



Safety Training Topics

December 2021

Ceiling and Overhead Tray Work

Unsafe Acts

Falling Objects

Cold Weather Safety

SAFETY TRAINING TOPIC

Ceiling and Overhead Tray Work

AVOIDING ELECTROCUTION HAZARDS

Overhead areas frequently contain energized wiring. If you are doing a wire pull or running raceway, observe the location of existing wiring and adapt as necessary.

Look for obvious NEC violations in existing installations. For example, if you see SO cord supplying power to recessed fixtures, you can suspect the installer made other violations. Stop work and inform your foreman, immediately. There may be contract issues, in addition to your personal safety issues, to resolve before work can resume.

Use lockout/tagout procedures, even if you are just installing light fixtures.

Communicate clearly with others on the job. Tools for this purpose include end of day notes, labels on wiring, and conversations. Keep others, especially your foreman, informed of what you are doing.

AVOIDING FALLING HAZARDS

Never stand on the top step of a ladder, or on the step below that one.

Use the right size ladder for the job. Using the wrong ladder "just for a minute" can mean a lifetime of paralysis. Tie-off extension ladders.

If working on scaffolding, check the inspection tag before use. Or, if you are qualified to erect scaffolding, inspect it before use.

Wear the proper fall restraints, if there is a place on which to tie off. In many cases, there may not be a suitable anchor within reach. You will then need to take a more aggressive approach in other fall protection methods.

You are going to drop things. That's a given. Rope off the area if necessary. To reduce the added falling hazards of climbing up and down, bring extra items with you. At the least, have some extra connectors, mounting hardware, and screw- drivers.

Keep wires bundled and neat. A bird's nest of wires can cause entanglement, entrapment, falling, hanging, and other undesirable consequences.

If someone on the ground wants to talk with you, don't try to keep working while dealing with that distraction at the same time.

Look where you place your feet, not just ahead. In one factory, five people fell on five different occasions-through the same hole. None of them saw it, and the company refused to address the issue. One person broke his teeth and all four limbs in the fall.

Use a three-point contact when climbing and descending ladders-one hand and two feet or two hands and one foot.

AVOIDING SHOULDER INJURIES

Shoulder injuries are common on overhead work, because the work often places high demand on the stabilizer muscles of the shoulders-muscles that aren't prepared for that load.

Many people think a rotator cuff injury or shoulder dislocation happens because of strain. That is not true. The cause is disproportionate shoulder development.

Your shoulder sits in a girdle of three muscle bundles: front deltoid, lateral deltoid, and rear deltoid. In most people, the rear deltoid is far too underdeveloped compared to the rest of the shoulder and the result is an unstable joint.

You develop the front and lateral deltoids by lifting things overhead.

You develop the rear deltoid by lifting things up and back-think of picking up a suitcase and pulling your shoulders back. Or rowing.

Many workers in certain trades have very solid rear deltoids because of the work they do. Many ironworkers, for example, lift rebar off the ground and toward their bodies. Electricians do the same thing with raceway. Just make sure you don't neglect this muscle. *Tip: if you have rounded or stooped shoulders, you probably have a shoulder accident waiting to happen.*

AVOIDING NECK FATIGUE

Working overhead often produces neck strain, because people look up while working. To avoid this, raise yourself to the level of work as much as possible, so you are looking straight at the work or down at the work.

If your neck feels tired, stop what you are doing for a moment. Rotate your neck gently through its full range of rotation and then back again. If you do this before your neck feels tired, you can greatly extend how long you can work without neck fatigue.

REVIEW AND DISCUSSION

- Why should you look for obvious NEG violations in existing installations?
- Why should you communicate with others on the job, and what are some ways to do this? What kinds of things should you communicate?
- What are some issues involved in using ladders and scaffolding?
- How should you prepare for the fact you are going to drop things?
- Why should you keep wiring bundled and neat?
- If you are working overhead and someone below you wants to talk with you, what should you do?
- Why do you need to look where you are placing your feet, rather than just looking where you are going?
- What causes rotator cuff injuries and shoulder dislocations?
- How can you correct the cause of rotator cuff injuries and shoulder dislocations?
- How can you reduce or eliminate neck strain?

SAFETY TRAINING TOPIC

Unsafe Acts

KEY CONCEPTS

Groups that focus on eliminating unsafe acts consistently have better safety records than groups that focus on eliminating unsafe conditions.

Even in the safest of conditions, an unsafe act can lead to tragedy.

Even in situations where unsafe conditions exist, workers who approach their tasks with the goal of eliminating unsafe acts usually remain safe.

You cannot control your environment or others around you, but you can control your own actions.

Some of your actions may involve stopping work until unsafe conditions are corrected, or asking others to stop their work to consider what unsafe act or acts they are engaging in and if they can think of a safer approach.

Understand that taking a safety shortcut to "save time" is not what management wants. You do not save time or money when an injury occurs.

If you are a qualified employee who is properly doing the work you are trained to do, it is not your fault if the work isn't meeting someone's schedule. Don't risk your safety in the mistaken idea your job depends on taking such a risk or that you will be rewarded for doing so.

You can save time by working smarter. You risk losing enormous amounts of time, or even your life, by working foolishly.

EXAMPLES OF UNSAFE ACTS

- Arc welding with no shields.
- Not wearing safety glasses.
- Stringing a portable cord loosely across a walkway.
- Standing on the top rung of a stepladder.

WHEN ENTERING THE WORK AREA

- Stop.
- Look for unsafe conditions or unsafe acts in progress.
- Smell for fumes, vapors, or smoke.
- Listen for alarms. Also, listen for leaks-especially if there is process steam-or mechanical sounds that indicate danger.

REPLACING UNSAFE ACTS WITH SAFE WORK PRACTICES

Look at the situation. What tools, materials, equipment, procedures, assistance, and PPE are appropriate for doing the job?

For PPE, think in terms of zones. Systematically assess the danger to each body zone so you get the right PPE: head, eyes, ears, nose/mouth/lungs, torso, arms, hands, legs, and feet.

Ensure the tools and equipment you use are serviceable.

Ask "what if" questions. What if I crawl in there and pass out from a gas? What if I step up there and slip? What if that part is energized?

Think through the job. What are the possible dangers? What steps can eliminate or reduce those dangers?

Look for what can change. Will gravel under the ladder allow it to shift? Can someone else energize this circuit if I don't lock it out? The answer to both questions is yes.

Look for typical hazards by type. For example, falling hazards: is there a danger of slipping, falling, or objects falling onto you?

Look for dumb things you might do, and take precautionary steps. For example, "If I'm working in that panel, I might forget and lean against that exposed bus bar, so I should cover it with a rubber blanket."

REVIEW AND DISCUSSION

- What is the number one cause of worker injury?
- What is misleading about safe conditions?
- What are some actions you may take in response to unsafe conditions or the unsafe acts of others?
- Does management want you to endanger yourself if doing so might mean the difference between timely completion and late completion of a job? Why do you think this is true or untrue?
- If you are a qualified employee doing your job properly, what does that mean in regard to whether you are working fast enough?
- What is the difference between working smarter and working foolishly?
- What are some examples of unsafe acts, other than those already mentioned?
- What should you do when entering a work area?
- How should you assess the safety requirements for a job?
- What is the significance of asking "what if" questions, and how might you apply this concept to a job where you are replacing a 75 KVA dry-type transformer?

SAFETY TRAINING TOPIC

Falling Objects

TO PREVENT INJURING SOMEONE

Rope off areas under elevated platforms, whenever practical. Note that a yellow barrier means "general caution," while a red barrier means "do not enter."

Ensure toeboards on scaffolding and lifts are sufficient to prevent objects from rolling off.

Tie off large tools, so if you drop them they won't bounce off the platform and land on someone below.

If you are in a roped-in area, momentarily stop work when someone alerts you he or she is entering. Resume when danger to that person has passed.

Observe good housekeeping rules on work platforms. Keep them free of debris and free of tools and materials not needed for the job at hand.

Keep tools in a bucket or other high-sided container, so these are less likely to fall off the platform or be kicked off. Make sure the container has a low center of gravity. You may need to place a large fitting or two in the bottom to help ensure this. It also helps to place tools in that container in a "handle up" orientation.

Don't make sudden foot movements when working overhead, to reduce the likelihood of kicking something over.

Never throw a tool or other object to another person. If that person doesn't catch what you throw, where will that object go?

If you are working on grating above another work area or traffic way, place plywood and plastic down to prevent a dropped object from falling onto people in the level(s) below.

Consider using netting around exposed perimeters.

TO PREVENT BEING INJURED

Wear your hard hat as soon as you enter the job site. Objects can fall on you while you are walking through a construction area, even if your shift hasn't started. Remember, objects can fall regardless of the time.

Give roped-off areas a wide berth unless your job requires entry. The rope is someone's estimate of the safety boundary, as well as a signal that danger is present. Danger may extend beyond the boundary.

Before entering a roped-off area, make contact with people working in that area - alert them that you are entering the area. You may need to enter the area as part of the team, but don't assume the falling objects know this.

If you are working on an intermediary platform, such as a scaffold with other scaffolding above it, ensure you have adequate protection above you. Your hard hat alone isn't enough.

Never walk under a crane load. Not only might the load drop, but also the crane operator isn't likely to see you and may become confused if he or she does.

Avoid walking under an opening in the floor above you.

Use caution before entering through a passageway where overhead work is being performed.

DEMONSTRATION

Begin this demonstration by pointing out that jars and bottles are, contrary to what's in the movies, harder than the human head. Place a glass object in a paper bag. The bag keeps broken glass from flying. If you are using glass panes, place the panes on 2x4s sitting in a cardboard box. The box eliminates glass injury and collects fragments.

Start with the smallest object you have collected. Drop the object from ten feet above, or toss it in a smooth arc from the ground. If it breaks the glass, stop dropping objects.

Start with the lightest object that broke the glass. Pass it around, and ask people if they handle objects of similar weight very often. Then, pass the other objects around, in order of increasing heaviness. Once all the objects are passed out, ask that the passing be stopped for a few minutes. Ask someone holding one of the heavier objects to tell the group if that object would be dangerous if it fell on someone. Then, ask people to volunteer how they might prevent such an object from falling on someone.

Be sure to dispose of the broken glass properly.

REVIEW AND DISCUSSION

- Why should you rope off areas under a raised platform?
- Where are the materials for doing that on this job, and how do you use them?
- When should you use yellow barrier vs. red barrier?
- What if you need to enter a roped-off area? Even if you are on the crew, what should you do?
- What if you are in a roped-off area and someone enters? What if that person fails to signal you, first?
- Why are toeboards important, and what should you do if they are inadequate?
- Where should you keep tools while on a platform?
- Is it OK to walk under a crane load, if you wave at the crane operator first? Why or why not?
- What are some common dropping hazards on this job site?
- When should you wear your hard hat, and why?

SAFETY TRAINING TOPIC

Cold Weather Safety

DANGERS OF COLD

Frostbite can easily result in the loss of fingers, toes, ear, and even your nose.

Excessive cold can cause severe fatigue or drowsiness. When you are fatigued or drowsy, you are at a much higher risk of doing things that are dangerous or even lethal to you and to others.

Excessive cold can cause light-headedness or euphoria, which would leave you in a state of impaired judgment.

RISK FACTORS

Insufficient rest increases your likelihood of injury in general, and your likelihood of cold-induced injuries due to impaired judgment. A person who is 20% sleep deficient is as mentally impaired as a well-rested person who is legally drunk.

Smoking greatly impairs circulation. Smokers have a much higher risk of frostbite than other people do.

Alcohol thins the blood, which is exactly the opposite of what the body needs in cold weather.

Many drugs have properties that impair cold weather endurance, and most illegal drugs are not compatible with cold weather at all. If in doubt about a particular drug, ask a pharmacist.

People with diabetes, heart problems, thyroid problems, and any of several other conditions have reduced tolerance for cold. If you have a medical condition, ask your doctor about cautions you specifically should take.

PROTECTION

Wear your hardhat insulator. This is the easiest way to protect your ears. Also, since 30% of your body heat escapes through your head, this helps you stay warm, period.

Wear the appropriate thermal clothing: socks, boots, gloves, and underwear. Your ears, feet, and hands are most at risk, so afford them the most protection.

Stay hydrated. Soft drinks are loaded with sodium; drink water instead.

Keep a full set of dry clothes on hand, in case you get drenched. At the very least keep a spare set of gloves and socks. Make that two pairs, if you want to be prepared for a coworker in need.

Use the buddy system. You and your buddy should watch each other's skin, eyes, and general demeanor for signs that the other has reached a cold weather tolerance limit and it's time for a break.

If working outdoors, park vehicles or erect barriers to reduce wind.

Before going on an outdoor job on a cold day, bring a shelter and an outdoor heater.

Use tools that have thermal insulation or at least choose tools that have some sort of covering. For example, use a pair of pliers with plastic-dipped grips rather than unadorned steel ones.

Limit exposure times. For example, work 15 minutes, then warm up for 10 in the truck. Then work 15 more and so on. In severe weather, you will probably finish the job faster this way than bumbling through with stiff fingers and fatigue.

SIGNS OF TROUBLE

Respect your limits. If you feel chilled, fatigued, irritable, or lightheaded, you are probably too cold.

If your hands or feet tingle, frostbite is probably on the way.

If your hands or feet feel hard or have no feeling, assume frostbite and seek the appropriate treatment immediately.

COPING

If you must wait for help with frozen hands, stick your hands in your armpits.

If you must wait for help with frozen feet, walk. This will at least get some blood flowing into your feet. Do not sit down or stand still.

REVIEW AND DISCUSSION

- What are some reasons cold weather is a serious, dangerous concern?
- Why is insufficient rest a risk factor?
- Why are smoking and alcohol risk factors?
- Why should you wear your hardhat insulator in cold weather?
- What are some articles of thermal clothing you should wear?
- How does the buddy system work?
- What does it mean to limit exposure times, and how does this work?
- How do you know when frostbite is probably on the way?
- If your hands or feet feel numb or hard, or you feel nothing at all in them, what should you do?
- What should you do if you must wait for help with frozen hands or feet?