time and distance (how quick and how close) to either first aid or medical services.

For Discussion...
OSHA currently recognizes maximum response time of fifteen minutes to be appropriate when a worker needs medical attention. But prior evaluations of conditions at each workplace must be made. The key word here is prior. This is necessary in order to ensure that all anticipated first aid situations are considered, proper provisions are made, and that fifteen minutes will be enough time to meet all those needs.

Other minimum requirements include:

- In areas where the likelihood of accidents resulting in suffocation, severe bleeding or other life threatening injury or illness can be expected or anticipated, a response time of three to four minutes is required.

- There must be a nearby infirmary, clinic, hospital, or physician. At the very least, someone trained in first aid must be available at the work site. (It is recommended to have at least two people certified in first aid and CPR in the event that one of these individuals happens to get injured).

- If 911 service is not available in the area, the posting of emergency numbers is required for the nearest physician, closest hospital, and ambulance service.

- In the event that you work in an area where emergency transportation is not available, your company must provide acceptable transportation to a medical facility. If these arrangements cannot be made within the appropriate time frame, then a trained first aid person must be available on each work shift. (Medical personnel must be consulted for advice on occupational health matters).

If you work on projects or job sites where you may be exposed to corrosive materials that may cause eye or other injuries, suitable eyewash/drenching stations must be available on site.

Consult your company’s Emergency Action Plan for a review and know who your first aid responder is. Do not attempt to move an injured person or try to get him to stand without authorization. Moving a person with a spinal injury can cause damage to nerves and result in paralysis.

Questions
1. Do we have any trained first aid workers on the job? Who are they?
2. Do we know where to report injuries and where the first aid supplies are? Who is the on site contact?
3. Do we know where to call for an emergency doctor and ambulance service? Where is the response team located?
4. Do we know how to tell emergency responders the directions to our job site?
FIRST AID OR INFECTION?

Overview
First aid and medical services must and should be a part of every construction job site. Aside from the fact that OSHA requires it, we all can agree that you’ll want to have access to emergency services for your employees anyway. But consider the more minor issues for a moment. For various reasons, many workers consider injuries such as burns, cuts, bruises or punctures of so little importance that they don’t bother to get first aid. It can actually be dangerous to neglect these “apparently” minor injuries because they can become easily infected. A knife cut, nail poke, or shin scrape can develop into a serious condition if infection sets in.

For Discussion...
Infection — Your skin, when unbroken, acts as a protective shield for the body. It is exposed to countless germs that are harmless as long as they remain on the surface. However, when an injury breaks the skin, the barrier is down and germs swarm into the open wound and multiply resulting in an infection. Once infection develops, unless properly treated, it can spread rapidly, causing severe pain, sometimes permanent disability and in some cases, death.

Don’t neglect an injury just because it doesn’t seem serious enough to need first aid. The sensible and safe action is to get first aid for all injuries. Sometimes workers tend to take an attitude that comes from past similar minor injuries, which fortunately never gave them any trouble. If that’s the case, consider yourself lucky, but don’t roll the dice again. Infections or other complications do not always follow slight injuries, but the guy who thinks he can escape infection time after time is gambling. You can’t win all the time. Nobody wins all time.

Follow these steps for treatment of wounds such as small cuts, abrasions, scratches.
1. Cleanse the wound with soap and water, and pat dry.
2. Apply a first aid antibacterial ointment.
3. Apply sterile gauze compress and bandage loosely.
4. Consult a doctor if there is any foreign matter in the wound.
5. Consult a doctor if any sign of infection (pain, redness or swelling) develops.

Notice of Accident
This Workers’ Compensation Act form documents a slight injury on the job that only requires on site treatment. This form does two things: (1) It makes sure the employer knows there was an injury and, (2) it gives the worker positive feed back about future medical care should it be needed. Make sure all job site workers know where the WCA Poster is located and that Notice of Accident forms are always attached and available.

Questions
1. Do you always get first aid for minor injuries?
2. Do you know where the first aid kit is kept on your job site?
3. Is your company’s first aid kit adequate?
4. Who should you report all injuries to on your job site?
5. Do you know what a Notice of Accident form is? When it should be used? Where they are located?
Forklift Training

Overview
Every year, there are approximately 100 workers killed and almost 95,000 injured in industrial truck accidents. OSHA believes that an estimated 11 deaths and 9,500 injuries will be prevented and $135 million in employer costs will be saved each year as the result of their new safety training requirements for operators of forklifts and other powered industrial trucks.

For Discussion...
Starting back in March of 1999, forklift training became an OSHA requirement. If you currently operate forklifts at your job site, or if you were hired after December 1, 1999, you must be trained before operating a forklift.

OSHA uses the term powered industrial truck to apply to mobile, power-driven vehicles used to carry, push, pull, lift, stack, or tier material. These include high lift, counterbalanced cantilever, rider, forklift, high lift platform, and motorized hand/rider trucks.

The following information highlights the requirements of OSHA’s forklift training rule and is in the OSHA general industry regulations at 29 CFR 1910.178(l) – Powered industrial truck operator training.

As a forklift operator, you must: (1) be competent to safely operate the particular forklift you will be using, and (2) successfully complete the training required by the new rule. The trainer must have the knowledge, training, and experience to train you and evaluate your competence. A trainee can only operate a forklift: (a) while under the direct supervision of a knowledgeable trainer or evaluator, and (b) when it does not endanger anyone.

Training topics are broken down into three broad categories: (1) truck-related, (2) work site related, and (3) the forklift rule requirements.

Refresher training and evaluation must be done to ensure that you have the knowledge and skills needed to operate the forklift safely. This is required when:

a) unsafe operation is observed,
b) an accident or near-miss has occurred,
c) an evaluation reveals unsafe operation,
d) you will operate a different truck or forklift, and,
e) workplace conditions change that could affect safe operation.

An evaluation of all forklift operators must be completed at least once every three years. It is up to your employer to certify that you have been trained and evaluated as required by the rule.

Questions
1. Why is forklift training now an OSHA requirement?
2. What job site hazards may exist when operating a forklift?
3. Can anyone train someone to operate a forklift? Why or why not according to OSHA?
4. Why evaluate competence of forklift operators?
5. When should refresher training and evaluations be scheduled?
Overview
Fires and explosions kill about 200 workers and injure 5,000 more each year. In 1995 alone, more than 75,000 workplace fires cost businesses more than $2.3 billion. On construction sites, you risk losing materials, structures, and even the lives of employees. More serious burn accidents on construction jobs result from gasoline fires than from any other single cause.

For Discussion...
Three typical gasoline burn accidents:

1. While gassing up his rig, some gas spilled on a worker’s clothes and over a platform close to a heater. The gas ignited and caught the worker’s clothes on fire. This resulted in severe burns on his right arm and leg.

2. A worker was burning some brush while clearing out a site. He threw some gasoline on a pile that was just smoldering to hurry the process along. A flashback caused him severe burns over parts of his body and face.

3. When attempting to fuel up a generator engine, a worker spilled some gasoline on the exhaust and it ignited. The worker was seriously burned and the equipment was destroyed.

Gasoline vapors can travel a good distance to a source of ignition like an open fire, a hot engine or a lit cigarette, and it evaporates rapidly! The vapor is easily ignited and very explosive.

Here are some pointers for safe use of gasoline:

**DON’T** start fires with gasoline. Never smoke when handling gasoline.

**DON’T** use gasoline for cleaning off parts or equipment or tools.

**DON’T** put gasoline in open pails or glass containers—use an approved safety can with a flash arrestor.

**DO** shut off all engines, and allow cooling, before refueling. Small engines should be fueled slowly using a funnel to prevent spillage.

**DO** keep an eye on the gas nozzle when fueling large engines — do not allow fuel to overflow.

Questions
1. Why do many burns occur when fueling gasoline engines?
2. Why should gasoline be used only as a motor fuel?
3. What are some safe gasoline-handling tips?
GUARDRAILS

Overview
It’s fall protection. If you’re working around areas and exposed to a fall of six feet or more, you need to make sure you’re protected from falling. Guardrails protect you from falls that can seriously injure or even kill you. In construction, falls are the leading cause of worker fatalities (150 to 200 deaths per year, and 100,000 injuries). Guardrails are barriers put up to prevent falls to a lower level. The amount of protection which guardrails provide depends on how they are constructed and maintained.

For Discussion...
Guardrails are used to protect you from falls in several areas such as unprotected sides and edges; during leading edge work; through holes, including skylights; from ramps, runways, or other walkways; and into or onto dangerous equipment. Most guardrails are built of strong materials and are usually solid when first put up. As time goes by, however, guardrails often are abused, weakened, broken or removed and not replaced.

Rules to follow
1. The height of the guardrail should be near your center of gravity or depending on how tall you are, about hip high (approx. 42 inches). The midrail is placed midway between the toprail and the walking or working surface, at about 21 inches.
2. Avoid the use of plastic banding for toprails or midrails because it is not adequate protection. Screens and mesh are OK for a midrail but it must cover the entire opening.
3. Once the guardrails are in place make sure they are safe and strong. Ensure that the wood is smooth to prevent splinters and snagging of your clothes. Will the materials you used stop a fall? The toprails must be able to resist a 200-pound load with little give.
4. Make sure the rails don’t extend too far past the upright posts so no one will run into them.
5. Be sure that the protecting guardrails go all the way around any holes.
6. Check guardrails if you suspect you may have weakened them. If you discover you’ve broken a rail, upright or toeboard, repair it if you can, or report it so that it can be repaired.

When repairing or replacing guardrails, remember you’re exposed to the very danger that you are providing protection against. Consider using a body harness and lanyard while completing the repair.

Missing or weakened guardrails
Sometimes sections of guardrails must be taken down so that materials or equipment can be brought in. These sections often aren’t replaced or, if they are, they’re not put back in place correctly. Weakened guardrails are sometimes more dangerous than no guardrails at all because they give a false sense of security.

Different types of construction may require different types of guardrails. But the points we’ve covered here apply to all. As a rule, if there needs to be a guardrail for the future homeowner, then there needs to be one for you, too.

Questions
1. What is the primary function of a guardrail?
2. At what height above the walking or working surface should the guardrail be placed? The midrail?
3. Will any pieces of wood do for guardrails?
4. What extra protection may be necessary when repairing guardrails or midrails?
HAND TOOLS

Overview
Hand tools, whether powered or not, were designed to perform specific functions. Anything from an axe to a wrench might seem simple in design and easy to figure out how to use, but they can be hazardous just the same. The greatest hazards that you are exposed to involving hand tools are misuse and improper maintenance. Your employer is responsible for the safe condition of tools and equipment you use, but you have the responsibility to use and maintain tools properly and let your employer know if tools are inadequate or in poor condition.

For Discussion...
As stated earlier, each tool is designed to perform a specific task and using them for any other job may result in damage to some of your most valuable tools: your hands or your eyes. For instance, how many times have you used a screwdriver for a pry-bar? Or a punch? Or a chisel?

The first safety rule in the use of hand tools is “Choose the right tool for the job.” If you choose not to, here are some actual bad examples and injury results to consider (which may change your thinking) before starting your next job with a hand tool.

- Using a punch with a mushroomed head. Sharp fragment of steel flew off and entered eye.
- Using a wrench to hammer a bolt. Head of the wrench glanced off end of bolt and mashed finger.
- Using a file to pry cover off a metal container. File snapped and broken piece struck worker’s cheek below the eye.
- Using shovel with a broken handle, splinter from handle entered hand.
- Pushing on adjustable wrench to tighten bolt. Wrench slipped and smashed knuckles against beam.
- Using hammer with loose head. Head flew off, striking fellow employee.

These half dozen classic examples represent a small fraction of the total number of actual injuries that occur on construction job sites every day. Unfortunately, these incidents are very typical. Four basic and simple rules to follow will help you to avoid falling prey to a preventable accident and possible serious injury:

1. Choose the correct tool for the job at hand; this includes the right-sized tool.
2. Properly inspect and maintain your tools; this includes sharpening, oiling and storage.
3. Remove damaged tools from the job site, or turn them in to your supervisor. Make repairs only if you are qualified.
4. Use personal protective equipment (PPE) such as safety glasses and gloves when appropriate.

Questions
1. Have you checked your toolbox recently for damaged tools?
2. Do you always use the right tool for the job, even if the job takes only a few seconds?
HAZARDS OF ELECTRICITY

Overview
We all know that electricity is necessary to get work completed at construction sites. But we need to keep in mind that along with its benefits come deadly hazards. We need to guard against these hazards while working with electrically-powered equipment and wiring and be aware of the possible dangers associated with them.

For Discussion...
The primary hazards of electricity are shock and possible electrocution, burns, arc-blasts, explosions, and fires. Electricity travels in closed circuits: its normal route is through a conductor and load. You can receive a shock when some part of your body becomes part of the circuit. An electric current enters your body at one point and exits at another.

Shock will occur (a) when both wires of an electric circuit are touched, or (b) when you hold one wire of an energized circuit and ground, or (c) by handling a metallic part that is “hot” because it is contacting an energized wire and you are in contact with the ground. The severity of the shock depends on three factors: (1) how much current flows through your body (measured in amperes), or “amps”; (2) what path the electric current takes through your body; and (3) how long your body is part of the electric current. The effects of an electric shock on your body can range from a faint tingle at 1 milliamp, to cardiac arrest, severe burns, and probable death at 10,000 milliamps.

A severe shock can also cause considerably more damage to your body than is visible. You can suffer from internal bleeding and destruction of tissues, muscles, nerves, and internal organs. Additionally, shock is often only the beginning in a chain of events. A person might also be the victim of a fall, cuts, burns, or broken bones. The most common shock-related injury is a burn. Burns suffered in electrical accidents are of three types: electrical burns, arc burns, and thermal contact burns.

• Electrical burns are the result of current flowing through tissue or bone, generating heat, and causing injury. They are serious injuries and should be given immediate and serious attention.
• Arc or flash burns are the result of high temperatures near the body. These are produced by an electric arc or explosion.
• Thermal contact burns are those experienced when the skin contacts hot surfaces of overheated electric conductors, conduits, or other energized equipment. Also, clothing may be ignited in an electrical accident and a thermal burn will result.

With regard to other injuries which may occur as an indirect or secondary result of shock, involuntary muscle reaction from the shock can result in bruises, bone fractures, and even death from collisions or falls.

Fire, explosion, and flying metal hazards are created from resulting arcs when a short circuit occurs. If high current is involved, arcs can cause injury or start a fire, which might damage equipment and cause fragmented metal to fly in all directions. Even low-energy arcs can cause violent explosions in atmospheres that contain flammable gases, vapors, or combustible dusts.

In the construction industry, workers can’t do their job without electricity. However, the constant activity at construction sites makes it a particularly hazardous working environment. Being around extension cords, temporary wiring, water hoses and material laying around coupled with using electric tools, makes it extremely important to be careful around electricity. It only takes one electric shock to hurt or even kill someone.

Questions
1. What are three types of burns that can be suffered as a result of an electrical accident?
2. How does electrical shock affect the whole body?
3. How can you prevent electrical shock hazards on your job site?
HAZARD COMMUNICATION – YOUR RIGHT TO KNOW

Overview
In 1983, OSHA recognized a growing need to protect workers who are exposed to chemicals on the job, and issued a new rule called Hazard Communication, or more commonly, HazCom. As many as 35 million workers have some kind of exposure to one or more of the 650,000 chemicals in companies across the country. This rule is often referred to as your “Right-to-Know” because it is your right to know about the chemical hazards you work with and how you can protect yourself from injury and illness.

For Discussion...
The HazCom rule will help ensure that you are instructed about the following:

- Material Safety Data Sheets (MSDS). These are the manufacturer’s source of information about chemicals used on your job site and work area.
- The written program regarding hazard communication for your job site.
- Chemical labeling to determine hazards of chemicals that are used on the job site.

Employers must provide exposed employees with information and training on the hazardous chemicals in their workplace. That means if you’re subjected to, or even potentially subjected to a chemical that is a physical or health hazard, you must receive training. In terms of health hazards, ‘subjected’ means any route of entry including inhalation, ingestion, or skin contact or absorption.

What the training includes: a) Methods to detect the presence of a hazardous chemical in your area, including periodic monitoring and the visual appearances or odors of hazardous chemicals when they are released; b) Physical and health hazards of chemicals in your area; c) Personal measures taken for protection. The use of personal protective equipment (PPE) including gloves, face shields, aprons, footgear, respirators, and full-body suits are often-used methods of protecting yourself. Safe work practices for doing your work in the safest possible manner and knowing emergency procedures such as using eyewash stations and knowing where to locate MSDS are other important safety measures to take; d) The elements of your company’s HazCom program. These include hazard assessment, the written program, labeling, MSDS, and training.

The overall goal of the company HazCom Program is to inform you of and to keep you current on the chemical hazards you might have to work with – so you can use them safely.

Questions
1. What is the HazCom “Right To Know” rule?
2. How does it affect your work on the job site?
3. What does the training include?
4. Name some personal protective methods.
5. Have you been shown a copy of your company MSDS file? Where is it kept?
HEAT AFFECTS PRODUCTIVITY

Overview
Heat is often the topic of conversation in the summer months. There’s an old saying that everyone talks about the weather, but no one does anything about it. Heat is one type of weather that managers must do something about. The effects of failure to act can be quite grim.

For Discussion...
One effect of heat is on productivity. Studies show that people work up to certain levels of muscular strain. A person is 100% efficient at temperatures from 80°F for medium work to 77°F for heavy work. If the temperature is increased to 89°F, efficiency drops to 70%. Increased to 91.5°F and efficiency drops to 50%. Further temperature increases cause efficiency drops to 30% at 94°F and 20% at 95°F.

What may be startling to some is that people live close to the borders of thermal death. Normal body temperature is 98.6°F. Death is expected at 106°F or 91°F — a very narrow margin. Body mechanisms to generate, store, and dump heat enable people to live and work in hotter or colder climates. But management of body fluids and salt is also needed. These temperatures are for healthy, physically conditioned young workers. Aerobic fitness, obesity, age, body composition and airflow modify the temperatures as follows:

- Not physically fit .............................................. -4°F
- Wearing impermeable clothing .................. -9°F
- Obese (20 lbs. over optimum weight) ........ -2°F
- Elderly (over 60) ........................................ -2°F
- Female body composition ......................... -2°F
- Adequate ventilation air flow ................. +4°F

Heat stress, unchecked, can result in various degrees of illness from transit heat fatigue up through heat rash, heat cramps, heat exhaustion, and heat dehydration, to heat stroke. Many of the necessities for heat stress control need to be provided through program management. These include selection and placement, acclimation, electrolyte drinks (not salt tablets), ventilation, and rest in cooler areas.

Other safety measures need to be taken by the employee. These are maintaining good physical condition, limiting consumption of diuretics (like alcohol, coffee, tea, and many drugs) and proper personal clothing.

It’s a cooperative effort. Together, managers and employees can do something about the heat.

Questions
1. Why should construction work be planned carefully when high temperatures are expected?
2. What are the advantages in choosing the right worker for the job during high heat months?
3. What is the employer’s role in providing a safe working environment with regard to ventilation?
4. What are the responsibilities of the worker to help reduce the risk of heat illnesses?
HEAT EXHAUSTION

Overview
Heavy lifting, stretching, straining and disregard for sound health habits are several ways we overexert ourselves. When the body is unable to cool itself through sweating, serious heat illnesses may occur. The most severe heat-induced illnesses are heat exhaustion and heat stroke.

If action is not taken to treat heat exhaustion, the illness could progress to heat stroke and possible death.

In the summer months, when the days are long and hot, we should be thinking of measures to protect ourselves from exposure to excessive heat while working.

For Discussion...
Recognizing the first symptom of heat exhaustion is important so proper first aid measures can be taken. The first signs are usually headaches, dizziness and staggering, light-headedness and physical weakness, followed by mood changes (irritable, or confused and can’t think straight); nausea, vomiting or throwing up, fainting and pale clammy skin may follow. Frequently, breathing is shallow.

A person who shows these symptoms of heat exhaustion should be removed immediately to a place where the air is circulating freely, preferably a cool shaded area. Then;

1. If the person is dizzy or light-headed, lay them down on their back and raise their legs about 6 to 8 inches. If the person is sick to their stomach lay them on their side.
2. Loosen and remove any heavy clothing.
3. Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
4. Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
5. If the person does not feel better in a few minutes, call for an ambulance or 911 for emergency help.

Although the dangers from heat exhaustion are not nearly as great as the dangers from heat stroke, immediate first aid must be given whenever heat overcomes a person. Paying careful attention to the first aid measures will result in rapid recovery without permanent effects.

And finally, always keep in mind that the symptoms of heat exhaustion are different from the symptoms of sunstroke or heat stroke and that the first aid treatments to be applied are correspondingly different.

Questions
1. What are some safety measures that can be taken to reduce the risk of heat exposure?
2. Why is knowing the signs of heat exhaustion so important here in New Mexico?
3. Is drinking water readily available on your job site? Is shade available during the lunch break?
4. What are the steps to relieving a worker suffering from heat exhaustion?
5. What types of proper clothing should be worn when working in direct or indirect sunlight?
HEAVY EQUIPMENT

Overview
OSHA has rules for heavy equipment, which are broken down into two sections: motor vehicles and materials handling equipment. The motor vehicles section covers off-road vehicles and on-road vehicles such as dump trucks and pickups when they are off-road. The materials handling section is further broken down into earth moving equipment such as scrapers, loaders, and bulldozers, and materials moving equipment such as forklifts and telescopic handlers.

For Discussion...
OSHA approaches safety and health regulations and rules for heavy equipment in a certain manner. There are general safety and health provisions that we must abide by.

The use of any machinery, tool, material, or equipment not in compliance with OSHA standards is prohibited. These items must be identified as unsafe by locking the controls and tagging them, physically removing from available use, or taking them off the job site.

Only qualified employees (by training or experience) can operate equipment and machinery.

Help drivers and operators to be safe. Sometimes it’s hard to see what’s behind you when operating equipment or a vehicle. There must be either a back-up alarm or a spotter to warn the driver or operator about obstacles and other workers.

Stay clear of heavy equipment. Keep out of the path of moving equipment and listen for back-up alarms. Also keep in mind that there might be falling limbs or trees during clearing and grubbing jobs. Be aware of raised equipment like buckets and shovels and always wear a hard hat around heavy equipment.

Other Safety Reminders. If you have to get on top of equipment to do any work, ensure that the equipment is stopped prior to getting up on it and make sure your boots are clean so you don’t slip and fall. Also, never “hitch a ride” while the equipment is moving.

Questions
1. Why do you think OSHA heavy equipment regulations are so strict?
2. Why should only trained and authorized persons operate heavy equipment?
3. What is the function of back up alarms and spotters?
4. Why should unattended heavy equipment be secured especially in residential neighborhoods?
HELPING EACH OTHER REDUCES INJURIES

Overview
No one wants to get hurt on the job. We all have a responsibility to look over our shoulder at the guy who may follow along after us or share the same tools, materials or equipment.

Safety is not a one-worker job, so we all have to share in the duties that make the job site a safe place to be. Clean, maintained job sites are pleasant places to work and they are safer. Plus, they look professional and get positive attention from both OSHA and insurance inspectors.

We all have the responsibility to recognize and avoid unsafe conditions and you are trained to abide by the regulations set forth by both OSHA and our company.

For Discussion...
The simplest of tasks, such as placing trash where it belongs, coiling up extension cords when not in use, and stacking lumber out of the way, may seem unimportant and unnecessary, until someone gets hurt.

If one of the other workers is working in a dangerous position, warn him about it. He may have problems that are distracting him or he may not be trained enough to recognize the hazard.

Don’t let an accident occur that could have been stopped if you had spoken up about something you saw. Never feel awkward about offering advice on safety. Advice in a helpful, sincere way is usually appreciated, even if it’s not appreciated right away.

Here are some ways we can help each other work safely:

- Help the inexperienced worker learn to work the right and safe way. Set examples in the safe method of using tools and equipment.
- Always keep machine guards in place for the next guy’s safety.
- Report tool/equipment defects or accident hazards to your supervisor promptly.
- Encourage everyone to report all injuries according to company policy.
- Utilize and encourage the wearing of proper clothing and personal protective equipment.
- Ask for help and clarification on matters you don’t fully understand.
- Do not tolerate horseplay...intended fun can turn into tragedy in a heartbeat.

Questions
1. Do you always report unsafe conditions that could catch someone else unaware?
2. Can you take safety suggestions in the cooperative spirit in which they are made?
3. Are we all properly trained to do our jobs?
4. Is the right way to do a job always the safe way? Why or why not?
5. Why is asking questions before beginning work better than half way through?
HIGHWAY CONSTRUCTION SAFETY

Overview
Working on highway construction exposes you to some unique hazards that are not always found on other construction sites. These sites have specific traffic hazards, much heavier equipment in use, and frequent trenching and shoring, as well as other hazards.

For Discussion...
Because of the nature of highway construction, most job tasks and their required equipment have hazards attached. Be alert to the following road work exposures and follow the rules when working on highway construction sites.

• When acting as a **flagman**, know the proper flagging techniques and always wear a red or orange vest for visibility; keep an awareness of both highway and street traffic and heavy equipment traffic on site; keep audio/visual awareness of all traffic.

• Be aware of potential for **excessive cold or heat exposure** and dress appropriately.

• Ensure all **excavations** are being properly shored as required.

• Be alert of the elevated risk of **carbon monoxide** from vehicular traffic near roadways; look for physical signs of nausea and headache and the need for fresh air.

• On **bridges** over other roadways or over water, be aware of and use appropriate fall protection for the circumstances.

• Use common sense and your experience to stay alert and aware of likely hazards.

Obviously, these are not all the possible dangers involved in highway construction. Although there is no requirement to provide specific training on highway construction site safety, such training usually makes employees more aware of the potential hazards and of the type of dangers to look out for. It can improve general awareness of and attitudes toward safety on the highway construction work site.

Questions
1. Why is the flagman similar to a ‘traffic cop’ in a big city?
2. What are some roadway exposures you should be aware of on your job site?
3. Is it always safe to work in all types of weather – just to get the job done?
HORSEPLAY

Overview
The construction industry has a wide range of individuals with varying personalities. We’re surrounded by all kinds of people doing all types of work with all sorts of different tools and equipment. Sometimes our work area gets cluttered with not only our tools of the trade and the material we need to do our job, but also with scrap and debris. It can get congested with other workers doing their jobs, subs coming around with more tools and equipment, and so forth. Hardly the place for a tool-totin’ comedian to practice his work. Yet each year in construction, injuries resulting from horseplay occur all over the country. Some even lead to criminal action.

For Discussion…
It’s a good bet that you can find one on every job site. The guy who would just as soon fool around as work at his job. The guy who spends more of his time thinking up a practical joke than he does nailing boards. Most of us can identify who this is on our own jobs and know how to do something about it before someone gets hurt -- and we should.

Everyone likes a good laugh and appreciates a good joke now and again. Save it for a break and keep it off the job site. There’s a time and place for distracting behavior and joking around: a construction site is never that place. The worker who thinks horseplay is OK is as dangerous as a circular saw without a guard or a ladder with broken rungs.

Horseplay is a hazard to all fellow employees who are trying to mind their own business and do their jobs well. Worksite foolishness should not be tolerated.

Things like tripping, pushing, and throwing tools or other objects have no place on a construction job. Nailguns and powder-actuated tools are for trained professionals, not “wannabe” comedians. Fooling around with air hoses has caused many cases of ruptured eardrums or ruptured bowels.

Horseplay that results in injury could result in civil action and/or criminal prosecution. The courts have held that these injuries are not the result of an accident but a deliberate act.

Questions
1. Why does horseplay occur on a job site?
2. How can horseplay be discouraged?
3. How does horseplay disrupt a smoothly working job site?
4. Reality check: Are you the “wannabe” comedian?
HOUSEKEEPING—WHY THE BIG FUSS?

Overview
Although housekeeping issues may not be at the top of your priority list, there are a number of safety reasons as to why it is an important topic. Good housekeeping allows employees to perform their jobs more efficiently, more quickly, and most importantly...more safely.

In no uncertain terms, poor housekeeping is against OSHA regulations. OSHA rules for housekeeping focus on construction sites in three places: general housekeeping, storage rules related to fire prevention and storage area housekeeping. These rules clearly state that you must maintain working conditions that promote safety and health. That translates into “picked-up” job sites.

For Discussion...
The following are some “positive points” that good housekeeping accomplishes:

- It minimizes waste and damage of material and equipment.
- It saves time.
- It provides more room in which to work.
- It prevents fires.
- It prevents injuries.
- It improves the quality of work and quantity of the work done.

Good housekeeping promotes safety, boosts morale, and encourages an overall professional working environment.

It says a lot about you and the company’s attitude towards accident prevention. It also shows your customer and the general public how professional outfits operate.

Questions
1. Do you plan neatness and order into a job before it starts?
2. Is an area designated and marked for construction debris?
3. Does every worker and/or subcontractor understand what they are to clean up, as part of their work on your job site?
4. Do we need storage racks or designated places for some of our equipment?
5. Why do good housekeeping and safety go hand-in-hand?
INSECTS, SNAKES AND ANIMALS

Overview
Although most insect bites and stings are no more than annoying and at times painful, there are cases where they can be more serious, and even lead to death if they go untreated. Certain animals and snakes can pose a serious threat from bites, scratches, or even just contact, especially if they carry a disease. There is always risk of infection from bites and rabies is always a concern.

For Discussion...
As if it’s not enough to be exposed to all the job site hazards that are man-made, we also have to consider the dangers that exist in the living environment that we may have disturbed or even attracted somehow. Here in New Mexico, we certainly have our share of stinging, biting, and crawling critters and animals. OSHA actually has a requirement that addresses working at job sites where harmful animals (and plants) are present. If you may be exposed to them, you must be informed about the potential hazards or dangers. This includes insects and snakes. How do you avoid them, and what are the first aid procedures you need to use in case of injury?

Some personal protection measures you can use to avoid insect stings:
- Foot protection. Many insects are ground-dwellers or remain in low-lying foliage. Tall leather boots are effective.
- Avoid wearing sweet-scented colognes and deodorants.
- When eating, remember that insects are naturally attracted to food odors.

If you get stung, scrape the stinger away from your body. Squeezing the stinger actually releases more venom. Apply some hydrocortisone cream or calamine lotion. Cold water or ice will reduce the pain. If you can, move inside because the venom from a wasp sting attracts other wasps.

Prior to beginning work in questionable areas, find out if there are any workers who are allergic to certain venoms or bee stings. These individuals require immediate medical attention or they could die from a sting.

Many animals are instinctively attracted to shelters and waste areas. They also may be carrying serious diseases. Infections are not uncommon among them and rabies can be transmitted from not only wild animals but also from stray and wandering cats and dogs.

First aid for animal bites and scratches includes cleansing the wound area with soap and potable, or non-contaminated water, applying an antibiotic cream, and then covering it up.

With regard to snakes, over 99 percent of snakebites are below the knee, and usually in the ankle area. As you may know, snakes tend to lay around near rocks and in wood or scrap piles. (Again, tall leather boots are a good source of protection, and may prevent a bite). Here are a few general rules to follow in the event a worker suffers a snakebite:
1. Allow the bite to bleed out for 15 to 30 seconds.
2. Clean and disinfect the bitten area.
3. Wrap the area with an elastic bandage but leave the bite marks open.
4. If available apply venom extractor; otherwise apply hard, direct pressure on the bite with a gauze pad and then tape in place.
5. Cool the wound without the use of ice (this retards venom movement), and seek medical attention.

If your company does work in areas where snakes are likely to be a concern, snakebite kits should be available.

Questions
1. Are you allergic to an insect that would cause serious illness?
2. Have you been notified of any potential insect or plant hazards on your job site?
3. What are the suggested protection measures against bites and stings?
LADDERS

Overview
Falls rank second only to motor vehicle accidents as the chief cause of death on the job. OSHA estimates that falls from ladders and stairs account for 24,000 injuries and 36 deaths per year. While ladders appear to be uncomplicated and simple to use, they remain a major source of accidents on construction sites, and a source for numerous OSHA citations.

For Discussion...
One of the most used (and often abused) pieces of equipment on the job presents a major hazard. This is the ladder. Why do we get hurt using ladders? If you look at 150 construction accidents involving ladders, you’ll find that the following were principal contributing factors:

1. Climbing or descending improperly.
2. Failure to secure the ladder at top and/or bottom.
3. Carrying or holding object(s) with one or both hands while climbing or descending.
4. Broken rung or side rail or other structural failure of the ladder.

For the most part, commercial ladders are constructed properly and with the right materials. The rungs are corrugated, knurled, dimpled or coated with skid-resistant material to help prevent slipping. However, after they have been in use for some time they are often damaged through abuse, rough handling while moving, being struck by heavy objects, etc. Failure on the part of anyone using a ladder to report a defect may result in a serious fall.

There are many opinions on the best way to climb a ladder. Some say you should use your hands on the rungs to climb up or down a ladder. Others say to grip the side rails, or a combination of both. But most people agree that either method is acceptable, as long as you use at least one hand to grasp the ladder. Remember too, never carry objects that could cause you to lose your balance and fall. And at all times, you should be facing the ladder.

Oftentimes, ladders are not secured either at the top or the bottom. It takes only a few minutes to tie-off a ladder. If that is not possible, then always use a “spotter,” someone at the bottom to keep the ladder stable. This is a much better choice than taking a shortcut and ignoring ladder safety.

Ladders should be set at the proper angle, according to the manufacturer’s recommendations; place the ladder so that for every 4 feet up, the ladder’s base is 1 foot out. (This is the 4:1 rule). Ladders should be long enough to extend at least 3 feet above the support point or landing. And remember: don’t stand on the top two steps of a stepladder or top four rungs of a straight ladder. Also make sure to lock open the spreaders of a stepladder before using it, and never use it while it’s leaning unopened against a wall or other surface.

When it is necessary to get tools and/or materials from the ground up to the work level or down again, don’t carry them on the ladder. Use a hand line to haul them up or let them down.

The few minutes you invest toward being safe can save you from the suffering caused by of a broken leg or a broken neck…or worse.

Questions
1. What is the 4:1 rule?
2. Are the ladders on this job in good condition and are they properly used?
3. Is the ground where the ladder is to be used stable?
4. Do we have a method of securing the ladder from falling?
5. Are ropes available on the site for both securing the ladders and for use as hand lines?
LOCKOUT/TAGOUT PROTECTION

Overview

The unexpected start-up of machines or equipment, or release of stored energy can cause injury to you and your co-workers. A company lockout/tagout program can prevent exposure to accidental, injurious and even life-threatening situations from energized equipment.

For Discussion...

The Control of Energy Sources. Many energy sources require lockout/tagout procedures to protect employees from the release of hazardous energy. Some of these include electrical, mechanical, hydraulic, pneumatic, chemical, and thermal sources. Some of the problems an accidental release of hazardous energy could cause are: (1) accidental start-ups, (2) electric shock, and (3) release of stored, residual, or potential energy.

These accidents often occur when someone takes a short cut during machinery servicing, or when workers don’t understand the equipment or the lockout/tagout procedures for the job task at hand.

A Lockout is the process of turning off and locking out the flow of energy from a power source that goes to a piece of equipment or a circuit. And, it must remain locked out. Lockout is accomplished by installing a lockout device at the power source so that the equipment powered by that source cannot be operated.

Placing a tag on the power source is called Tagout. The tag acts as a warning to other workers not to restore energy; this is not a physical restraint. Tags must clearly state: Do Not Start. Both the locks and the tags must be strong enough to prevent unauthorized removal and to withstand various work area environmental conditions.

Below are some pointers for the most common lockout/tagout situations:

Electrical Controls, Equipment and Circuits. (1) Tag all controls that are to be deactivated during the course of work on energized or de-energized equipment or circuits. (2) Render equipment or circuits that are de-energized inoperative and attach tags at all points where such equipment or circuits can be energized. (3) Place tags so that they plainly identify the equipment or circuits being worked on.

Mechanical Equipment. Ensure that no employee is permitted to perform maintenance, service, or repairs 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 potential hazardous energy sources have been locked out and tagged.

All Tags shall read Do Not Start or similar language to ensure the equipment is not operated.

A good solid lockout/tagout program will control and/or eliminate the unexpected start up or energization of machines or equipment, or release of stored energy that can cause injury, or worse. Specific lockout/tagout procedures for construction can be found in OSHA 29 CFR 1926.417 and 29 CFR 1926.702. For an excellent overall lockout/tagout program, refer to 1910.147 — The control of hazardous energy (lockout/tagout), which is a general industry standard.

Questions

1. What are some of the problems an accidental release of hazardous energy could cause?
2. Why are shortcuts never a good habit on the job site?
3. What should be written on ‘lockout/tagout’ tags?
4. Why is close repair management essential where workers use energized equipment?
MACHINE GUARDING — HAND & POWER TOOLS

Overview
Many power tools and machines used on construction sites have guards on them to protect you from the danger of hazardous moving parts such as belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment. These moving parts must be guarded, as per OSHA requirements, if they are exposed.

For Discussion...
The common types of equipment on which you might find machine guards include:
circular & other power saws; jointers; routers; grinders; conveyors

As necessary, guards are provided to protect the operator and others from:

• Point of operation hazards
• Nip point hazards
• Rotating parts
• Flying chips and sparks

Never remove safety guards when the tool is being used or in operation. If the guard is not on, you are exposed to hazards from the moving parts of the machine or tool being used.

Circular saws must be equipped with blade guards. The upper guard must cover the entire blade. A retractable lower guard must cover the teeth of the blade except when it makes contact with the work material. Then, the lower guard must automatically return to the closed position when you’re finished making the cut. Otherwise, you may be exposed to the cutting action of the blade.

Many times these guards are bypassed or removed because a worker believes he can get more done without it. By doing this the worker exposes himself to unnecessary risks of cuts, being hit by flying objects, and other hazards.

So, don’t take chances with machine guards. Make sure they’re in place on tools, equipment and machines that require them. If they’re missing, tag out the equipment and turn it in for repairs. Protect yourself and others.

Questions
1. Are guards always in place on the equipment you use?
2. Is there ever an excuse for not using the guard?
3. Why does OSHA insist that guards be in place when power tools are in use?
4. Who is responsible for inspecting your job site hand and power tools?
MANUAL HANDLING – MATERIALS AND OBJECTS

Overview
Each year, manual handling of objects and materials produces approximately one-sixth of the disabling injuries occurring in the construction industry. By handling tools, lumber, sheathing, beams, trusses, steel, stone, brick, block, bagged material and all the other items that have to be moved on any construction job, we are exposed more times and in more ways to more different sizes, shapes and weights than workers in any other occupation.

For Discussion...
There’s a good chance that some of you on this job have injured a hand, fingers, toes or back at one time or another while handling materials.

To help reduce these potential injuries, let’s review some proper manual material handling methods:

1. Don’t try to carry too bulky or too heavy a load. Get help when you need it. Always be sure you can see where you are going.
2. Before you set material down, be sure that your fingers and toes are in the clear.
3. Watch out for sharp rough edges. Wear gloves to protect your hands.
4. Lift in a way that feels most comfortable to you - with as straight a back as possible, using your legs as much as you can.
5. Lift gradually - do not jerk.
6. Avoid twisting when carrying a heavy load. If you have to turn, do so by shifting your feet.
7. Also, when carrying loads, keep them as close to your body as possible.
8. When carrying long pieces, look out for others on the job site. Generally, the leading end of long pieces should be high and the trailing end should be low.
9. Don’t try to sheath roofs on windy days.

There is a right way and a wrong way to do any manual handling job. Figure out the right way and proceed with caution. And get help when you need it!

Questions
1. Will someone demonstrate the proper method of lifting?
2. Should he have asked for assistance lifting this object?
3. Lifting what types of material on this job site merits help with moving?
4. What operation in our work requires the heaviest manual lifting?
MSDS – CHEMICAL INFORMATION
YOU NEED TO KNOW

Overview
According to OSHA, construction workers who are exposed to hazardous chemicals must be provided with thorough and accurate information on each hazardous chemical present at their job site. The MSDS, or Material Safety Data Sheet, is the means used to provide employees with the required information on workplace chemicals and their hazards.

For Discussion...
MSDS are stored easily and can be readily accessible to employees. Your safety supervisor should tell you where those MSDS are located at your job site. Find out where they are if you don’t already know.

MSDS can come to you in all kinds of different formats. Requirements are met as long as all the prescribed information is presented on the MSDS in English. Most MSDS are printed on paper sheets; however, technology of recent years has led some companies to computerize MSDS. OSHA approves of this method, but only if the information is in English and is readily available to affected workers. In order to become familiar with the MSDS associated with the chemicals and materials in your work place, your supervisor should show you and explain the following appropriate sections on a MSDS.

• Chemical identity on the label;
• Physical and chemical characteristics;
• Physical hazards like potential for fire or explosion;
• Health hazards including signs and symptoms of exposure and medical conditions which may be aggravated by exposure;
• Primary route(s) of entry, such as skin contact, inhalation and ingestion;
• Exposure limits used or recommended by the chemical manufacturer, importer, or employer preparing the MSDS, where available;
• Is the chemical a carcinogen?
• Precautions for safe handling and use;
• Control measures, such as engineering controls, work practices or personal protective equipment;
• Emergency and first aid procedures;
• Date of preparation; and who prepared or distributed the MSDS
• The manufacturer, importer, or responsible party, address and telephone number.

Consult your Material Safety Data Sheet. Stay healthy and safe.

Questions
1. What do the initials MSDS stand for?
2. On which part of the sheet do you find the emergency and first aid instructions?
3. Where are the MSDS kept on your job site?
POWDER-ACTUATED
NAIL GUN SAFETY

Overview
Many accidents can be prevented through proper training and taking precautionary measures when using nail guns. There was an incident where two employees were on a remodeling job building a wall. One of the workers was killed when a nail fired from a powder-actuated tool struck him. The tool operator was attempting to anchor some plywood to a 2” X 4” stud, and fired the tool. The nail penetrated the stud and the plywood partition prior to striking the victim.

For Discussion...
As the result of an OSHA investigation, citations were issued for serious violation of the following regulations.

1. Employees using powder-actuated tools must be trained in the operation of the particular tool.
2. Driving into materials easily penetrated must be avoided unless materials are backed by a substance that will prevent the nail from passing completely through and creating a flying missile hazard on the other side.
3. Operators and assistants using powder-actuated tools must be safeguarded with eye protection.

OSHA Regulations for Nail Guns
All nail guns must be tested each day prior to loading to ensure the safety devices are working properly. Use the manufacturer’s recommended procedure for testing.

Any tool that is not working properly during the daily test or while using must be immediately removed from service, tagged, and not used until repaired.

Utilize the proper PPE in accordance with Subpart E of the OSHA construction regulations.

Tools must not be loaded until just prior to the intended firing time.

You must never: (1) point a nail gun, loaded or unloaded, at another person; (2) leave loaded tools unattended; (3) drive fasteners into very hard or brittle material such as cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile, and; (4) drive a fastener into a spalled area caused by an unsatisfactory fastening.

Never use nail guns in explosive or flammable atmospheres. All tools must be used with the correct shield, guard, or attachment recommended by the manufacturer.

(For specific regulations on powder-actuated tools, refer to OSHA 29 CFR 1926.302(e)).

Nail guns can save time and energy during construction projects. However, they can be deadly when mishandled, and cause disabling injuries. Review the proper inspection and operational procedures with your employees.

Questions
1. Is once a week safety inspection of nail guns sufficient? Why or why not?
2. Can anyone’s rules be used for inspection? Why or why not? Whose procedures must be used according to OSHA?
3. Why not carry a loaded nail gun without its guard?
4. Why is personal protection so important when using nail guns and similar power tools?
Overview

Teamwork and a heightened sense of awareness with safety in mind helps keep all of us from getting injured. Have you ever witnessed something that could have caused a lot of damage to a structure or to a worker? Have you ever been in the middle of a job task when you almost got hurt? How many times have you shrugged off a near miss or a close call, never giving it a second thought? The difference between a near miss and an accident often is a fraction of a second or an inch. If it should happen again, that difference may not be there.

For Discussion...

Realistically, we never know when a serious injury is coming. One study shows that for every 330 incidents of the same type, 300 produce no injuries, 29 produce minor injuries and one produces a major injury. Naturally, these statistics vary with the job that’s being done. The problem is we never know which time the major injury will occur. **Near misses and close calls are warnings.** We need to take advantage of the fact that no one was injured or nothing was damaged this time and look for the causes at hand. We may be able to prevent a similar occurrence. Maybe even save a life.

To cite an example, let’s look at a progressive scenario: Picture the guy who’s going up a walk ramp into a house he’s working on. He loses his footing, but regains his balance without a problem. He wasn’t carrying anything so nothing was dropped, he didn’t fall, so, no big deal, and he just went on his way.

Then another worker comes along. He slips, too, but his reactions are a little slower than the first guy. To keep from falling, he jumps off the board. Again, no harm done.

Finally, a third worker begins his way up the ramp carrying a load. He has the same experience, but he falls off the board, lands with the load on top of him, and breaks his ankle.

There were two warnings--both of which were ignored until someone was hurt. Not until then was the loose cleat, mud or sand on the ramp discovered and the condition finally corrected. A little too late for the guy with the broken ankle. The first two workers had a chance to prevent an injury and keep another fellow worker out of harm’s way, but failed to do anything about it.

Causes of Close Calls

Removing safety devices, using broken equipment and not using equipment the right way are three common things that lead to a lot of accidents. You also have to be careful not to be somewhere you’re not supposed to be, goof around on the job site, or forget or avoid wearing the appropriate personal protective equipment. If one of these actions caused your close call or near miss, etch it in your mind, and make certain you don’t ever do it again. Then, and without hesitation, warn the other workers about the incident in order to prevent a possible injury or accident.

If it was an unsafe condition that caused the close call, find out if there’s something you can do to make the situation better and safer, or eliminate it altogether.

Remember: Move it or remove it. Fix it or get it fixed. Fill it, cover it, block it or guard it. Take action and warn others. And always let your supervisor know of all these situations. This is the most opportune time for an effective safety meeting, and you could wind up being the hero and saving someone else from serious injury.

Questions

1. Relate a close call that after the fact, you realized you had been spared serious injury.
2. Why is walking the job site or at least your portion of it, before beginning work, a good habit?
3. Why is it equally important to stay within the bounds of your job description while on the job site?
4. How may good housekeeping help eliminate close calls and near misses?
NEIGHBORHOOD KIDS & PROTECTION FOR CHILDREN

Overview

Children around our job sites present special safety problems and concern. As much as we hope that they would keep away from our unfinished projects and job sites, kids will be kids, and you can expect them to come around when we’re not there and after the end of the workday. When they do, we can’t expect them to be aware of the hazards of our equipment, the excavations, unfinished structures, or any other unforeseen dangers. And being children, they are naturally curious and adventurous.

For Discussion...

An unthinkable and most uncomfortable situation is to be the one who had to inform a mother that her child had just been seriously injured on your construction site. I think we’d all agree that it would be the hardest job that any worker would have to do.

Some of us can reminisce to our own childhood and recall the new subdivisions under construction near the old neighborhood. The trenches and huge piles of dirt near a half-built house offered some pretty interesting alternatives to normal activities, and without a doubt made for a playground that we couldn’t resist. Challenging each other to climb up or over or through any opening we could find was new and exciting fun for lots of us—until somebody crawled over a projecting nail, fell through some plywood covering or twisted an ankle jumping off some unguarded decking.

We have an obligation and should think of it as our moral duty to try to do everything that we can do to leave the job in as safe a condition as possible. Some steps to consider are:

• Lock or secure all powered equipment so that it can’t be started.
• Buckets, blades and scoops should be lowered to the ground.
• Park equipment on level ground and chock or block wheels so it won’t roll if the brake or clutch is released.
• Remove or lock up gasoline or other hazardous materials in areas where children might play.
• Remove portable ladders from areas where children may get to them.
• Properly guard all wall and floor openings.
• Ensure that no exposed (energized) wiring is on your job site.

Put yourself back in those old days and guard your job site from what you probably would have gotten into! Keep in mind that you may not only protect your company from being liable for an injury, but you may also save a child from serious and even permanent harm.

Questions

1. Do you make sure your work areas are child-safe at the end of the day?
2. What are the areas or equipment that might attract children to the job site?
3. Who is responsible for securing equipment and the job site against hazards to children?
OVERHEAD POWER LINES

Overview
Each year, contact between crane booms and power lines cause more fatalities than any other type of electrical accident in the construction industry. You’ve probably seen these types of accidents reported on TV or in the newspapers, or possibly even experienced witnessing one on your own job site. Overhead power lines are one of the most dangerous hazards on the job and are often overlooked, but injuries from contact can be avoided if you know where the hazards are.

For Discussion...
Here’s a review of several typical accidents involving crane boom contact with power lines:

• A foreman was walking backward pulling the hook when the load line contacted an overhead power line.
• A framer had hooked onto a bundle of material stored under a power line and was guiding the load when the boom hit the line.
• A worker was leaning against the side of the crane when the boom hit a power line causing the current to ground through his body.

Injury or death resulted in each of these accidents to someone other than the operator. In fact, the operator is usually safe when a contact is made and is able to protect himself either by swinging the boom free of the line or jumping clear of the crane. The worker on the ground is the one who falls victim to the electric shock. It is imperative that both the worker on the ground and the operator realize that it is difficult for the operator to be sure of the exact location of the boom tip. The operator simply does not have a good judgment of distance looking up along the boom when he’s concentrating on watching the load.

The most effective way of avoiding crane boom and power line contacts is to keep the boom at least 10 feet away from any overhead line. Even if material has to be stored in another area instead of conveniently under the power lines, take the extra care to do so. It may mean that a spotter has to be used to watch the boom tip when work approaches a power line. In some cases, it may be necessary for the power company to de-energize a line or protect it with rubber sleeves.

Finally, if a worker does come into contact with an electrical source, don’t try to pull him free with your hands. If you have to free him, use a dry manila rope or a dry plank.

Questions
1. Do we have any material stored, or work to be done, close to a power line on this job?
2. Is there anyone here qualified to give CPR to a worker rendered unconscious by electric shock?
3. Who decides when the crane is too close to overhead power lines?
4. Why is close communication between workers on the ground and the crane boom operator important?
PORTABLE ELECTRIC POWER TOOLS

Overview
Every year, countless workers in construction receive painful electrical shocks while using portable electrical tools and equipment. These injuries, including those caused by ground faults, range from minor to serious secondary injuries. Electrocution is also a devastating possibility.

When a worker recoils from an electric shock and therefore sustains an injury, this is called a secondary injury. Depending largely on the surrounding physical conditions, such an accident can result in a bruise, a broken bone or a fatal fall.

For Discussion...

Electrocution. Electrocution occurs when the shock current exceeds 70 or so milliamperes causing ventricular fibrillation and death. This happens when employees contact electrically energized parts. Usually the frame of the tool becomes accidentally energized due to an electrical fault. This provides a conductive path to the casing of the tool. This conductive path can occur instantaneously or can develop gradually over a relatively long period. If a worker contacts an energized tool, an unwanted path or circuit of electricity develops from the tool through the worker to ground.

The amount of current that flows through the worker depends primarily upon the resistance of the fault within the tool, the resistance of the worker and the resistance of the path from the worker back to the electrical supply.

If there is moisture in the atmosphere, this may contribute to the electrical fault by intensifying both the conductive path within the tool and the external path back to the electrical supply. Moisture also may increase the severity of the shock by decreasing the worker’s contact resistance. Therefore, the extent of the hazard will increase with higher amounts of moisture at the job site.

Protection. One way of protecting against injury caused by an electrical fault is the use of an equipment grounding conductor commonly known as the 3rd — or green — wire. This equipment grounding conductor grounds the exposed, noncurrent-carrying metal parts of tools or equipment and carries off the leakage and fault currents. This limits the voltage on the tool frame by providing a low resistance path to ground. This will provide the worker using the tool the protection that’s needed.

Utilizing a ground-fault circuit interrupter (GFCI) is another source of protection. GFCI protection is now required for ALL job site electrical outlets. This includes job site outlets at existing homes and businesses. GFCI continually monitor the current and conductors. If the leakage current to ground (either through the equipment-grounding conductor or through a person) exceeds the trip level, the circuit is interrupted quickly enough to prevent electrocution.

Review for Safety. Regardless of what type of protection is provided, there are certain things you should do to protect yourself:

• Prior to using any portable electrical power tool, inspect the plug, cord, on-off switch and housing. Look for broken, cracked, or frayed insulation, and any exposed wires or connections for evidence of any overall damage.
• If you find any problems, tag the tool “out of service” and turn it in for repairs. In any case, do not attempt to use it.
• Before you use the tool, and only if it checked out alright, you still have to check out the extension cord and the GFCI protected outlet you plan to plug into! Inspect for any damage and exposed conductors.
• Finally, before you plug in and start using the tool, inspect the work area as well as the tool and the outlet, and the extension cord to make sure everything is clean and dry.

Questions
1. What should you look for when examining electrical cords and tools before using them?
2. How does moisture affect electrical tool use?
3. What is the accepted method of grounding?
4. On which job sites are GFCI protection not required?
PORTABLE ELECTRIC TOOL SAFETY

Overview
Without a doubt, portable power tools enable us to be more efficient and more productive. What we need to keep in mind, however, is that the power and efficiency can also pose serious risk of injury or even death. Don’t believe the old phrase that if it’s “only 110” it can’t hurt you. Too often, tragedy occurs before we take the proper steps to avoid or eliminate certain hazards.

For Discussion...
For those people who think that 110 volts can’t kill you should check out the records; they’re full of accidents that show that a 110-volt shock can be fatal. This being the case, our 110-volt portable electric tools have to be treated with respect.

Inspect your power tools for obvious defects. Many dangerous defects are easy to spot right away if any exist. Some are not so obvious, so look carefully. Look to see if the cord is cracked or worn. Take notice as to whether the case is cracked or bent from being dropped or struck by something. If you are not satisfied with the appearance or operation of the tool, turn it back in for repairs. Don’t try to make any repairs involving the electric circuit - this is a job for an authorized electrician. Damaged portable electric tools need to be removed from available use and tagged “Do Not Use”, or something similar—ask your supervisor for approved company procedures for tagging broken equipment.

Working with electricity in wet conditions is dangerous because water is a good conductor of electricity. Your tools should not be used in the rain or allowed to become wet. Don’t drop them in any water or let them get splashed with water. If they are, use common sense and immediately dry them off. And always use a power source that is GFCI-protected. (Test the GFCI prior to plugging into it).

Also, never carry a tool by the electric cord or hose, or use the power cord to raise or lower the tool. And never yank the cord or the hose to disconnect your tool from the receptacle. Try to keep cords and hoses away from heat, oil, and sharp edges.

Disconnect all tools when you’re not using them and most importantly before servicing them. You need to also disconnect prior to changing accessories such as blades, bits, and cutters. Also avoid accidental starting. Don’t put your finger on the switch while you’re carrying a plugged-in tool.

A quick reminder:
Always wear the proper personal protective equipment for the work being performed!

Questions
1. Have you noticed if any of our tools appear to be defective?
2. Why inspect an electrical tool before use?
3. Do you know why GFCI protection is important on the job site?
4. Why don’t electrical tools and water mix?
PROTECT YOUR EYES

Overview
Eye protection is one of the easiest and least expensive OSHA requirements and yet each year thousands of workers injure their eyes or lose their sight. This is not because they didn’t have the proper eye protection; it is because they chose not to wear it. The percentages are very high for being hit in the eye with a metal shaving or a flying piece of wood or fragment of some sort during construction. Eye protective devices have been used in the construction industry since 1910. Training is this area is crucial.

For Discussion...
We probably all know of workers who have been spared injury or even blindness because they wore their eye protection at the right time. Sometimes a flying particle will strike with the force of a bullet. In order to protect your eyes from things like nails, wood chips, metal shavings, dusts, acids, and other related flying particles and chemicals, you must wear the appropriate eye protection. Depending on the job, you may wear safety glasses, goggles, a full-face shield, or other special eye and face protection. Today, we have eye protection available that will protect you from every type of exposure. The safety goggles and glasses available today can take tremendous blows from all sorts of objects that we may encounter on the job sites. But your eyes can’t handle anything close to what your eye protection can. People who wear glasses with corrective lenses may need prescription safety glasses or goggles that can be worn over their regular glasses for protection against damage or breakage. All this protection is available.

Eye protection on the job is a critical and necessary form of protection. If you don’t use it, you could potentially lose an eye or partial vision. In fact, it could happen to any of us at any time if we don’t use our heads to protect our eyes!

Many operations on our construction projects have mandatory eye protection rules. Here are ten of them:

1. Cutting construction materials with any type of power tool
2. Use of pneumatic and powder-actuated nailguns
3. Use of manual impact tools, such as hammers
4. Chipping, sledgering and hammering on metal, stone and concrete
5. Caulking, brushing, and grinding
6. Drilling, scaling and scraping
7. Gas welding, cutting, brazing, soldering
8. Electric arc welding and cutting, and other operations which subject our eyes to flying particles, fumes, gases, dust, hot liquids, and molten substances
9. Handling of acids, caustics and creosoted materials
10. Handling of hot tar

Train yourself to recognize eye hazards and anticipate where they may be present. As well as the eye dangers just mentioned there are many others that shouldn’t be overlooked. For example, when drilling overhead or when excessive dust is present, suitable goggles will give appropriate protection.

There are those workers who object to eye protection because it fogs up. Fogging occurs because sweat vaporizes and coats the inside of the lens. If this happens to you, or if you sweat a lot, wear a sweatband or handkerchief around your forehead to keep the perspiration off your eye protection. Use anti-fog eye protection or an anti-fog liquid coating.

The consideration and time taken to protect your eyes is certainly worth the effort. There is no trade-off for eyesight. It should be easy to decide which you’d rather do - take the risk or take a minute to put on your eye protection before you do a job that requires eye protection. Like many other personal safety devices, we should always keep them handy. It should become a natural instinct to grab your eye protection before you grab a tool or start a task that requires their use. If there’s any doubt, use them!

Questions
1. Are there any other operations on this project that would require safety glasses, goggles, or other eye protection?
2. Do you personally know of anyone who has had an eye injury because they were not wearing eye protection?
3. Who issues our eye protection devices when needed?
PUT A LID ON IT!

Overview
Thousands of head injuries occur every year in construction, ranging from concussions to death, trauma to minor abrasions and even electrocution. Hard hats may have prevented the better part of these injuries. They lessen the degree of the injury in most cases because they are designed with a hard outer shell and a suspension system inside. They can protect your head from many hazards: impact, falling and flying objects, electrical shock and burns, and hair entanglement.

For Discussion...
Getting a good knock on the head by a falling object is not a good way to convince a stubborn worker that he needs a hard hat. That’s something we’d rather avoid. Rather than a head-thump or worse, let’s learn some answers to the arguments some workers have when asked to wear hard hats on your job sites.

• “It doesn’t stay on.” In a high wind that may be correct. But a chinstrap will solve that problem. Aside from that, you’ll find that a properly fitted hard hat stays put no matter how much crouching or leaning over you have to do.

• “It’s too heavy.” A hard hat is less than one-third as heavy as an Army helmet and only a few ounces heavier than a cloth cap, but the extra protection is worth the extra weight.

• “It’s too hot.” Temperatures measured under a hard hat have actually been 5° - 10° cooler than outside.

• “It gives me a headache.” There is no medical reason why a properly adjusted hard hat would cause a headache. Something that falls from two stories up would certainly give you a much worse headache.

• “It’s noisy.” You may think so at first, but in reality, tests show that properly-worn hard hats actually shield your ears from noise.

When you stop to think about it, the hard hat is a very useful piece of safety equipment.

Questions
1. What are the adjustments that can be made on our hard hats for proper fit and comfort?
2. Why is it important that hard hats be worn at all times by everyone on the job site?
RESIDENTIAL CONSTRUCTION
SITE SAFETY

Overview
Residential construction presents special problems for workers. With this in mind, OSHA has teamed up with the National Association of Home Builders (NAHB) to produce a handbook that contractors can use to meet OSHA requirements for residential construction. The handbook offers an outline you can use to aid in guiding you in the right direction while working on-site, but always refer directly to OSHA regulations for accuracy if ever any questions should arise as to exact compliance.

The following is brief highlight of the helpful contents of this handbook.

For Discussion...

Orientation And Training. Is orientation and safety training completed on OSHA standards for all employees, and do they understand the company’s policies as well?

Personal Protective Equipment. Do you use all required and provided PPE?

Housekeeping and access around site. Are all walkways and stairways kept clear of trash and debris, tools and materials? Is scrap lumber and other material picked up and discarded properly to prevent fire and tripping hazards?

Stairs And Ladders. Are ladders secured near the top or at the bottom and are they in good condition and free of defects?

Scaffolds And Other Working Platforms. Are all erecting and dismantling operations under the direct supervision of your company’s competent person? Are all scaffolds inspected by your competent person before each use?

Fall Protection. Do you use other fall protection systems like slide guards, roof anchors, or alternative safe work practices when a guardrail system cannot be used? When working on a roof with a pitch over 4:12 up to 6:12, are slide guards installed along the roof eave after the first three rows of roofing material are installed?

Excavations And Trenching. Are all utilities located underground by the local utility service(s) prior to digging? Is the width of the foundation trench at least two feet wide?

Tools And Equipment. Do you inspect tools regularly to ensure they are safe and free of defects? Are damaged or broken tools tagged and removed from the job site?

Vehicles and Mobile Equipment. Is all equipment with a limited rear view equipped with back-up alarms, or is a spotter available to guide the operator?

Electrical. Are broken or damaged tools and equipment removed from the job site?

Fire Prevention. Do you provide fire extinguishers near all welding or soldering projects, or other sources of ignition?

Residential construction site safety covers a variety of areas and potential hazards. Encourage your employees to always be alert and not to take chances by taking short cuts.
SAVE YOUR BACK

Overview

Sprains and strains are the most common causes of lower back pain. The back can be injured by improper lifting of moderate to heavy objects, by falling, in auto accidents, and through sports activities. But out of all of these, lifting improperly is the largest single cause of back pain and injury.

For Discussion...

Safe lifting is a special concern on the construction job site because lifting is a major part of the job. Without lifting, through either physical or mechanical means, materials could not be moved around the site to build the project.

Some pointers to follow:

- Never lift beyond your strength. Always get somebody to help you or use equipment when possible.
- Always crouch down bending your knees to reach what you are going to lift. DO NOT BEND over to the load without bending your knees.
- Get good footing. Place your feet comfortably apart.
- Get a firm grip on the item you’re going to lift.
- Keep your arms straight and your back in as nearly a straight up and down position as possible.
- Lift gradually. Don’t jerk up the object you’re lifting.
- Avoid twisting; shift your feet around instead.
- Take the strain off your back muscles by lifting with your legs. Lift by standing up or by pushing up with the leg muscles.
- If you can’t lift the load after trying all of the above, then GET HELP!
- When you’re lowering or putting down an object you have lifted up, just reverse the above lifting methods.

By using common sense, you can keep your back out of trouble!

Every time you think about lifting, think defensively about your back and the possibility of a back sprain.

Follow good lifting techniques at work and at home.

Questions

1. Why learn proper lifting?
2. Why should you move your feet rather than twisting to move a heavy object a short distance?
3. Why should you get help when lifting a heavy object?
4. When may mechanical lifting equipment be the only lifting option?
SCAFFOLD SAFETY

Overview
Scaffolding hazards continue to rank among the highest on the list of the most frequently cited OSHA standards in construction. A “top five” list of scaffolding rules actually leads off the “top twenty” overall list of construction safety violations. They also account for approximately nine percent of all fatalities at construction work sites. Over 40% of the serious injuries to workers in the building trades are caused by falls from one level to another. Aside from fall protection, scaffold safety considerations must be made for getting to and from the working platform, scaffold planking, firm foundations, and scaffold training.

For Discussion...

Share these top five OSHA Scaffolding Violations with your employees and give them the confidence that you are concerned about their safety and welfare.

1. Fall Protection – Each employee on a scaffold more than 10 feet above a lower level must be protected from falling to that lower level. (1926.451 (g) (1)). Consult OSHA regulations for the proper fall protection for each type of scaffold. This is currently the #1 most cited construction regulation.

2. Access to the working platform – When scaffold platforms are more than two feet above or below an access point, portable, hook-on, or attachable ladders; stair towers; stairway-type ladders; ramps; walkways; integral prefabricated scaffold access; or direct access from another scaffold, structure, personnel hoist, or similar surface must be used. Crossbraces must not be used as a means of access to the working surface. (1926.451 (e) (1)). This is currently the 7th most cited construction regulation.

3. Scaffold planking – Each platform on all working levels of a scaffold must be fully planked or decked between the front uprights and the guardrail supports. This is currently the 8th most cited construction regulation.

4. Firm foundations – Supported scaffold poles, legs, posts, frames, and uprights must bear their weight on base plates and mud sills or other adequate firm foundation, and must meet the following requirements:
   • Footings must be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
   • Unstable objects must not be used to support scaffolds or platform units.
   • Unstable objects must not be used as working platforms.
   • Front-end loaders and similar pieces of equipment must not be used to support scaffold platforms unless the manufacturer for such use has specifically designed them.
   • Forklifts must not be used to support scaffold platforms unless the entire platform is attached to the fork and forklift is not moved horizontally while the platform is occupied. This is currently the 10th most cited construction regulation.

5. Scaffold Training – A scaffold-qualified person must train each employee who works from a scaffold. The person must be able to recognize the hazards associated with the type of scaffold being used, and understand the procedures to control or minimize those hazards. The training must include the areas outlined in 1926.454 (a). The scaffold rule outlines specific training requirements for: employees who work on scaffolds; employees who assemble, disassemble, move, operate, repair, maintain, or inspect scaffolds; and requirements for retraining of employees. This is currently the 19th most cited construction regulation.

For more information, refer to OSHA CFR Part 1926, Subpart L - Scaffolding.

Questions
1. What is the number one OSHA construction regulation cited?
2. What is the most easily corrected scaffold hazard?
3. Is any part of scaffold use to be taken for granted?
4. What does weather have to do with scaffold use?
5. Who on this job site is qualified to train employees in scaffold erection and dismantling?
SCAFFOLDING — A GUIDELINE

Overview

In July, 1991, two employees were working on a pump jack scaffold doing roofing work. The scaffold became overloaded and broke. The employees fell 12 feet to the ground, resulting in one fatality and one serious injury.

Other research revealed that in 1995, 9,750 workers were injured in scaffold or scaffold-related accidents. Of those injured, 72% said the accidents were caused by:

- Planks or supports giving way (the most common cause)
- Employees slipping on the scaffold
- Being struck by falling objects

These types of statistics prompted OSHA to write a new, simpler, and more up-to-date scaffold rule, which became effective in November, 1996.

For Discussion...

The new rule is divided into five sections. Here’s what’s involved:

1. The rule applies to all scaffolds used in construction, alteration, repair (including painting and decorating), and demolition.
2. Requirements for capacity, construction, access, use, fall protection and falling object protection when working on scaffolds.
3. Additional requirements applicable to specific types of scaffolds pinpoints specific types of scaffolds in use and applies additional requirements for working safely with these scaffolds.
4. Aerial lifts — Includes safety requirements for extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers, and a combination of any such devices.
5. Training — Provides specific training requirements for: (1) Employees who work on scaffolds, (2) Employees who assemble, disassemble, move, operate, repair, maintain, or inspect scaffolds, and (3) retraining.

Described at the top of this talk is an accident that the new scaffold rule is designed to prevent. Although no rule can force you to be safe all the time, you should and must have the desire on your own to go home from work the same way you came...alive and in one piece.

(See your supervisor for the details on scaffolding BEFORE attempting any scaffold erection or use.)

Questions

1. What are the factors that contribute to most scaffold-related injuries?
2. Why is fall protection a factor in scaffold use in construction?
3. Had you considered aerial lift safety part of scaffold safety before this talk? Why would the same safety requirements apply?
4. Is training as important as getting the job done? Why or Why not?
5. Why is scaffold assembly important on the job site?
6. Who is responsible for determining the correct scaffold for use and its proper erection on your job site?
SLIPS, TRIPS AND FALLS

Overview
You may have heard this before in some of our other safety meetings, but it never hurts to hear it again. We hope it helps. Falls are the leading cause of injury accidents in the construction industry. There are three physical factors involved in slips, trips, and falls: friction, momentum, and gravity. All play a part in an accident scenario. Friction is the resistance between objects, the speed and size of an object affect momentum, and gravity is the force that pulls you toward the ground in a fall.

For Discussion...
Slips can be caused by several different factors including wet surfaces, spills, or weather hazards like ice and snow. Slips are more likely to occur when you hurry or run or when you wear inappropriate shoes or don’t pay attention to where you are walking. To help avoid slips, follow these safety precautions:
1. Clean up spills immediately or report them to the appropriate person. Even a minor spill can lead to a hazardous situation.
2. Practice safe walking skills. Take shorter steps to keep your center of balance under you and point your feet slightly outward.
3. Keep grease from accumulating on your job site and work area.
4. Take extra precautions on smooth surfaces such as new floors or recently waxed floors.

Trips are more likely to happen, again, when you are in a hurry and aren’t paying attention to where you’re going.
• Make sure you can see where you’re going and carry only loads that you can see over.
• Use a flashlight or an extension light to make your walking path more visible in darker areas. Keep your work areas well lit!
• Store materials and tools in cabinets or assigned storage areas. Keep your job site clean.
• Don’t let your extension cords and power tool cords become dangerous trip hazards.
• Eliminate hazards that may result from loose footing on stairs, steps, and floors.
• Keep equipment away from walkways or pedestrian traffic.
• Store planks and ramps properly.

Falls occur when you move too far off your center of balance. In order to avoid unnecessary falls consider the following preventive measures:
• Do not jump from upper levels; use proper exits.
• Replace or repair stairs and handrails that are loose or broken.
• Check lighting to ensure adequate views.
• Wear boots or shoes with appropriate nonskid soles.
• Keep passageways and walkways (and aisles) clear of clutter and debris.

Keep an eye out for unsafe conditions in your work areas, and stay aware of hazards that may cause an accident due to a slip, trip or fall. Your efforts could save fellow workers from injury and just as likely — keep yourself out of harm’s way!

Questions
1. What is the leading accident with injury in construction?
2. Name some ways slips, trips and falls occur.
3. How can they be prevented?
4. Why is it important to ‘look out for the other guy’ on a job site?
STEEL ERECTION
GENERAL REQUIREMENTS

Overview
As a result of a review of problems with the 25-year-old steel erection rule now in effect, OSHA believes it needs a complete revision to provide greater safety protection for steel workers. In the meantime, OSHA has authorized employers to use the current rule or the proposed one.

For Discussion...
This information is for those companies who have elected to follow the current steel erection rules for job site safety. While walking around your construction job site, you should remember these steel erection rules:

Permanent flooring requirements. There must not be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost permanently secured floor.

Temporary flooring requirements. For temporary flooring, the derrick or erection floor must be solidly planked or decked over its entire surface except for access openings. A safety railing of ½ inch wire rope or equal must be installed around the outside edge of all temporary planked or metal-decked floors.

Structural steel assembly. During the final placing of solid web structural members, the load must not be released from the hoisting line until the members are secured with not less than two bolts (or the equivalent) at each connection and drawn up wrench tight. Tag lines must be used for controlling loads.

Bolting, riveting, fitting-, and plumbing-up. General requirements—Containers must be provided for storing or carrying rivets, bolts, and drift pins, and must be secured against accidental movement when aloft.

• Bolting—When bolts or drift pins are being knocked out, a means must be provided to keep them from falling to lower levels.
• Riveting—When riveting near combustible materials take precautions to prevent a fire.
• Plumbing-up—Guys used for plumbing-up can only be removed under a competent person’s supervision.

Unused openings – All unused openings in floors, temporary or permanent, must be completely planked over or guarded in accordance with the fall protection rule.

Safety belts – Employees must properly use safety belts when they are working from float scaffolds.

Fall protection is required under the current rule in the following areas:

• Exterior fall hazards of 25 feet or more
• Interior fall hazards of 30 feet or more on buildings which have floors or are adaptable to temporary floors
• Interior fall hazards of 25 feet or more on tiered buildings which are not adaptable to temporary floors.

Non-tiered buildings and other structures — Exterior and interior fall hazards of 25 feet or more require fall protection. Fall protection is not required for fall hazards of less than 25 feet. (The major difference between the current fall protection requirements and the proposed new rule is a 15-foot threshold for requiring fall protection).

The above rules are not all of the steel erection rules and are only intended to be used for an overview. Consult OSHA 29 CFR 1926.750 and .752 for current steel erection requirements, and 1926.502 for general fall protection system requirements.
STEPLADDERS – A QUICK REVIEW

Overview
More serious accidents occur in the building construction industry from falls than from any other single cause. Studies show that electricians and painters using stepladders are involved in a large percentage of these falls.

This does not necessarily mean that stepladders are unsafe. They can be. It all depends on how the stepladder is used. Looking further into the accident studies, you’ll find that it was usually an unsafe action or work practice, or an unsafe condition that brought about the accident.

For Discussion…
Here are examples of these situations:

• Broken side rails and treads - A damaged stepladder really can’t be repaired properly for safe use, nor would it be acceptable according to OSHA standards. Without certified testing, it should be thrown away.

• Stepladders used as straight ladders – A stepladder is not designed for this type of use and should never be utilized when leaned against a wall or other surface. The treads may not be level or the legs may kick out or slip out from under you. The metal spreaders between the front and back sections keep the ladder stable and give the rails support, so be sure they are fully extended and locked into place prior to use.

• Standing on the top or next to top step – The higher you go on a ladder, the more top heavy you are. That’s why you should never use the top two steps of a stepladder. A good practice is not to go above the third step from the top. If you have to, go find a bigger ladder for the job at hand.

• Scaffold supports - Stepladder treads are not designed to carry the load of a scaffold, unless certified by the manufacturer for that use.

• Working from the backside - The slope and the rungs create an unsafe condition. And never step on the cross braces. They are made for structural support and not for handling the load of a worker.

• Poor footing - A stepladder needs level four-point support to be steady.

Remember that many falls are simply caused by using ladders the wrong way. Using them properly is the only way to protect yourself from injury.

Questions
1. Are we using our stepladders correctly?
2. Who is the best source for use of stepladders?
3. Do we have any defective stepladders on the job?
4. Who do we notify when a stepladder is damaged?
STRUCK-BY, HIT-BY HAZARDS

Overview
Twenty-two percent of all construction related deaths are caused by struck-by, hit-by accidents. In October of 1994, OSHA began its Focused Inspections Initiative for construction sites. A focused inspection concentrates on the four leading causes of death at construction sites. Struck-by, hit-by hazards are one of these four, along with falls from elevations, caught in/between hazards, and electrical hazards.

For Discussion...
The example below is followed by some rules of struck-by, hit-by hazards for our review.

Several employees were dismantling grain spouts at a grain elevator. A ten-foot section of a spout weighing 600 pounds was being pulled through a vent hole by a winch. As the spout was being pulled through the opening to the outside, the spout became wedged. A number of the employees began using pry bars to free a collar which was under tension. The spout suddenly popped out of the vent striking and killing an employee who was standing beside the spout.

Use your personal protective equipment. Employees who work in areas where there is possible danger of head injury from impact, of falling of flying objects, or from electrical shock and burns, must be protected by protective helmets, or hard hats, as we commonly refer to them.

Where and when employees are required to work or pass under a scaffold, the scaffold must be provided with a screen between the toeboard and guardrail.

Overhead protection must be provided for workers on a scaffold exposed to overhead hazards.

Fall protection — protection from falling objects. Toeboards, when used as falling object protection, must be erected along the edge of the overhead walking/working surface for a distance sufficient to protect workers below. Materials piled, grouped, or stacked near a roof edge must be stable and self-supporting.

Cranes, derricks, hoists, elevators, and conveyors. Accessible areas within the swing radius of the rear of the rotating superstructure of a crane, must be barricaded to prevent you from being struck or crushed by the crane.

All employees must stay clear of loads about to be lifted and of suspended loads.
As for excavations, you must not be permitted underneath loads handled by lifting or digging equipment. You must be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
You also must be protected from excavated material or other material and equipment that could pose a hazard by falling into excavations.
Survey your own job sites to determine the conditions that fall into the “struck-by, hit-by” category, and take protective and corrective action to prevent injuries and possible accidents.

Questions
1. What are the four leading hazards that cause deaths on the construction sites?
2. Name some work areas that require you to wear personal protection.
3. When workers are walking below, where does the protective screening belong on a scaffold?
4. What are the hazards on an excavation job site? Around working cranes or hoists on the job site?
SUN EXPOSURE—BE AWARE

Overview
As nice as it can be, the New Mexico sun can do major damage. From sunburn and skin cancer to cataracts, the rays of the sun are damaging not only during summer months (especially between 10 a.m. and 2 p.m.), but sunburns can occur even during a cloudy day in the other seasons, and at other times of the day.

Although OSHA does not require specific training on sun exposure, it does require training to recognize and avoid unsafe conditions at work sites and to understand the regulations applicable to the work environment. They also expect you to eliminate or control the hazards.

For Discussion...
Three major areas of concern should be reviewed as possible sun exposure dangers to be aware of:
1. Melanoma symptoms (skin cancer).
2. Eye Cataracts.
3. Sunburn

Melanoma, or skin cancer, is developed in the pigment cells of the skin. It may spread to other parts of the body. In men, melanoma occurs most often in the area between the shoulders and the hips, the head, and the neck. In women, melanoma is often found on the arms and lower legs. In any case, it is found most often in people who have fair skin, but people with dark skin can develop melanoma on the palms of the hands and the soles of the feet.

Ultraviolet radiation from the sun is a risk factor that increases the chance of getting melanoma. You can reduce your risk by avoiding sunlight or limiting sun exposure between the hours of 10 a.m. and 2 p.m. You should try to gradually build up exposure to sunlight, especially here in New Mexico. Wear a hat when you can, and although the thought of it might make you cringe, long sleeves protect you from the sun’s harsh rays! And don’t forget the sunscreen!

The earlier melanoma is detected, the better your chances are for a full recovery; so check your skin on a regular basis for any new growths or other changes like color and sizes and shapes of moles. See your doctor right away if you detect any areas that look suspicious. For more information, contact the Cancer Information Service at 1-800-4-CANCER.

Cataracts. This eye condition is when the lens of the eye fogs up to a point that no matter how the eye tries to focus, it can’t see through the foggy area. A main factor here in developing cataracts is age, but exposure to ultraviolet radiation from the sun is also a concern. The use of eye drops helps, and avoiding glare and wearing proper prescription glasses can help as well, but usually the most effective treatment is surgery.

Sunburn. A person from New Mexico does not have to be told about the dangers of sunburn…you would think. Prolonged exposures to the ultraviolet rays from our desert sun will produce severe sunburn. The symptoms will be obvious: red, sensitive inflamed skin, and eventually blisters. In an effort to relieve the pain, soak sunburns in cold water, pat the area dry and apply ointment. Then cover up. Get medical treatment for severe sunburn.

Reminder: The only way to prevent sunburn is to avoid sun exposure. You can accomplish this by covering up with hats, long sleeves, and, you guessed it — don’t forget the sunscreen!

Questions
1. Why should sun exposure be considered a matter of concern to construction workers?
2. How often have you suffered severe sunburn after working outside for ‘only a little while’?
3. How can sunburn risk be reduced or eliminated?
4. Do you wear safety sunglasses when working outdoors?
TRENCHING

Overview
Trenching operations are common to many types of construction and maintenance projects, and although inherently dangerous, the hazards of trench cave-ins are preventable. Yet every year there are an estimated 75 to 200 deaths and more than 1,000 lost work days from trenching accidents. A few simple precautions, when observed and implemented, can serve to take most of the risk out of trench construction.

For Discussion...
• Do you know who your job site trenching competent person is?
• Does the competent person inspect all trenches before workers are allowed in the trench, and frequently during work, after rainstorms or other hazard increasing occurrences?
• In soils other than solid rock, shale or cemented sand and gravel, is the trench shored and/or braced, or benched if over five feet in depth?
• Regardless of the length of time it will be open, is the trench shored and braced and are employees protected from cave-ins?
• Are all surface hazards and excavated materials placed a minimum of two feet back from the edge of trench?
• Are workers in the trench working in the area of operation of any excavating machine?
• Are all workers wearing hard hats in the trenches?
• In trenches over four feet in depth are ladders provided so as not to require more than 25 feet of lateral travel to reach one?
• Do all workers know where the ladders are and have unobstructed access to them?
• Are all underground utilities located and protected, supported, or removed?
• Are hazardous atmospheres, that exist or could exist, tested for and eliminated prior to entry?
• Is rescue equipment provided where hazardous atmospheres exist or could reasonably be expected to develop during work in the trench?

The above safety actions are your employer’s responsibilities. Report any discrepancies to your supervisor if any of these is not correct.
Overview
In construction, falls are the leading cause of worker fatalities. Each year between 150 and 200 workers die and more than 100,000 are injured as a result of falls at construction sites. Contractors such as roofers, carpenters, and structural steel erectors account for half of the fatal falls. About 40% of the serious injuries in the building trades are due to falls from one level to another.

For Discussion...
Proper and adequate protection of wall and floor openings is one way of preventing these falls. This protection is a responsibility of all the trades. Make sure that all wall and floor openings are properly guarded, either by guardrails or coverings. If you have to remove guardrails to work, put the protection back when you are finished.

Guardrails are required to be placed at 42” and midrails at 21”. Make sure that you understand the applicable rules regarding when wall and floor openings must be guarded, and what are acceptable methods of guarding.

An OSHA rule to remember: Each employee on a walking/working surface with an unprotected side or edge six (6) feet or more above a lower level must be protected from falling by the use of a guardrail, a safety net, or a personal fall arrest system. (1926.501 (b) (1))

This is the second most violated OSHA construction regulation.

Questions
1. Does your job have an competent person on site?
2. Does this person inspect the job site as to the fall hazards present and are appropriate corrective measures taken, before work begins?
3. Is the job site inspected at the beginning of each workday, and as the day proceeds, for new fall hazards?
4. Do you know of any locations on this job where wall or floor opening protection is either lacking or defective?
5. What procedure do the various trades follow on this job for replacing or arranging for replacement of wall and floor opening protection after they have removed it?
WELDING AND CUTTING SAFETY

Overview
For all of those who are involved in welding and cutting operations, there are necessary precautions to be taken to prevent fires, explosions, and personal injuries. Using established safety procedures and resisting the temptation to take short cuts are rules that should always be followed.

For Discussion...
Welding, cutting, and brazing pose unique threats to the health and safety of construction workers simply by the processes and the materials often involved. Not only the welder, but passersby and nearby flammable materials and structures are threatened by welding activities.
Some of the common welding dangers you should be aware of include fumes, gases, radiation, electric shock, fire and explosion, lead poisoning, metal splatter and sparks, noise, and slips, trips and falls. Methods of protection allowed by OSHA to control or eliminate these hazards are below.

Ventilation. Exhaust hoods at the arc, fans, and open spaces all help to reduce the concentration of hazardous fumes, gases, and dusts, and prevent the accumulation of flammable gases, vapors, and dusts that could cause fire. Perform atmospheric tests as needed.

Respirators. When ventilation and fume avoidance don’t give enough protection or when welding creates an oxygen-deficient area, wear a respirator.

Personal protective equipment (PPE). This includes flame-resistant aprons; leggings and high boots; ankle-length safety shoes worn under your pant legs; shoulder cape and skullcap; ear plugs or earmuffs; insulated gloves; safety helmets; goggles; and shields.

Electrical precautions. Do not arc weld when standing on damp surfaces or if you’re in damp clothing. Check your ground, install and operate equipment properly. Do not use defective equipment. Use well-insulated electrode holders and cables. Insulate yourself from both the work and the metal electrode and holder. Do not wrap a welding cable around your body. Wear dry gloves and rubber-soled shoes or boots. Do not use damaged or bare cables and connectors.

Fire protection. Always wear flame-resistant clothing. Have someone be your fire watcher while welding. Keep all combustible material at least 35 feet from the work area or cover them with fire resistant material. Don’t weld in atmospheres containing dangerously reactive or flammable gases, vapors, liquids, or dust. Clean and purge containers which may have held combustible material before applying heat. Get a hot work permit and follow its safety precautions.

Confined space precautions. Evaluate all confined spaces for hazardous atmospheres and all interior surfaces for flammability, combustibility, or toxic fumes that could result from welding processes.

Clothing. Always wear wool, leather, or cotton treated clothing to reduce flammability for gas shielded arc welding. Long sleeves and pants without cuffs or front pockets are recommended to avoid catching sparks. Don’t get too close to the fume or plume and don’t weld on lead-painted surfaces. Explain the importance of handling cylinders properly. Bring up “rocketing” (when a compressed gas cylinder ruptures or is damaged, the cylinder can then act like a rocket and break through concrete walls or travel through open spaces). Review the danger signals to look for like leaking, corrosion and cracks.

Questions
1. What are some of the common welding dangers you should be aware of?
2. Name some of the OSHA approved methods for welding protection.
3. Relate “rocketing” to a possible welding mishap. How could this occur?
WORKER FATIGUE

Overview
Fatigue can be dangerous. It is the condition of being physically or mentally tired or exhausted. It can lead to uncontrolled and involuntary shutdown of the brain. The challenge of just making it through a work shift fighting fatigue is a battle workers deal with more and more today. If you work with machinery, flammable liquids, explosives, hazardous waste, chemicals, electricity, or ladders, or you operate a forklift or other vehicle, the errors caused by fatigue can be critical.

For Discussion...
We do know certain causes of fatigue:
Sleep loss; changes to the body’s natural 24-hour rhythms; night work; heat; illness; exertion; noise; excessive exposure to toxic chemicals; insufficient bright light exposure; poor nutrition; alcohol; caffeine and cigarettes; lack of interest; insufficient exercise.
Ways you can fight fatigue:

• Get eight hours of sleep before starting work and sleep at the same time each day. Rotate shifts clockwise (from day to evening to night).
• Take all your scheduled work breaks.
• Become acclimatized to working in the heat to avoid heat fatigue and drink plenty of fluids, especially water.
• Is fatigue a side effect of exposure to any chemicals you use frequently? Read your chemical labels or your MSDS to find out about possible health effects.
• Use proper personal protective equipment.
• Use earplugs, soft music or a fan to block out noise when trying to sleep during the daytime. Find a quiet, cool, dark location.
• Consult a physician if suffering from sleep disorders and for effects of illness medications.
• Try to stay on a well-balanced diet beginning your day with high protein foods and ending with carbohydrates. Don’t eat great quantities before bedtime.
• Try to avoid alcohol, cigarettes, and caffeine.
• Exercise gives you stamina and helps you to fall asleep later on.

Watch for warning signs of fatigue. Some signs include slowing of job performance and reduced job quality, poor memory and trouble solving problems, bad decisions and making errors, and near misses and close calls.
Fatigue may have played a role in some the world’s major accidents in recent years: The Challenger Shuttle Disaster, the Three Mile Island Nuclear Power Plant Accident, and the Exxon Valdez Oil Spill.
Report any unusual behavior on the part of fellow employees to your supervisor. You may be doing that person a favor in the long run — you may prevent an accident that involves many innocent workers.

Questions
1. Is fatigue only physical tiredness? Why or why not?
2. What are some of the signs of fatigue?
3. Name some causes of fatigue?
4. What are some ways to combat fatigue?
THE WRITTEN HAZARD COMMUNICATION PROGRAM

Overview
To comply with OSHA regulations, your company is required to write a plan that describes how it will implement its hazard communication program. This involves chemical hazard determination, chemical labeling, material safety data sheets (MSDS), non-routine tasks, contractors, and training.

For Discussion...
The written plan must be available to you at any time and your employer must tell you where you may find a copy of the plan. When reading the plan, you can determine what chemicals are present at your work-site and other information regarding hazard communication on chemicals under the following categories:

Labeling. What labeling system is being used at your site; who is responsible for labeling of containers; alternatives to labeling of containers, if any; and how the company reviews and updates label information if and when necessary.

MSDS. How MSDS are to be maintained on the job site; how employees access MSDS in their work area during the work shift; the procedures to follow when a MSDS is not received at the time of the first shipment; and, alternatives to having actual data sheets at the job site if required.

Training. Who is responsible for conducting the training and elements of the training and how the training will be accomplished (use of videos, classroom instruction, etc.). The procedure for training new employees at the time of their initial assignment to work with a hazardous chemical, and when a new hazard is introduced into the workplace.

Non-routine tasks. The methods that the company will use to inform you of the hazards of non-routine tasks.

Informing employers of other workers. The methods your company will use to inform the employers of other workers on your site, such as contract workers, of any precautionary measures that they must take to protect themselves, of labeling systems used, and of access to MSDS for hazardous chemicals to which they may be exposed.

Questions
1. Does your company have a written HazCom plan?
2. Why is it necessary to have a written plan?
3. What are the five components of a written HazCom plan?
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