

**Toolbox Talk**  
**Machine Safety – Before Operations**

**Pre-Start Procedures**

- Read and understand the Operation and Maintenance Manual
- Always perform a pre-shift walk around inspection
- Clear all personnel and obstacles from the machine path.
- Turn battery disconnect switch to "ON."
- Clean and secure all windows and doors.
- Adjust mirrors for optimum vision.
- Adjust seat for pedal operation and operator's height and weight.
- Inspect and fasten seatbelt or harness.
- Sound horn prior to start-up.
- Start engine from operator's compartment only.

**After Starting Machine**

- Allow engine to warm up at low idle.
- Conduct monitoring system test per Operation and Maintenance Manual (if applicable).
- Check panel indicator lights and gauges frequently.
- Check transmission oil level (if applicable).
- Perform brake checks (per Operation and Maintenance Manual).
- Preparing to Move
- Sound horn according to site regulations (allowing three to five seconds after to enable anyone to get out of the way).
- Raise all lowered implements
- Push on the service brake pedal and disengage parking brake.
- Unlock transmission and move control lever to desired gear.
- Release the service brake pedal

**Getting on the Machine**

- Always use 3-points of contact when entering machines.
- If you have items to bring in the cab with you, such as a lunchbox or radio, set them on the machines' entry platform before climbing on the machine, and secure them once inside the cab.
- Do not secure the items in a place that blocks ingress or egress.
- If the machine is too high to safely reach the entry platform, tie your items to a rope then hoist them up once you are safely on the entry platform.
- Never throw items onto the machine or into the cab from the ground.
- Avoid contact with machine controls when entering or exiting the cab.
- Always be sure the machine is off and all implements are grounded before entering a machine.



## **Toolbox Talk Trench Boxes**

Trench boxes/shields are the most common form of trench protection. When used properly they provide a safe area to work during trenching operations. Training your employees on proper handling and assembly is crucial to being safe. Here are some useful tips on trench boxes/shields.

### **Sizing A Trench Shield**

- Know the job – Use a trench shield that is large enough for the
- job but light enough to be handled by the equipment you are
- using.
- Know how deep the cut is going to be?
- What type of soil are you digging in and what is the condition?
- What is the outside pipe diameter?
- What is the length of the pipe you are using? – The box should be
- 2 to 4 feet longer than a joint of pipe.
- What is the size of Excavator and what is the lift capacity? –
- Minimum capacity should be 1.5 times the shield weight at 20
- foot radius.

### **Handling and Assembling**

- Determine the weight of the load and be sure the equipment
- being used to handle the shield or components is capable
- If using a crane, be sure the rigging is properly sized and in good
- condition before lifting anything
- Always assemble the shield per manufacturer's directions
- Always use the components and spreader pins that are supplied
- by the manufacturer
- Never substitute rebar, bolts, pipe, or other materials in place of
- the spreader pins
- Always install the keepers
- If using a tag line, be sure the line is long enough to keep the
- worker a safe distance from the shield

### **Trench Shield Tips**

- Never lift a shield by the spreaders
- Always install all the spreaders and NEVER remove spreaders from
- a shield
- Never substitute any material for the spreader pins
- Always use stacking pins when stacking shields, chaining



## **Toolbox Talk**

### **Fatigue Avoidance**

Fatigue is one of the leading causes of injury at the workplace and at home. Operating mobile equipment while fatigued can be fatal to you and others and is as dangerous as operating while impaired due to drugs and alcohol. When we become increasingly fatigued, our ability to plan ahead also diminishes. As our fatigue increases:

- Our risk for injury increases
- Our decision making process and reaction time slow down
- Our ability to process information and handle multiple tasks decreases

#### **Recognizing Fatigue**

It is important to be able to recognize the early signs of fatigue in ourselves as well as others so that we can take appropriate steps to mitigate the effects.

- Our eyes feel heavy and it becomes hard to focus
- Constant yawning
- Wandering disconnected thoughts
- Head nodding and muscles relaxing

#### **Tips for Staying Alert:**

Listed below are tips and pointers to help get you through challenging times due to fatigue both on and off the job:

- Periodically rotate jobs – keep it fresh. When possible, set up a job rotation schedule if the work is mundane and not stimulating.
- Time the use of coffee and caffeinated drinks for when you need it.
- Improve general wellness. This includes a balanced diet, plenty of fluids, regular exercise and managing stress. Prioritize sleep, especially on work days. You should target 7 hours and use naps to fill in the gaps when your sleep is reduced.

#### **Questions to Generate Discussion:**

- –What would you do if you observed a fellow employee fatigued or sleepy on the job?
- What are some things you do to minimize fatigue in your daily life? What tips can you pass along to fellow employees?



## **Toolbox Talk**

### **Cost of an Accident**

Every accident has a cost associated with it and that is why it is important to stress safety on and off the job. The costs that are involved are both direct and indirect; however the employee who was injured will be the one who pays the most. The costs associated with an accident are always more than just dollars and cents.

#### **Direct Costs for the Employee**

- Lost wages and overtime
- Doctor and hospital bills

#### **Indirect Costs for the Employee**

- Physical pain and suffering
- Mental anguish
- Lost time with family and friends
- Loss of productivity on and off the job
- Relationship strain

#### **Direct Costs for the Employer**

- Medical bills and workers' compensation claims
- Legal costs
- Insurance costs
- Property damage costs
- Wages being paid for a sideline worker

#### **Indirect Costs for the Employer**

- Loss of a valued employee
- Loss of productivity
- Replacing the lost worker (e.g. hiring and training costs)
- Damage to equipment or tools
- Time it takes to handle the injury claim
- Decrease in employee morale over the loss of an employee

Safety is, without doubt, the most crucial investment we can make, and the question is not what it costs us, but what it saves.





## **Toolbox Talk**

### **Chain and Sling Safety Tips**

Chains, slings and hooks are used to connect the lifting device (crane, hoist or forklift) and the load itself.

A substandard or faulty chain or sling can injure or kill a person instantly. It is critical that chains and slings conform to specifications at all times.

#### **Inspection Checkpoints and Safety Tips**

- NEVER stand directly underneath a load – You cannot always trust that the sling or chain will support the load.
- Never modify or improperly use chains, slings or hooks; use them only for their intended purpose.
- Keep a 20 foot distance from the load if using a tag line.
- Always fasten the sling or chain to a rigid, fixed point on the load. In some cases, temporary eye-hooks may be fastened to the load.
- While hoisting and carrying the load, always try to ensure it is centered. This will help minimize an awkward center of gravity or shift of the load which could increase strain on the chain or sling.
- Always ensure hooks have a clasp to avoid inadvertent slipping off the hook.
- Inspect the condition of the chains and slings for link damage, cracking, separation, fraying, etc. Some slings are designed so that any exposed red material means the sling should be replaced.
- Understand the rated load for the chain, sling or hook. Hooks are usually stamped accordingly. If you cannot read the rated load tag on a sling, take the sling out of service.
- Make sure there is a routine inspection checklist or preventive maintenance program established for the chains and slings in your work area.

#### **Questions to Generate Discussion:**

What are the maximum loads carried by slings and chains in your work area?

Are workers taught safe practices, and are those practices used?

What are the main reasons chains, slings and hooks get damaged in your work area? What can be done to reduce these problems?



## **Toolbox Talk**

### **Building a Safety Culture**

Safety Culture can be thought of as the values, beliefs, perceptions and normal behaviors that are shared by employees.

Whether it is intentional or not, every organization has a safety culture. The question is whether the safety culture is what we want it to be and what can we do to change it.

In a positive safety culture:

- Communication is open at all levels of the organization and feedback is seen as vital to improving safety processes.
- Individuals at all levels focus on what can be done to prevent injuries or illnesses.
- There is a commitment to safety regardless of all other concerns in the business.
- People and their well-being are valued. The focus is on protecting people, not the bottom line
- All personnel, especially senior managers, demonstrate their commitment to safety by following all safety processes and procedures, just as they instruct their employees to do.

In a negative safety culture:

- Communication is not open at all levels; employees do not openly communicate with upper management.
- Management may not follow safety rules (for example, not wearing hearing protection or other PPE as they are supposed to).
- Production demands require less focus on safety.
- Management's concern is not for the well-being of the employees, but rather for a good safety record.

#### **Questions to Generate Discussion**

What kind of safety culture do we have?

What can our management team do to improve our safety culture?

What can you do, individually, to improve our safety culture?

Why is communication so important in establishing a safety culture?

Do you feel you could approach a peer to discuss something that they could do more safely? Why or why not?

If you could change one thing about our safety culture, what would it be?



## **Toolbox Talk**

### **A Healthy Jobsite**

A healthy worksite should be clean and safe and promote the overall well-being of the employees and visitors. It reduces the exposure to job hazards and communicable diseases that can lead to lost time or restricted duty, increased expenses and lost productivity. Healthy worksites also promote employee morale and reduce employee turnover.

Characteristics of a Healthy Worksite:

- Provide clean bathrooms, wash stations, eating areas and running water
- Make sure there are proper toiletries and cleaning supplies available.
- Hands-free plumbing and waste receptacles are best.
- Make the work environment as visual as possible: Eliminate slip, trip and fall hazards.
- Use signs, colors and shapes to denote locations, aisle ways and means of egress.
- Ensure there is good ventilation in work areas proportional to the risk involved with the work
- Establish and adhere to all Personal Protective Equipment requirements.
- Ensure blood-borne pathogen training has been provided and response kits are available.
- Limit the use of smoking and oral tobacco to designated areas only. ]
- Establish a pre-shift stretching routine to keep muscles loose. ]
- Make sure Safety Data Sheets are available and accessible to all employees.
- Ensure spill response and fire suppression equipment is available.
- Provide Emergency First Responders and have at least one designated for each work area.
- Set high cleanliness and housekeeping standards: Do not let dirt and debris accumulate.
- Keep waste receptacles from over-filling.
- Designate the type of waste that should go into each waste receptacle, and establish good recycling procedures.
- Implement a comprehensive auditing program that assesses compliance to expectations; most Healthy Worksites have an effective auditing process.

Questions to Generate Discussion: - What are some other characteristics of a healthy worksite? Can you identify any examples in your work area?



## Toolbox Talk

### Struck-By

When construction equipment is rumbling around a project, you've got to watch your step. If both construction workers and equipment operators keep their eyes open, no one's going to get hurt. Following are ways to help you maintain a healthy respect for cranes, dozers, excavators and trucks:

When construction equipment is rumbling around a project, you've got to watch your step. If both construction workers and equipment operators keep their eyes open, no one's going to get hurt.

Following are ways to help you maintain a healthy respect for cranes, dozers, excavators and trucks:

- Never take for granted that equipment operators see you.
- Never depend on hearing a horn or other warning signals; they might be lost in the general noise around a project. Never use cell phones or headphones that may cause a distraction or limit your ability to hear warning signals.
- Equipment shouldn't be backed up without someone to check the blind spots and give signals; nevertheless, keep in the clear whenever equipment is traveling backwards, as that is when most equipment accidents happen.
- Swinging counterweights often create a dangerous pinch-point. The swing radius of equipment must be barricaded to prevent exposure.
- Never hitch a ride on the running board - it's fatally easy to fall under moving equipment.
- No riding on top of loaded trucks; the load might shift, and you might not have enough overhead clearance in a tight spot.
- Never walk alongside moving equipment. Keep in the clear in case the unit suddenly turns your way, or slides, or the load shifts.
- Stay out from under loads on cranes or hoists. Use established walkways and avoid shortcuts.
- Maintain a minimum 10' clearance between equipment and overhead power lines. If the boom of a unit ever hits a power line, keep away from the frame of the unit and the load cables.
- Don't approach the cab of any equipment when the boom is raised. Wait for the operator to lower the load.
- Never lubricate, clean or work on a machine that's in operation. Stop the machine and lock it out. Never remove a guard.
- Construction equipment is husky, heavy, and extremely unhealthy to tangle with. Always assume that the operator doesn't see you and doesn't know you're around.

Always assume that it's up to **you** to keep in the clear.

Each year, workers are crushed by equipment, struck by swinging backhoes, run over or pinned between other equipment and walls. That is why it is important for all jobsite personnel to be properly trained on equipment and jobsite safety.





## **Toolbox Talks Preventable Accidents**

These incidents are all true and all could have been prevented.

What could have been done differently in order to prevent these accidents from happening?

At approximately 3:00 p.m. on October 10, 1984, Employees #1 and #2 were refueling a forklift with gasoline from an open 5 gallon plastic bucket. Employee #2 lit a cigarette lighter 10 inches away from the open bucket. The gasoline vapors ignited and Employee #1 dropped the bucket, which still contained 2 gallons of gasoline. Employee #1 was engulfed in flames as he jumped off the forklift, sustaining burns over 60 percent of his body. In a signed statement, Employee #2, age 18, stated that he lit the lighter as a joke, trying to scare Employee #1. The plastic bucket, a completely open container, was not an approved safety can.

Employee #1 was exiting his employer's truck cab (passenger side) when he was struck by a passing garbage truck, causing him to fall to the ground. Employee #1 was run over by the rear wheels of the garbage truck. Employee #1 suffered serious fracture injuries to his right leg and hip. Employee #1 was hospitalized.

On July 19, 2006, Employee #1 was working for a firm that dealt with water, sewer, and utility lines. He was using a jackhammer and shoveling concrete and asphalt outdoors in the direct sunlight with temperatures ranging from 87 to 94 degrees Fahrenheit, when he became disoriented due to the stresses imposed by the heat. He was helped to recuperation, but he became unresponsive. He was taken to a medical center, where he was hospitalized for three days for treatment for heat stroke and related complications.

On September 22, 2008, Employee #1 was kneeling on his left knee while rigging a trench box. The trench box was to be attached to a slip hook on a clevis at the end of an excavator boom that was resting above the employee, on the top edge of the trench box. A coworker, the excavator's operator, was at the machine's controls. Without warning, the boom of the excavator slipped off the trench box, fell, and landed on employee's right foot. Employee was hospitalized.

Employee #1 was using a steel alloy chain sling connected to an overhead hoist to lift a steel plate. The plate became disengaged from the hooks on the chain and fell, crushing Employee #1. He was killed.

On January 29, 2007, an employee was welding inside a bell hole approximately 4 ft long by 3 ft wide by 3 ft deep. While the welding torch was on, he laid it down in order to reposition himself. He accidentally kicked the welding hose, and the welding torch accidentally burned his face. The worker was not able to move because his arms were pinned by his body, which was inside the bell hole. The worker was immediately pulled out by the foreman, who treated the welder's facial burn. The welder was hospitalized for treatment.



## **Toolbox Talks**

### **Four Second Rule**

Perhaps the best tool to come along in industrial construction (at least as far as safety is concerned) is the Field Level Risk Assessment or Job Hazard Analysis. Whatever you call it, this is a tool that makes everyone stop and think about the different risks associated with the task. Crews normally gather and write out the JHA before doing a job. This exercise greatly reduced the number and severity of injuries where this was done.

The same principle of these risk assessments can be done in our shops. Simply take a four-second “reset”. Take four seconds before starting some new familiar task. This act of refocusing has been shown to reduce the probability of an injury incident by more than 90% versus not taking the four seconds. How hard is that? You may have done the task you are about to perform thousands of times before. In your mind, you know that you could do it with your eyes closed. It is usually not the task itself but some small thing you did not anticipate that causes the incident. You did not notice the debris in front of the tool you were going to pick up. You did not notice somebody placed something on the part you were about to pick up. You did not realize how heavy a piece is that you were asked to help carry.

It is easy to imagine the different activities we do every day and how this applies. For example, getting in a forklift and having a quick look around. We change our thinking from where we are going to focusing on the area, road conditions, and other vehicles and so on. This is the “reset” we are talking about.

Believe it or not, four seconds is all it takes. Get in this habit of taking four seconds and you significantly reduce your chance of injury. If you get into the habit of taking chances or simply cruising from job to job, you will eventually be injured.

This four second reset was first instituted on CN Rail. This was part of a strategy to reduce the number of very serious incidents they were having including many amputation injuries. What they found was that their employee knew the rule or procedure to do the job without getting injured but were simply not focused. Even well rested employees were getting caught up in the routine of the day and found themselves daydreaming or thinking about other things. Losing an arm or leg is a very rude awakening.

We highly recommend this four second “reset” as an excellent way to refocus on the job at hand. And we believe that this is one very effective method to prevent injury on and off the job.



## **Toolbox Talks Caught Between**

Each year, workers suffer approximately 125,000 caught or crushed injuries that occur when body parts get caught between two objects or entangled with machinery. These hazards are also referred to as "pinch points". The physical forces applied to a body part caught in a pinch point can vary and cause injuries ranging from bruises, cuts, amputated body parts, and even death.

Here is some training to learn about the caught/crush hazards and pinch points specific to your tasks, tools, and equipment so you can take precautions:

- Dress appropriately for work with pants and sleeves that are not too long or too loose. Shirts should be fitted or tucked in.
- Do not wear any kind of jewelry.
- Tie back long hair and tuck braids and ponytails behind you or into your clothing.
- Wear the appropriate, well-fitting gloves for your job.
- Look for possible pinch points before you start a task.
- Take the time to plan out your actions and decide on the necessary steps to work safely.
- Give your work your full attention
- Don't joke around, daydream, or try to multi-task on the job-most accidents occur when workers are distracted.
- Read and follow warning signs posted on equipment.
- If you value all that your hands can do, THINK before you put them in a hazardous spot.

Machinery can pose a hazard with moving parts, conveyors, rollers and rotating shafts. Never reach into a moving machine. Properly maintain and always use the machine and tool guards provided with your equipment; they act as a barrier between the moving parts and your body. Don't reach around, under or through a guard and always report missing or broken barriers to your supervisor. Turn equipment off and use lockout/tagout procedures before adjusting, clearing a jam, repairing, or servicing a machine.

Vehicles, powered doors, and forklifts can pose a crush hazard unless they have been blocked or tagged out. Never place your body under or between powered equipment unless it is de-energized. Doors, file drawers, and heavy crates can pinch fingers and toes. Take care where you place your fingers. Test the weight before lifting, carrying, and placing boxes; an awkward or heavy load can slip and pinch your hands or feet. Get help or use tools to move large and/or heavy items.

If you have ever slammed your finger in a door, you can appreciate the pain associated with this common type of caught/crush injury. Take the time to learn about the caught/crush hazards in your workplace so you don't learn about the consequences first hand.



## Toolbox Talks

### Crane Safety

#### General info

The following Toolbox Talk applies to all types of cranes, including mobile cranes, overhead or gantry cranes and jib cranes. It is important to understand the characteristics and methods to operate your crane safely. The U.S. Department of Labor cites an average of 82 deaths per year due to crane accidents at construction sites alone. Do not become the next statistic. Review these safety tips prior to operating your crane.

#### Crane Safety Tips:

- Know the rated load limitations of your crane and the weight of the load to be lifted and moved. Do not move the load if the weight is uncertain.
- When calculating the weight of the load, consider internal fluids or objects within the load that could increase the weight.
- Understand the reach and travel limits of the crane before moving the load to avoid extra handling, sudden stops and uncontrolled load swings.
- If required, ensure rigging and cribbing is adequate to support the load. Attach eye-bolts or other latching devices to the loads' strongest structural members.
- Avoid lifting the load from the side to prevent sudden impacts on the crane.
- Ensure the load is in static and not dynamic state. That is, inspect the load for additional forces applied to it other than the vertical upward force of the crane. Unforeseen forces on the load could create a sudden jerk or impact on the crane and introduce more safety hazards or damage.
- Never use the crane to pull or drag the load across the ground or floor. This introduces frictional forces that could exceed the rated crane load capacity.
- When using mobile cranes, ensure it is stable enough to move the load without tipping or overturning. This is one of the most hazardous conditions when using mobile cranes. If required, use stabilizing bars or outriggers to provide the necessary resistance.
- For heavy and awkwardly-shaped loads, use tag lines to help guide the load.
- Always wear the proper PPE before using cranes, including eye protection and steel-toed shoes with metatarsal guards.

#### Questions to Generate Discussion:

- What is the difference between a static and dynamic load? Which load is safer?
- What is the most dangerous safety hazard related to mobile cranes?





## **Toolbox Talks**

### **Heavy Equipment**

The primary sources of injury to operators and other personnel working around heavy equipment are:

- Repairing and servicing equipment in dangerous positions.
- Striking individuals or other vehicles with the equipment, particularly its blade.
- Unexpected violent tipping of the equipment.
- Uncontrolled traffic within or through the work area.
- Unexpected violent shocks or jars to the machine.
- Sudden movement of a power unit while it is being attached to earth moving equipment.
- Limbs of trees or overhead obstructions
- Leaving earth moving or other equipment in dangerous positions while unattended.
- Failure of lifting mechanisms.

General Operating Precautions:

- Machines should be maintained in good working order. All vital parts such as motors, chassis, blades, bladeholders, tracks, drives, hydraulic and pneumatic mechanisms, and transmissions should be thoroughly inspected each day.
- Before starting a job, the operator should be given instructions regarding the work to be done.
- Before using the starting motor, the operator should check to make sure that all operating controls are in the neutral position.
- Machines should be operated at speeds and in a manner consistent with conditions on the particular job.
- At no time should a piece of equipment be left unattended while the motor is running, especially if the machine is on an inclined surface or on loose material.
- If possible, equipment should be driven entirely off the road at night. When any portion of the machine projects into the road, it should be adequately marked with red lights or flares. Red flags should be used in daytime.
- Personnel should stop motors and refrain from smoking during refueling operations.
- The operator should keep deck plates or steps on equipment free from grease, oil, ice and mud. Corded soles shoes are recommended.
- Employees, other than operator, should not ride on equipment.
- Operators should not wear loose clothing, which can get caught in moving parts of equipment.



## Toolbox Talks

### Scissor Lifts & Man Lifts

Manlifts and scissor lifts are two pieces of equipment that many workers can't imagine working without. This equipment, if used correctly, provides quick and safe access to work areas that at one time could only be reached from scaffolding or a crane's manbasket. These lifts, collectively called Aerial Work Platforms, are important tools. But as with any tool, there are right and wrong ways to use them safely.

The most important tip to remember before operating any aerial lift platform, is always read and follow the manufacturer's safety and operation manual! This information must be kept on the rig, and can usually be found in a PVC tube that's tied to the machine's frame or rails.

#### **Safe Operating Procedures for Both Manlifts and Scissor Lifts:**

- Only trained and authorized people should operate the lift. A qualified instructor must make sure that every operator reads and/or understands the equipment's safety and operating instructions. This includes all of the warning decals and labels mounted on the machine.
- Always check for overhead obstructions before driving or elevating the platform.
- Refuel tanks only when the unit is turned off. If battery powered, the batteries should be charged only in a well ventilated area, away from any open flame.
- Prior to each shift a safety inspection should be completed by the operator; this includes both a visual inspection and a function test. If a problem is found, get the lift repaired.
- Elevate the platform only when it is on a firm, level surface. Although many lifts look like a rough terrain piece of equipment, they are not. Their large tires do allow the equipment to access somewhat difficult areas, but once in position they are designed to be out of level only 5° while in operation. This amounts to 10 inches in a 10 foot wheel span.

Scissor lifts are efficient one-direction lifts. They provide a solid surface to work from, but always remember:

- Guardrail, midrails and toeboards must be in place. The toe board can be omitted at the door.
- The platform must be equipped with a mechanical parking brake that will hold the unit securely on any slope it is capable of climbing. The brake should be tested periodically.
- Never use the lift's rails, planks across the rails, or a ladder, to gain additional height.

Unique hazards for manlifts: Manlifts can move in more than a single direction, increasing the risk of mishaps, so it's important to remember the following:

- Whenever working out of a manlift, a full body harness must be worn, and properly attached to the basket. A sudden jolt has thrown people from manlifts, before they could react.
- Always maintain a safe distance from debris piles, drop-offs, floor openings, etc.
- Never drive the manlift when it is elevated above the limit the manufacturer considers safe. Each piece of equipment will state what the maximum extension can be while being driven.
- Used correctly, aerial work platforms can be priceless, timesaving assets. Operate them without regard to their limitations, and this same equipment will put you and those around you, at undue **risk**.



## **Toolbox Talks**

### **Masonry**

#### **Limited Access Zone and Wall Bracing**

When a masonry wall is being constructed, employers must establish a limited access zone prior to the start of construction. The limited access zone must be as follows:

- Equal to the height of the wall to be constructed plus 4 feet, and shall run the entire length of the wall;
- On the side of the wall that will be un-scaffolded;
- Restricted to entry only by employees actively engaged in constructing the wall; and
- Kept in place until the wall is adequately supported to prevent overturning and collapse unless the height of wall is more than 8 feet unsupported; in such case, it must be braced.
- The bracing must remain in place until permanent supporting elements of the structure are in place.
- All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported.
  - The bracing shall remain in place until permanent supporting elements of the structure are in place.
  - Bracing needs to be based on both dimensions and environmental conditions. Provide adequate bracing so if there is a failure of one brace there isn't collapse.

#### **Material Storage**

Designate specific material storage areas on the jobsite and stage materials at storage areas to ease and facilitate the moving and transferring of materials/supplies to the production work area.

- Plan the way materials are to be taken from a pile or stack at the time materials are delivered.
- Secure materials stored in tiers by stacking, racking, blocking or interlocking to prevent them from falling.
- Brick stacks should not be over 7 feet high, when over 4 feet high taper back.
- Masonry stacks over 6 feet high taper back.
- Surplus materials should be returned to the stockpile
- Store flammable materials in closed containers, prohibit smoking in flammable liquid storage areas.
- Keep all solvent waste, oily rags and flammable liquids in fire resistant covered containers until removed.
- Incompatible chemical products (which may cause hazardous reaction if they come in contact) should not be stored together.



## **Toolbox Talks**

### **Concrete Placement**

Do you know how much concrete weighs? A cubic yard (3 feet by 3 feet by 3 feet) weighs 4000 pounds! That's 2 tons, more than twice the weight of the average small car on the road today. Think about that when a concrete truck is placed next to an excavation. All that weight plus the load shift during mixing will cause a super imposed load on the sides of an excavation or trench and could result in a cave-in. Be on guard during any concrete placement.

When pouring concrete be sure that you wear the proper personal protective equipment. Rubber boots are a must to prevent you from getting lime burns on your feet and ankles. If you get wet concrete on your socks change them immediately to prevent concrete burns. Your eyes also need protection. Goggles will provide you with excellent coverage.

Another area that has potential for serious injury is when a concrete chute is raised or lowered at the rear of a concrete truck. Always keep your fingers out of pinch points. One slip can mean the loss of fingers or even a hand. The same thing applies any time an extra chute is added to the truck. Watch where you put your hands and get help to lift the add-on chute.

Pinch points are all around concrete buckets. Never ride a bucket and make sure that no one is working under the load. If the crane or pump truck operator cannot see the pour be sure to use a qualified signal person. When placing concrete with a bucket, know the capacity of the crane, don't overload. A test lift is advisable. Avoid swinging the bucket near power lines. Contact with an energized power line can kill or injure.

When applying curing compound to concrete wear the right personal protective equipment. Chemical additives can cause burns. Check the appropriate MSDS sheet with your supervisor. Also remember that wet concrete conducts electricity. All tools and cords must be grounded, and don't allow metal bull float handles to come in contact with electrical wiring or light bulbs.

**KEEP A SAFE DISTANCE FROM MOVING TRUCKS OR EQUIPMENT, ESPECIALLY WHEN THEY ARE BACKING UP. THE OPERATOR MAY HAVE A LIMITED FIELD OF VISION.**





## Toolbox Talks

### Scaffolding

Most scaffold injuries happen because the scaffold itself is unsafe. Scaffolds are often set up by another contractor, so we don't have as much control over them as we would like. But no matter who sets up the scaffold, don't work on it if you think there's a problem. Report it to a foreman or supervisor. Scaffolds are strictly regulated, and today we'll look at some of the rules for building a safe scaffold and working on it safely. Keep in mind that you should never use unstable objects like stilts, bricks, blocks, or loose tile as a substitute for a scaffold. And some kinds of scaffolds are outlawed-like shore scaffolds, lean-to scaffolds, and jack scaffolds.

OSHA says scaffolds must be built to meet certain standards. Do you know any of the specifications for scaffolds?

- If a scaffold is 10ft or higher, it must have standard guardrails on its open sides and ends.
- If people work or pass below, the scaffold must have toeboards at least 4 in. high to keep tools and debris from falling on them.
- The scaffold must be tied off using wire, synthetic, or fiber rope. Begin tying off as the scaffold is built. Improper tying off is one of the main reasons for scaffold accidents.

Do you know any of the requirements for platforms on a scaffold?

- They must be planked solid, without openings or gaps. (Standard planking is a minimum 10 in.)
- They must be able to support the intended load.
- They must not slope or be slippery.
- If people are working overhead, platforms must be protected from objects falling from above.

Any special rules for rolling scaffolds?

- Always lock or block the wheels before anyone gets on.
- After you move a rolling scaffold, check and adjust it to make sure it's still plumb.
- Always get off before the scaffold is moved, even if only a few feet.
- Don't extend adjusting screws all the way.
- Use horizontal cross bracing to protect against skew.

Is it OK for heavy and light trades to work from the same scaffold?

- Heavy and light trades have different requirements:
  - Light trades may work from heavy trade scaffolds.
  - Heavy trades may not work from light trade scaffolds.

What is the right way to get on and off a scaffold?

- Use a ladder to go up to the working platform and to get down.
- Make sure the ladder is secured to the scaffold.
- Never jump from a scaffold.



## **Toolbox Talks**

### **Excavation Accidents**

These incidents are all true and all could have been prevented.

What could have been done differently in order to prevent these accidents from happening?

On September 22, 2008, Employee #1 was kneeling on his left knee while rigging a trench box. The trench box was to be attached to a slip hook on a clevis at the end of an excavator boom that was resting above the employee, on the top edge of the trench box. A coworker, the excavator's operator, was at the machine's controls. Without warning, the boom of the excavator slipped off the trench box, fell, and landed on employee's right foot. Employee was hospitalized.

On July 23, 2008, Employee #1 was working in a 3 ft deep excavation. He was pulling a water line under the road to replace the existing water line. A coworker was using a back hoe to assist in pulling the pipe through. The motor of the backhoe was running. As the coworker climbed back into the cab, he inadvertently hit the controls for the backhoe bucket. The bucket swung around and struck Employee #1 in the head. Employee #1 suffered a concussion and was hospitalized. The employee was not wearing a hard hat.

At approximately 9:00 a.m. on June 5, 2007, Employee #1 was working in and around a 5.5-ft deep trench in type "C" soil. Employee #1 had not had any training on working in or around trenches, and could not answer any questions about soil types or when trench protection is needed. The trench collapsed, causing Employee #1 to suffer a broken collar bone. Employee #1 was hospitalized.

Employee #1 was working in an excavation while hydro testing a 24-in. gas pipe line. It is believed that Employee #1 slipped on the gas pipe line, hit the valve that releases the air pressure mixed with water causing the bull plug to dislodge and strike Employee #1 in the forehead. There were no witnesses to the accident.

A work crew of 19 employees was hand digging an approximately .25 mile long excavation along the edge of a road. The excavation ranged from 28 in. to 32 in. deep. While digging, Employee #1 struck a gas line using a shovel and pickaxe. This gas line had not been marked and no one knew that it was there. The old gas line was marked and was located about two feet away from the new one that was struck. No one was injured.

At approximately 3:00 p.m. on September 3, 2003, Employee #1 with South Bay Pipeline was working on an underground pipeline installation project in Moreno Valley, CA. While helping to guide an 8-ft by 12-ft side plate of a box trench shield onto 3-ft spreaders that were being positioned by a Hitachi Model EX 200 Excavator, he placed his right forearm and hand under the plate. His forearm became crushed between the bottom of the shield plate and a 4-in. steel spreader. Employee #1 was hospitalized at Loma Linda University Medical Center for surgery to reattach his partially severed arm.



## Toolbox Talks

### Flying Objects

#### The One Eyed Carpenter

A carpenter asked his employer to pay for the damage done to his glass eye which was broken when a nail he had been driving flew up and struck it. When he was asked how he lost the eye in the first place he replied, "Oh, the same way, a flying nail." A dark world awaits this carpenter if the next nail hits his other eye before he decides to use safety glasses. It may be difficult getting used to eye protection, but have you tried getting used to a glass eye?

There are two kinds of foreign particles that can get in your eyes on job sites. The first type is wind-carried material like:

- sawdust
- dirt
- rust, etc.

Although a bother, these aren't as serious as the other type: namely high-speed chips that go flying when a hard material contacts another hard material. Some examples include:

- A jackhammer breaking rock or concrete
- Drilling, scaling, or reaming steel
- Cutting masonry products with a powered saw
- Demolishing walls or ceilings
- Striking a chisel or punch with a hammer
- Using a powder actuated gun into steel or concrete
- Cutting with a portable circular saw
- And don't forget working with molten materials:
- Soldering
- Socketing wire rope end connections

#### Eye Protection Can Be:

- safety glasses
- safety goggles
- face shields
- prescription glasses with safety lenses

Each has a different use depending on whatever conditions exist for your particular job site. It is very important to make sure that your eye wear fits correctly. Remember that proper ventilation and sprays can help reduce fogging.



## **Toolbox Talks**

### **Hazards of Post Tensioned Concrete Slabs**

Post tension slab construction is common in areas with expansive soils. If your location is an area with expansive soils, always assume the slab is post tensioned. Once the concrete is poured and sets, the cables are tensioned. Once tensioned, the cables cannot be de-tensioned. The hazard exists when workers cut into the slab and rupture the tensioned cable. If there is the potential that a slab may be post tensioned, a competent or qualified person needs to identify the cable locations before any slab work begins.

Stucco and bricks may cover cable grout making it difficult to identify post tensioned slabs. If a slab is post tensioned there will be a hole in the foundation or slab that contains a cable end. Always look to see if the cable ends have been mudded over by some form of concrete patch filler. If the wall is load bearing, the footer under the wall is probably post tensioned. Corners typically contain cables. Cables typically run East to West or North to South.

Do NOT cut into a post tensioned slab if there is a chance you will rupture a cable. People have been dismembered and killed when cables are cut and burst out of the concrete.

Questions to start discussion:

- Why should you identify post tensioned slabs?
- How do you identify post tensioned slabs?





## **Toolbox Talks**

### **Dangers of Hidden Openings on the Jobsite**

It has to be a terrible feeling. One moment your feet are on what seems to be a solid surface, the next moment they're in mid-air as you begin a fall to a level far below.

That's how a floor opening fall typically happens. A worker in a plant or at a construction site falls through an opening to a surface below or into industrial machinery on a lower level. Chutes for moving materials, elevator shafts and mine shafts have also taken their toll in similar worker falls.

Openings in floors and roofs are often part of the work environment during construction, renovation and demolition. They must be guarded and securely covered so no one can accidentally step in. Half measures won't do it.

Many have died in incidents such as these:

- A worker cleaning up after a roofing crew picks up a piece of plywood, not realizing it covers an opening, into which he falls.
- A worker passing through a renovation site steps on a too-small covering placed over a hole and not secured. The board breaks or one end tips into the hole. The worker falls down the opening.
- Skylights and other roof features not designed to bear weight also have been the route to death for workers who stepped or climbed on them.

In industrial plants, workers have fallen from catwalks over machinery or process vessels. Holes in the runway, unguarded sides and ends have allowed workers to fall. Tanks with unguarded openings large enough for a worker to fall in have also taken many lives. Unguarded access points to fixed vertical ladders have also been the scene of fatal falls.

There are safety laws requiring certain types of guards around openings including roof openings and floor openings, smoke shafts, vehicle repair pits, loading dock edges and other openings on walking and work surfaces. Prevention of falls into water or another liquid, or into a hazardous substance or object is also regulated.

By law, temporary and emergency floor and wall openings must be guarded by rails and toeboards or a cover.

The floor opening cover must be capable of supporting any load placed on it. It should be secured positively so it cannot be easily removed, and it should be labeled. The cover should go over the entire opening unless guardrails are installed.

Ladderway floor openings and platforms must be guarded by railings and toeboards on all sides except the entrance. The entrance must be arranged so the person cannot walk directly into the opening without encountering a gate or an offset area.

Guards are also required for hatchways and chute openings, skylight openings, pits and trap door openings and manhole floor openings.

Besides guardrails and nets, fall prevention and fall arrest equipment might be required for you to work safely. Learn to use the fall protection equipment and avoid hazards. Don't wait for an opening; do it now.



## **Toolbox Talks**

### **Lessons Learned - PPE**

The prospect of getting into an accident is something no one likes to think about. Time and time again we hear our managers, supervisors or co-workers telling us to be careful, work safely and use personal protective equipment. Yet, do we really listen? We hear the words, but do we really believe we'll be the one who will have an accident?

There are those who take the safety message at work seriously, and those who do not. Safe work procedures have a purpose. Experience tells us that if we do things right, we'll complete our work correctly and safely. When personal protective equipment (PPE) is provided, this is also for good reason. PPE prevents or minimizes injury or illness to the user.

Sometimes accidents happen when you least expect them. The following true stories prove this, along with a reminder that sometimes they do happen to us.

**Lesson #1:** Two mechanics were working on a step van and repairing the rear roll-up door. In order to fix the door, they had to alternately "tension" the large spring that assists the door's upward movement. As they took turns tightening the spring by inserting 3/8 inch metal rods into the spring catches, the front mechanic's rod slipped out from the catch. The rebound motion and force made the rod, still in his hand, fly back and strike the other mechanic in the eye. Obviously, the mechanic who was struck in the eye needed immediate emergency medical attention.

#### **Lesson learned?**

Lack of eye protection + inadequate work procedures = Serious injury.

**Lesson #2:** A construction superintendent was observing project operations when a piece of heavy equipment ran over a piece of concrete with its rear tire. The object became a flying projectile when it "shot out" from under the tire, missed a small stock pile, sailed past a back-hoe and struck the superintendent in the head. Fortunately, the superintendent was wearing his hard hat, or the blow might easily have been fatal.

#### **Lesson Learned?**

Use of proper PPE = Protection from more serious injury or death.

**Lesson #3:** An employee was using a bench grinder to polish a piece of metal on the wire wheel. When he turned to talk to another employee, and took his eyes off his work, the piece of metal he was holding became caught between the wheel and the tool rest. His finger was pulled into the wire wheel which instantly shaved off part of his finger.



## **Toolbox Talks**

### **What's the Point of Safety Meetings?**

Why do we have safety meetings? Safety meetings are an opportunity for management and your safety department to communicate to employees how they can do their jobs safer and better. Topics discussed in safety meetings may be topics that you are familiar with, or topics that you have limited knowledge about.

If the topic is something that you are familiar with, it may be easy to tune-out and not listen to the safety information presented. Do yourself a big favor and listen to the information as if you have never heard before. You may just learn something new, about the newest protective equipment, or a smarter way to do your job. Information passed on in a safety meeting has a purpose - to stop you or your co-worker from being injured. Safety meetings also allow employees an opportunity to relay safety concerns or improvement ideas to their supervisors.

Accidents result from unsafe acts or unsafe conditions. According to some experts, for a variety of reasons, unsafe acts typically account for 90% of all accidents. Safety meetings serve as a preventative measure against unsafe acts by educating employees on how they can do their job safely.

If you're still not sold, let's look at the potential cost of accidents. More specifically, how can accidents directly affect you?

**DEATH** - The ultimate unwanted result. Where does this leave your loved ones?

**FINANCIAL COST** - Lost pay or reduction in pay. Who pays the bills? Are you the sole income producer in your household?

**PAIN & SUFFERING** - An obvious detriment that no one desires.

**DISABILITY** - A life changing experience. Now you're not able to do what you use to do. Maybe now you can't cast that fishing rod? Ride that bike, hug your wife, lift your child, or simply see? Or perhaps you're confined to a wheelchair. Good bye career.

**COMPETITIVENESS ON BIDDING JOBS** - Other than payroll and benefits, worker' compensation insurance and accident costs may represent the bulk of a company's operating expense. When a company's operating expense increases, they are then less competitive to bid jobs. If your company is not awarded jobs, where does that leave you?

**YOUR CO-WORKERS SAFETY** - Perhaps you and your co-worker have been working together for sometime now. Chances are you may spend as much time with your co-workers as you do your own family. Thus, you obviously do not want something bad to happen to them. Watch out for their safety too.

Safety meetings are a perfect opportunity for you to communicate any safety ideas or concerns that you may have. Participate in your safety meetings. If you don't participate, then your ideas will not be heard. Who knows...the idea that you have may very well save your co-worker's life or even your own.



## **Toolbox Talks**

### **Taking Shortcuts**

Everyone takes a shortcut at one time or another. You cross the street between intersections instead of using the crosswalk or jump a fence instead of using the gate. But in many cases, a shortcut can involve danger. If you have the habit of taking dangerous shortcuts, break it. At work, it can be deadly.

Earlier this year an employee was coming down stairs from a platform and rather than going straight down the steps, they stepped from the last one to their right onto a curb where they twisted their ankle severely. They were in a hurry and they took a shortcut.

In a recent near miss we had an employee walked over a set of roller conveyors rather than crossing 4 feet to their right where a walk plate was. They didn't slip; they didn't fall, at least not this time. Eventually they will. The supervisor counseled them when he saw the unsafe act, but it's truly up to you. What is a shortcut worth.

Even if the job will only take a few minutes, it isn't worth risking your safety and health for those few minutes. Wear personal protection to safeguard your body parts. Use proper, well-maintained equipment. Don't improvise to save time. Ladders, steps, and walkways are built to insure your safety, as well as for your convenience.. The safest way isn't always the shortest way, but it's the surest way.

Last Friday we had an employee take a shortcut and not turn off their machine prior to reaching into a running nip. They knew better, they were taught different, but they did it anyway. For that shortcut they will pay with months of pain and agony as their crushed hand heals. They will pay by not being able to do some of the things they love to do. We don't know if the employee had done that before and gotten away with it. The fact is that this time he didn't and the machine caught him. The machine will always win.

How about you? What shortcuts do you take? What danger are you putting yourself in?

This week we'll be taking a look at shortcuts. I ask that you think about the actions you're taking. Is it a shortcut? What price are you willing to pay?





## **Toolbox Talks**

### **Lawyer Plunges 24-Stories to Death**

Police said a lawyer, demonstrating the safety of windows in a downtown Toronto skyscraper, crashed through a pane with his shoulder and plunged 24 floors to his death.

A police spokesman said Gary Hoy, 39, fell into the courtyard of the Toronto Dominion Bank Tower early Friday evening as he was explaining the strength of the building's windows to visiting law students.

Hoy previously had conducted demonstrations of window strength according to police reports.

Peter Lawyers, managing partner of the firm Holden Day Wilson, told the Toronto Sun newspaper that Hoy was "one of the best and brightest" members of the 200-man association.

The above story from many years ago has become legend. It has been featured in television shows such as "1000 Ways to Die" and "Mythbusters" and also earned Mr. Hoy a Darwin Award in 1996.

Many of us hear this story and think: "Well, he was flirting with disaster by running straight into the glass over and over again and he probably got what he deserved", and that is a fair opinion. But what about you?

What type of things do you do over and over again . . . taking a chance that "it won't happen to you"?  
Do you:

- Reach into moving equipment?
- Not wear specific PPE for the task?
- Not lockout equipment before servicing?
- Drive a forklift with your view obstructed?
- Keep your safety glasses on your head rather than your eyes?
- Take shortcuts?
- Use broken tools?
- Work on live electrical circuits without protection?
- Use faulty extension cords?
- Get up on an unguarded platform without fall protection?
- Remove machine guards or tape up safety limit switches?

Think about it. Each of those things has led to the death of someone in the past year at their workplace. Until you make the decision to eliminate those at-risk behaviors that you do, you are playing roulette with your limbs, your life, and maybe even a coworker's life.

Today is the day to stop ramming your body against the window.



## **Toolbox Talks**

### **Falls from Heights**

Who needs fall protection equipment? If you said workers building bridges or cleaning office tower windows you would be right. But what about all the workers who work at lesser heights, just a few feet off the ground? They should also be protected from falls - which can be every bit as fatal.

Consider your work area. Are there locations from which someone could fall? What sort of protection is in place to prevent a fall? And is there equipment to stop a fall?

The situations to be considered are both:

**Permanent** - such as a fixed ladder on a process tank or mezzanine floor where materials are stored.

**Temporary** - such as a scaffold or the top of a loaded truck.

Fall protection equipment is broadly divided into two categories:

One is fall prevention equipment. Guardrails and coverings at floor openings and safety-interlock gates on elevated platforms are designed to prevent falls. A body harness worn by the worker can also be used to tether him to an area away from the fall hazard.

Fall arrest equipment is designed to save the worker if he falls. He may wear Personal Protective Equipment consisting of a body harness and lanyard attached to a lifeline or an anchor point. Or a net slung below the work area may protect him.

The law in many areas says a worker must be protected if he is exposed to a fall hazard of 10 feet or three meters. But a study has indicated 10 per cent of fatal falls occur at heights lower than that. Imagine someone falling four feet from a loading dock and striking his head on the pavement. Such an incident could very well be fatal.

Do employees ever have to climb on top of vehicles, to unload tankers, remove load strapping, paint or do other maintenance?

Does anyone ever go to the roof? Do maintenance workers service the air conditioner up there? What is the potential for falls?

Do you ever do painting of the facility during slow work periods? Are scaffolds built safely according to regulations?

Floor openings created by construction work must always be properly barricaded and securely covered.

Catwalks over machinery and process equipment must be regularly inspected and maintained.

Safety laws are in place to prevent falls from heights. Be sure to follow these rules to the letter. And look beyond the law. You know a fall hazard when you see one, so report it to ensure it gets fixed.



## **Toolbox Talks**

### **What is a Confined Space?**

A confined space does not necessarily mean a small, enclosed space. It could be rather large, such as a ship's hold, a fuel tank or a pit.

One of the first defining features of a confined space is its large enough to allow an employee to enter and perform work. The second defining feature is it has limited means of entry or exit. Entry may be obtained through small or large openings and usually there is only one way in and out. The third defining feature is that confined spaces are not used for continuous or routine work.

All confined spaces are categorized into two main groups: non-permit and permit-required. Permit-required confined spaces must have signs posted outside stating that entry requires a permit.

In general, these spaces contain serious health and safety threats including:

- Oxygen-deficient atmospheres
- Flammable atmospheres
- Toxic atmospheres
- Mechanical or physical hazards
- Loose materials that can engulf or smother

Although the danger in a confined space is obvious, the type of danger often is not. For example, a confined space with sufficient oxygen might become an oxygen-deficient space once a worker begins welding or performing other tasks.

These are some of the reasons confined spaces are hazardous:

- Lack of adequate ventilation can cause the atmosphere to become life threatening because of harmful gases.
- The oxygen content of the air can drop below the level required for human life.
- Sometimes a confined space is deliberately filled with nitrogen as a fire prevention technique. Nitrogen cannot sustain human life, so you must use respiratory protection.
- Many gases are explosive and can be set off by a spark.
- Even dust is an explosion hazard in a confined space. Finely-ground materials such as grain, fibers and plastics can explode upon ignition.
- Confined spaces often have physical hazards, such as moving equipment and machinery.
- Tanks and other enclosed confined spaces can be filled with materials unless the flow process for filling it is controlled.

Before entering any confined space you must test the atmosphere to determine if any harmful gases are present. There must also be radio contact with an attendant outside the confined space and a rescue team at the ready in case of an emergency.

What confined spaces do we have around our workplace? Which are permitted? Can any of them be reclassified?



## **Toolbox Talks**

### **Working in Hot Weather**

In summer weather and other hot, humid working conditions, drinking enough water is vital to preventing heat illness. The most serious illness, heat stroke, can be fatal. It occurs when the body's cooling system fails because of moisture and minerals lost to sweating.

To prevent heat illness under hot work conditions

- Wear clothing that allows air circulation
- If possible, try to stay out of the sun
- Take breaks when you can and drink water frequently.

Don't drink a large quantity of water at once, just keep on sipping. Drinking enough water helps keep the body's digestive and elimination systems working properly. What is enough water? Eight glasses (eight fluid ounces or about .25 of a liter each) is probably as good a starting point as any. Drinking other beverages and eating waterlogged produce such as lettuce also supplies some of your water requirements. Then adjust your water intake for what seems right for you.

Common causes of dehydration include intense bouts of diarrhea, vomiting, fever or excessive sweating. Inadequate intake of water during hot weather or exercise also may deplete your body's water stores. Anyone may become dehydrated, but young children, older adults and people with chronic illnesses are most at risk.

Mild dehydration can cause symptoms such as

- Dry, sticky mouth
- Sleepiness or tiredness
- Thirst
- Decreased urine output
- Few or no tears when crying
- Muscle weakness
- Headache
- Dizziness or lightheadedness

Dehydration can be treated by replenishing the lost fluids your body has lost. Drink at least 32 ounces of water or sports drinks slowly and steadily. Rest, if you don't feel better, drink more slowly and steadily.





## **Toolbox Talks**

### **Working in Winter Weather**

Working in the cold winter weather is very similar in some ways as working in the extreme heat: you have to be prepared for it, you have to be equipped for it and you have to get accustomed to it.

For example, it is easy to become dehydrated in cold weather. Typically we think of that as a heat related issue but it holds true for the cold also. Drink plenty prior to working. Warm sweetened liquids can be especially helpful. Avoid alcoholic drinks. Remember, it is as important to hydrate yourself PRIOR to starting work as it is during the actual physical activity.

Dressing properly is extremely important to preventing cold stress. The type of fabric worn also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, silk and most synthetics, on the other hand, retain their insulation even when wet. The following are recommendations for working in cold environments:

- Wear at least three layers of loose fitting clothing. Layering provides better insulation. Do not wear tight fitting clothing. ◦An inner layer of wool, silk or synthetic to keep moisture away from the body. ◦A middle layer of wool or synthetic to provide insulation even when wet. ◦An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- Wear a hat or hood to help keep your whole body warmer. Hats reduce the amount of body heat that escapes from your head.
- Use a knit mask to cover the face and mouth (if needed).
- Use insulated gloves to protect the hands (water resistant if necessary).
- Wear insulated and waterproof boots (or other footwear).

Similar to the heat, you have to allow yourself to get acclimatized to the cold weather. The first day out in frigid weather can be challenging. It is best to start off very slowly and allow your body to get used to the weather. It is also important that if you are doing a very active job outside, that you do stretching exercises inside prior to starting the tasks outside. This allows your muscles to warm up appropriately rather than the initial shock of being active in a very cold environment.

If possible, schedule heavy work during the warmer part of the day. Employers can assign workers to tasks in pairs (buddy system), so that they can monitor each other for signs of cold stress. Workers can be allowed to interrupt their work, if they are extremely uncomfortable. Employers should give workers frequent breaks in warm areas.

Other Safety Tips:

- Know the symptoms of cold stress.
- Monitor your physical condition and that of your coworkers.
- Stay dry in the cold because moisture or dampness, e.g. from sweating, can increase the rate of heat loss from the body.
- Keep extra clothing (including underwear) handy in case you get wet and need to change
- Use proper engineering controls, safe work practices, and personal protective equipment (PPE) provided by your employer.



## **Toolbox Talks**

### **Flammable Liquids**

Improper storage and handling of flammable chemicals, and failure to recognize and control ignition sources, have accounted for many of the catastrophic accidents involving flammable liquid use and manufacturing.

Statistics have indicated that more than 21 percent of industrial fires and 15 percent of office fires start with the ignition of a flammable or combustible liquid.

#### **What are flammables?**

A combustible substance is one that catches fire and burns easily; a flammable substance is one that continues to burn even after the ignition source is removed. Determine the flammability of a combustible liquid by:

- Flash point — the lowest temperature at which vapors or gases will ignite;
- Fire point — the temperature at which a combustible liquid gives off vapors;
- Minimum concentration of extinguishing agents needed to extinguish the fire;
- Combustion rate;
- Temperature increase during combustion.

Flammable liquids burn with intensity. Few materials can generate as many British thermal units (BTUs) per pound as flammable liquids. This accounts for the rapid heat buildup and how fast the fire spreads. It is extremely important for employees to realize that the liquid itself does not burn, but its vapors, which are invisible and generally heavier than air. The vapors settle to the floor and are moved by air flow. Always consult the material safety data sheet (MSDS) provided by the manufacturer to determine the flammability of a particular liquid.

It is important when storing or working with these flammable liquids that you are not exposed to ignition sources such as:

- Open flames;
- Electrical switches;
- Open motors;
- Static electricity;
- Friction and mechanical sparks;
- Smoking;
- Heat guns;
- Cutting and welding;
- Radiant heat.

Today as you go out to your work area, take a moment and look around. What flammable liquids are you using or storing? Are there any ignition sources around? Are they stored properly? Take action today prior to a disaster occurring.



## **Toolbox Talks**

### **Extension Cord Safety**

The U.S. Consumer Product Safety Commission (CPSC) estimates that each year, about 4,000 injuries associated with electric extension cords are treated in hospital emergency rooms. About half of the injuries involve fractures, lacerations, contusions or sprains from people tripping over extension cords. CPSC also estimates that about 3,300 residential fires originate in extension cords each year, killing 50 people and injuring about 270 others. The most frequent causes of such fires are short circuits, overloading, damage and/or misuse of extension cords.

#### Tips for use of extension cords

- Use extension cords only when necessary and only on a temporary basis. Do not use extension cords in place of permanent wiring.
- Do not remove the prongs of an electrical plug. If plug prongs are missing, loose, or bent, replace the entire plug.
- Do not use an adapter or extension cord to defeat a standard grounding device. (e.g., Only place three-prong plugs in three-prong outlets; do not alter them to fit in a two-prong outlet.)
- Use extension cords that are the correct size or rating for the equipment in use. The diameter of the extension cord should be the same or greater than the cord of the equipment in use.
- Only use cords rated for outdoor use when using a cord outside.
- Do not run cords above ceiling tiles or through walls.
- Keep electrical cords away from areas where they may be pinched and areas where they may pose a tripping or fire hazard (e.g., doorways, walkways, under carpet, etc.).
- Always inspect the cord prior to use to ensure the insulation isn't cut or damaged. Discard damaged cords, cords that become hot, or cords with exposed wiring.
- Never unplug an extension cord by pulling on the cord; pull on the plug.
- In locations where equipment be pushed against an extension cord where the cord joins the plug, use a special "angle extension cord" specifically designed for use in these instances.



## **Toolbox Talks**

### **Electrical Safety - Construction**

Electricity has long been recognized as a serious workplace hazard, exposing employees to such dangers as electric shock, electrocution, fires, and explosions. It doesn't take a lot of electricity to kill you. The amount of current needed to light an ordinary 60-watt light bulb is five times what can kill a person. Thus, all electrical equipment on construction sites is potentially deadly. Electrical extension cords are numerous on construction sites and become damaged because of the rough conditions in which they are used.

#### **Inspect to ensure:**

- All extension cords are three-wire cords;
- The ground pin is on a male plug;
- There is no unbroken insulation on the cord;
- End appliances (plug and receptacle) are gripped to insulation;
- All wires are continuous and unbroken;
- All cords are protected from damage, likely to occur when passing through a door or window;
- Metal boxes with knockouts are not used on extension cords;
- Plugs are dead-front (molded or screwed in place);
- Romex (non-metallic sheathed cable) is not used as flexible cord;
- Cords are not stapled or hung from nails;
- Bushing is passing through holes in covers or outlet boxes.
- Also, check these items:
- Temporary lights are not supported by cords;
- Bulb guards are used on temporary lights;
- Electrical power tools with non-dead man switches have a magnetic restart (when injury to the operator might result if motors were to restart following power failures);
- Provisions are made to prevent machines from automatically restarting upon restoration of power in place;
- Outlets do not have reversed polarity;
- Power tools are double insulated or have a ground pin;

Guard all of exposed electric of more than 50 volts so no one can come in contact (receptacles, light-bulb sockets, bare wires, load center, switches). Guard by:

- Using approved enclosures;
- Locating them in a room, vault or similar enclosure accessible only to qualified persons;
- Arranging suitable permanent, substantial partitions or screens so only qualified persons have access to the space within reach of live parts;
- Locating them on a suitable balcony or platform that is elevated and arranged to exclude unqualified persons;
- Elevating them 8 feet or more above the working surface.

It's important to take the time prior to beginning work at construction sites each day. The fluid nature of the activities, along with the changing environment and high potential for damage can let these items become a hazard quickly.





## **Toolbox Talks**

### **Housekeeping**

Good housekeeping is one of the surest ways to identify a safe workplace. You can tell how workers feel about safety just by looking at their housekeeping practices. Good housekeeping isn't the result of cleaning up once a week or even once a day. It's the result of keeping cleaned-up all the time. It's an essential factor in a good safety program, promoting safety, health, production, and morale.

Whose responsibility is housekeeping? It's everyone's. Clean work areas and aisles help eliminate tripping hazards. Respecting "wet floor" signs and immediately cleaning up spills prevents slipping injuries. Keeping storage areas uncluttered reduces the chances of disease and fire as well as slips, trips, and falls. Accumulated debris can cause fires, and clutter slows movement of personnel and equipment during fires.

Other housekeeping practices include keeping tools and equipment clean and in good shape or keeping hoses and cables or wires bundled when not in use. Broken glass should be picked up immediately with a broom and dustpan, never with bare hands. Be aware of open cabinet drawers, electric wires, sharp corners or protruding nails. Either correct the unsafe condition if you are able and it is safe to do so, or notify the person responsible for overall maintenance that something should be done.

How a workplace looks makes an impression on employees and visitors alike. A visitor's first impression of a business is important because that image affects the amount of business it does. Good housekeeping goes hand-in-hand with good public relations. It projects order, care, and pride.

Besides preventing accidents and injuries, good housekeeping saves space, time, and materials. When a workplace is clean, orderly, and free of obstruction; work can get done safely and properly. Workers feel better, think better, do better work, and increase the quantity and quality of their work.



## Toolbox Talks

### Defensive & Distracted Driving

#### Safety Rules:

- Only authorized employees may drive a motor vehicle in the course and scope of work.
- Drivers must have a valid and current license to operate the vehicle.
- The use of alcohol, illegal drugs, or certain medications are strictly prohibited when driving.
- Seatbelts must be worn by all vehicle occupants at all times whenever a vehicle is in motion.
- Authorized drivers must follow safe driving practices including, but not limited to:
  - o Practice defensive driving techniques
  - o Do not use any electronic equipment that may cause distraction
  - o Obey all posted traffic and speed limit signs
  - o Maintain a safe distance between vehicles at all times
  - o Report all collisions and traffic violations and accidents to supervisors
  - o Maintain vehicles in a safe working order.
  - o Loads must be secure and shall not exceed the manufacturer's specifications and legal limits.

#### Defensive Driving Techniques

Following the rules of the road can help you concentrate on what you should be doing...driving. Stay out of the other vehicle's blind spot and avoid tailgating. Keep a safe distance from other drivers. Know the road and weather conditions. Be cautious, stay alert, and expect the unexpected. Watch out for other drivers and pedestrians on or near the road. Safe drivers constantly scan for road hazards, how they may be affected, and how to avoid them.

Be aware of the following while driving:

- Know and observe all traffic rules and regulations
- Constantly be alert for the illegal acts and driving errors of other drivers. Make timely adjustments in your own driving so that these illegal acts and errors will not involve you in an accident.
- Know your vehicle and be aware of special hazards presented by unusual or changing conditions.
- Obey the rules of right of way and be willing to yield to other drivers whenever necessary

The following outlines general principles of defensive driving:

- **See the hazard**—when driving, think about what is going to happen or what might happen as far ahead of encountering a situation as possible. You should never assume everything will be "all right."
- **Understand the defense**—specific situations require specific ways of handling. Be familiar with unusual conditions which you may face and learn them well so that you can apply them when the need arises.
- **Act in time**—once you've noted a hazard and understand the defense against it, act! Never take a "wait and see" attitude.

Keep these three principles in mind as well as the unexpected actions of other drivers & pedestrians; ever changing weather & traffic conditions, and the mechanical condition of your vehicle.

#### Distracted Driving

Much media attention has been given to stories of cell phones and their distractive effects upon the operators of motor vehicles. A recent study has shown that:

- Cellular phone use of any type leads to significant increases in non-response to traffic situations and an increase in response time.
- The more intense and complex the conversation, the greater the likelihood that the operator will overlook traffic conditions, and show an increase in response time. The distracting effect is similar to that of a driver turning on and tuning a radio. And while any calling tends to retard driver response to road conditions, placing calls or more casual conversations are less of a distracter.
- For drivers over age 50, the distracting effect of cell phone use is two- to three-times as great as that of younger drivers for all aspects of cell phone use.
- Familiarity and experience with using the cell phone appears to bear no relation to the distracting effects of using the phone on driving safety.

The use of head sets has not impacted the safety issues. A study published by the National Safety Council has shown that driver distraction is the same with either a hand-held or hands-free phone. A University of Utah study showed that using either device slowed driver reactions time to road conditions anywhere from 10 to 30%.



## **Toolbox Talk**

### **Confined Space Entry – Construction**

After more than 20 years in the development process, the Confined Spaces in Construction standard has been released by OSHA. Companies have to comply with the standard's requirements by August 3, 2015. The standard provides employees performing confined space activities in construction with protections similar to those in 1910.

OSHA has determined that asphyxiation is the leading cause of death in confined spaces, and that atmospheric hazards cause most confined space asphyxiation fatalities. However, atmospheric hazards are not the only causes of asphyxiation fatalities in confined spaces. Confined space workers confront significant risks of death, injury, or impairment of health due to the following conditions:

- Atmospheric hazards:
  - fatalities in asphyxiating atmospheres,
  - fatalities in toxic atmospheres,
  - fatalities due to flammable or explosive atmospheres.
- Fatalities from engulfment.
- Fatalities due to mechanical hazards.
- Fatalities among untrained rescuers.

The new standard protects employees engaged in construction activities at a worksite with one or more confined spaces. All employers engaged in construction have a duty under the final standard to ensure that their employees do not enter a confined space except in accordance with the requirements of the standard, and the presence of a confined space on the worksite triggers this duty. The focus is on the type of work performed, and whether that work could produce, and expose employees to, confined space hazards

If you are doing construction work - such as building a new structure or upgrading an old one - then you must follow the construction confined space rule. An employer whose workers are engaged in both construction and general industry work in confined spaces will meet OSHA requirements if the employer meets the Confined Spaces in Construction Regulation.

#### **Locations where confined spaces may occur**

Examples of locations where confined spaces may occur include, but are not limited to, the following: Bins; boilers; pits (such as elevator, escalator, pump, valve or other equipment); manholes (such as sewer, storm drain, electrical, communication, or other utility); tanks (such as fuel, chemical, water, or other liquid, solid or gas); incinerators; scrubbers; concrete pier columns; sewers; transformer vaults; heating, ventilation, and air-conditioning (HVAC) ducts; storm drains; water mains; precast concrete and other pre-formed manhole units; drilled shafts; enclosed beams; vessels; digesters; lift stations; cesspools; silos; air receivers; sludge gates; air preheaters; step up transformers; turbines; chillers; bag houses; and/or mixers/reactors.

There are 5 key changes in the new construction regulation and several areas where OSHA has clarified existing requirements:

1. More detailed provisions requiring coordinated activities when there are multiple employers at the worksite.
  - a. This will ensure hazards are not introduced into a confined space by workers performing tasks outside the space. An example would be a generator running near the entrance of a confined space causing a buildup of carbon monoxide within the space.
2. Requiring a competent person to evaluate the work site and identify confined spaces, including permit spaces.
3. Requiring continuous atmospheric monitoring whenever possible.
4. Requiring continuous monitoring of engulfment hazards.
  - a. For example, when workers are performing work in a storm sewer, a storm upstream from the workers could cause flash flooding. An electronic sensor or observer posted upstream from the work site could alert workers in the space at the first sign of the hazard, giving the workers time to evacuate the space safely.
5. Allowing for the suspension of a permit, instead of cancellation, in the event of changes from the entry conditions list on the permit or an unexpected event requiring evacuation of the space. The space must be returned to the entry conditions listed on the permit before re-entry.



## Toolbox Talk

### Compressed gases

We use compressed gases in nearly every aspect of our lives. Compressed ammonia keeps our food cold; compressed propane grills it. Compressed gases are used as anesthetic for surgery, to provide oxygen to emphysema patients, to manufacture products, and to heat our homes. For the most part, compressed gases are very safe, but if not handled, stored, or used properly, they can also be deadly.

#### Definitions

Compressed gas is defined as:

- A material or mixture in a container with an absolute pressure of 40 psi (pounds per square inch) at 70 degrees Fahrenheit.
- A material or mixture in a container with an absolute pressure exceeding 104 psi at 130 degrees Fahrenheit.
- A liquid material having a vapor pressure exceeding 40 psi absolute at 100 degrees Fahrenheit.

Absolute pressure is the pressure reading on the gauge plus local atmospheric pressure (14.7 psi at sea level).

#### Gases Hazards

- **Under high pressure:** When a high-pressure cylinder accidentally ruptures or when a valve assembly breaks off, *rocketing* can occur. If the pressure of the contents increases enough, it can drive the cylinder, turning it into a missile that can blast its way right through a concrete wall.
- **Flammable:** Flammable gases catch fire easily and burn quickly. Hydrogen, acetylene, ethylene, propane, and natural gas are some examples. If you were to add flammability to a compression hazard, you would have some extremely dangerous materials.
- **Asphyxiant (inert):** Inert gases displace oxygen for breathing and can lead to suffocation of the exposed employee.
- **Oxidizing:** Oxidizing gases can explode violently when they react with organic and combustible materials. It is important that containers of oxidizing gases or oxygen and associated equipment be free of oils, greases, and other hydrocarbon-based materials. In addition, clothing which has been exposed to an oxygen-rich atmosphere is a fire hazard.
- **Corrosive:** Corrosive gases attack tissue and other materials. Employees should be aware that they will be required to wear special PPE and a self-contained breathing apparatus when handling these gases. Eyewashes and emergency showers must be available. Point out their location.
- **Toxic or highly toxic:** Poison (toxic) gases such as arsine, diborane, methyl bromide, nitric oxide, nitrogen dioxide, phosgene, and phosphine can only be handled by specially trained personnel. Workers must be fully aware of the potential hazards involved and must wear the appropriate PPE to handle them.
- **Cryogenic (extremely cold):** A cryogenic liquid has a boiling point colder than -150 degrees Fahrenheit at 14.7 psia. Besides causing frostbite or burning the skin on contact, such a liquid has an asphyxiation hazard associated with it, too. Cryogenic liquids require a higher level of PPE than other substances contained in pressurized tanks.

#### Proper Storage

- Store cylinders with their cylinder valves in the closed position;
- Securely attach cylinder valve caps;
- Separate cylinders according to their contents. Place oxygen cylinders at least 20 feet from any flammable gas cylinders or combustible materials; or by a noncombustible barrier at least five-feet high and with a fire-resistant rating of at least 30 minutes;
- Identify empty cylinders to be stored separate from full cylinders;
- Secure all cylinders while in storage and in use;
- Ventilate all cylinder storage;
- Keep cylinder storage away from fire and potential electrical hazards;
- Ensure all cylinders are labeled to identify contents. Do not trust the cylinder color code as identification method for cylinder content (Medical gas cylinders are color coded, but always check the label);
- Return any cylinder to the supplier if the label does not identify contents;
- Store acetylene cylinders upright;
- Avoid dropping or striking cylinders.





## **Toolbox Talk**

### **Chemical Protection**

Millions of workers are potentially exposed to chemical hazards each year. The nearly 600,000 existing chemical products pose serious problems for exposed workers and their employers.

Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires, explosions, and other serious accidents.

Providing protection from chemical hazards is a challenging task because of the range of hazards and operations in which they are used. Potential hazards arising from chemical exposure may occur during the following:

- Production operations involving hazardous chemicals.
- Hazardous substance site survey.
- Rescue.
- Spill mitigation.
- Emergency monitoring.
- Decontamination.

Protecting workers from chemical hazards primarily occurs through engineering and administrative controls; before personal protective equipment (PPE) is considered. This outline, however, focuses on the training you need to provide workers who must wear PPE to protect themselves from hazardous chemicals on the job.

#### **Personal protective equipment (PPE)**

Explain to employees that you have selected protective clothing by evaluating its performance characteristics against the requirements and limitations imposed by the hazards they face. Inform them of the types of PPE they will be required to use and describe the jobs or tasks that require use of the PPE.

#### **Inspection of protective equipment**

During emergencies is not the right time to discover problems with protective clothing. Teach employees to care for their clothing by following a standard program for inspection, proper storage, and maintenance. This step, plus helping employees realize protective clothing/equipment limitations, is the best way to avoid chemical exposure during emergency response.

An effective chemical protective clothing inspection program features five different inspections:

- When equipment is received from the factory or distributor.
- When equipment is selected for a particular chemical operation.
- After use or training and before maintenance.
- During storage.
- When questions arise as to appropriateness of selected equipment or when problems with similar equipment are discovered.
- 

Identify who is responsible for each of the above inspections.

Chemical protective clothing will only be effective if it is appropriate for the job and if it is in good condition. Inspect your chemical protective clothing before you use it, and watch for damage during use.

#### **Employee training**

OSHA regulations contain specific training requirements for personal protective equipment. At 29 CFR [1910.132\(f\)](#), the rule says you must provide training to each employee who is required to use PPE. Each such employee must be trained to know at least the following:

- When PPE is necessary;
- What PPE is necessary;
- How to properly put on, take off, adjust, and wear PPE;
- The limitations of the PPE; and
- The proper care, maintenance, useful life and disposal of the PPE.



## **Toolbox Talk**

### **Reducing Exposure to Silica**

#### **Overview**

More than 1 million U.S. workers are exposed to crystalline silica (free silica). Overexposure to crystalline silica can cause silicosis, a disabling lung disease. Sand, rock, and soil are the most common materials that contain silica. The most common form of crystalline silica is known as quartz. Inhalation of airborne dusts that contain crystalline silica can occur in a wide variety of settings: mining, quarrying, and stone cutting; foundry operations; paint-blasting and sand-blasting; glass manufacturing and etching; and in some types of construction work. When might you expect silica exposure?

- ◆ During work with dry sand, quartz, or clay that contains silica
- ◆ During demolition of concrete, brick, and mortar
- ◆ During drilling of quartz-containing rock, clay, or sandy soil
- ◆ During dry sweeping of concrete, rock, clay, or sand dust

#### **Exposure**

Inhalation of crystalline silica can lead to chronic or accelerated silicosis. Chronic silicosis, the most common form of the disease, usually occurs after 10 or more years of overexposure. As silicosis progresses, symptoms appear such as severe cough and shortness of breath following physical exertion. Without adequate dust controls, workers may develop accelerated silicosis, which results from very high silica exposures and develops over a period of only 5-10 years.

#### **Prevention**

There are many things that employers and workers can do to help prevent silicosis, including:

- ◆ Control overall dust exposures by minimizing the dust around work areas.
- ◆ Substitute less hazardous abrasive-blasting materials for those containing crystalline silica.
- ◆ Install engineering controls (local exhaust ventilation) and containment methods (blast-cleaning machines and cabinets) to prevent dust from being released into the air.
- ◆ Train workers about health effects of silica dust and good work practices that reduce dust.
- ◆ Wet down surfaces before clean-up.
- ◆ Use vacuums with high-efficiency particulate air filters or wet-sweeping for clean-up.
- ◆ Never dry sweep or blow dust with compressed air.
- ◆ Wear respirators, where necessary, to avoid breathing dusts.
- ◆ Be aware that the highest silica concentrations may occur inside enclosed areas during tasks such as concrete or masonry sawing or abrasive blasting. Wear air-supplied respirators under high dust conditions.
- ◆ Shower or wash up and change into clean clothes before leaving the worksite.

The keys to preventing silicosis are to minimize the amount of silica-containing dust in the air and to avoid breathing silica-containing dust. There is no cure for the disease once it develops, but it is 100 percent preventable if employers and workers work together to minimize exposures.



## **Toolbox Talk**

### **Saw Safety**

Know your power saw read the safety instructions and owner's manual carefully. Learn the applications and limitations, as well as the specific potential hazards peculiar to the tool. Ensure the tool is grounded all tools, unless they are double insulated. If the tool is equipped with a three-prong plug, it should be plug, into a three-hole receptacle. Never remove the third prong.

Keep guards in place and in working order. Avoid dangerous environments and don't use the saw in wet locations. Make sure you have adequate light to work-in. Safety and efficiency go hand in hand. A power saw in good condition, with a sharp blade, is not only safer but does a fast, and better job. Choose the right saw for the work you're doing -- if in doubt, check with you supervisor.

If you're using a table saw, make sure the saw and motor frame are properly grounded and guarded. Keep your body out of line with the lumber being sawed. Use a pusher stick when feeding lumber near the blade. Use a brush to remove scrap from the table, not your hands. Shut off the power while adjusting the saw hood or gauge. Lock power controls in the off position (and where possible, unplug the electric cord) before changing saw blades. Be sure there is no play in the arbor.

As with any other operation, get help when sawing long material. Always keep the area around the saw free of loose material that can cause tripping. Wear proper apparel, no loose clothing or jewelry to get caught in moving parts. Wear suitable eye protection when using power saws. Safety glasses are a must -- a stray splinter or wood chip can cause injury or even the loss an eye.

Finally, never force a power saw always use the right size tool for the job. Don't abuse the cord never carry the saw by the cord or yank it to disconnect from the receptacle. Avoid accidental starting don't carry a plugged in power saw with your finger on the switch.



## **Toolbox Talk**

### **CPR**

#### **OVERVIEW**

Cardio pulmonary resuscitation, or CPR for short, is the best form of artificial resuscitation. In the old days we were taught to use the back pressure arm lift method when someone stopped breathing. We did not have a method to make the heart keep pumping blood. CPR has been around for over twenty years now, and yet we still find people who do not know how to use this life saving procedure.

#### **BASICS**

Let's talk about when to use CPR. If there is an accident on the job where a worker is injured, loses consciousness and stops breathing, or perhaps simply has a heart attack, the first thing that you need to do is call for help. That means someone needs to dial 911 or another posted number to obtain outside emergency medical help. Next you need to make sure the area around the victim is safe, so take a quick look. If the area is ok, then you can go ahead -- but if it's not safe -- don't attempt a rescue! We don't need any dead heroes.

When you first get to the victim you must see if the injured party responds. Tap them on the shoulder lightly and ask them, "Are you ok?" If they respond, tell them that you are there to help them. If there is no response then you must check the ABC'S. Check their Airway, check for Breathing, and then check for Circulation. If you find that there is no pulse present then need to start CPR. When administering CPR a rescuer maintains a steady flow of oxygen and circulates the blood for the victim. CPR should only be given by someone who has completed the training. Once you start this rescue method don't stop until relieved by a medical professional.

Many people around the world are alive today because someone took the time to learn how to give CPR. Training is available through the American Red Cross, the YMCA, various Rescue Squads and the National Safety Council, just to name a few. Are you qualified? If not, enroll in a course soon.





## Toolbox Talk AED

### Overview

Automated external defibrillators (AEDs) are small, portable, battery-operated device capable of detecting life-threatening conditions of the heart that can be corrected with defibrillation. AEDs are widely available, safe, effective, portable, and easy to use. They provide the critical and necessary treatment for sudden cardiac arrest (SCA) caused by ventricular fibrillation, the uncoordinated beating of the heart leading to collapse and death. According to the American Heart Association, SCA leads to death resulting from the sudden, abrupt loss of heart function in a person who may or may not have diagnosed heart disease.

Brain death and permanent death start to occur in just four to six minutes after someone experiences a cardiac arrest. Immediate treatment of an SCA event can result in greater than a 90 percent survival rate. A victim's chances of survival decrease about 10 percent with each passing minute. A quick emergency response, including cardio-pulmonary resuscitation (CPR) and an AED, is essential for workplaces that are more than ten minutes away from the nearest medical help.

In the workplace, an AED is only one link in a chain of survival. The links in the chain of survival are as follows:

- Early access—To emergency medical services. This includes someone trained in emergency response to assess the scene, assess the victim's responsiveness, and activate an emergency plan.
- Early CPR—CPR is a holding action that buys time until more skilled or extensive medical services can be accessed.
- Early defibrillation—With an AED. This is the primary factor in successful resuscitation from sudden cardiac arrest.
- Early advanced cardiac care—This is the final critical link. This is where stabilizing care and transport are provided.

### How it Works

An AED is a small, portable, battery-operated device capable of detecting life-threatening conditions of the heart that can be corrected with defibrillation. Once on the scene, the AED begins to prompt you through the required steps.

The unit comes with a set of pads that are applied to a victim's bare chest via the adhesive that is exposed by peeling off a covering of paper. There are graphics on the pads to help you with correct placement. After the pads are in place, the AED will analyze the victim to determine if a shock should be administered. If so, the unit will deliver the shock automatically or will prompt the operator to do so by pressing a button.

From there, the unit will analyze the victim's heart performance again and prompt you through more required steps, which may include continuing CPR.

The strength of the shock is automatic, so you do not have to guess how much to deliver. You don't even have to determine whether a shock is needed; the unit will tell you. If the unit does not detect a shockable condition, it cannot deliver a shock, so it cannot be used in an unsafe manner.



## **Toolbox Talk**

### **Dress for the Job**

#### **Overview**

Our clothes and footwear are our first line of defense when it comes to protecting our bodies. Each day we wear our work clothes for eight, ten and sometimes even more hours, and there is nothing worse than working in uncomfortable clothing and/or poor fitting footwear. Although your work clothes are very important to your safety and health, your comfort is also a consideration.

Your work clothing should be:

- right for the job,
- sturdy and durable,
- capable of standing up to heavy wear and tear,
- accommodating to PPE requirements,
- keep you warm in winter and cool in the summer, and
- keep you dry in wet and inclement weather.

We all know that it's easier to take off a layer of clothing than not have enough on in cold weather. Wool works best in the cold while cotton is superior during the warm months. In other words, wear clothes that you can work in comfortably and that are designed for the kind of work you do and the weather in which you must do it.

#### **Footwear**

Proper footwear is another important part of construction attire. Wear the right shoe or boot for the job. A good sturdy leather boot will last a long time and also provide your feet with good support throughout the shift. Since you are on your feet most of the time, make sure the shoe or boot fits correctly. Tennis shoes have no place on a construction site -- one reason is that protruding nails and tennis shoe soles just don't mix.

#### **Body**

If you wear jewelry, watches or rings remember that they can be very dangerous around machinery and electricity. Take them off and put them in your pocket, or better yet, just leave them at home! Many a construction worker has lost a finger or two from wearing rings on the job. Use common sense and dress for the job you do -- leave jewelry at home, wear appropriate clothing and sturdy footwear, and your workday will be a safer and more comfortable one.



## **Toolbox Talk Abrasive Blasting**

### **Overview**

Abrasive blasting applies to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure, or by centrifugal force. An abrasive is a solid substance used in an abrasive blasting operation. Sandblasting is a type of abrasive blasting. Some tasks performed with abrasive blasting include cleaning sand and irregularities from foundry castings; cleaning and removing paint from ship hulls, stone buildings, metal bridges, and other metal surfaces; and finishing tombstones.

### **Hazards**

The hazards involved in abrasive blasting include the material that is being removed and the surface from which the material is being removed. Lead is an example of a hazardous material being removed, while exposure to silica comes from using sand and other silica-producing materials in the blasting process. Both of these materials involve inhalation hazards.

Silica has traditionally been used as a material in the abrasive blasting process. However, NIOSH recommends against the use of silica sand (or other substances containing more than 1 percent free silica) as abrasive blasting material.

Sometimes the dust that is formed from abrasive blasting can be flammable or explosive. This can involve obvious hazards of fire and explosion. Along with these risks are those of flying debris to the eyes, face, and any other exposed skin.

### **Alternatives to Abrasive Blasting**

Substituting less toxic abrasive materials for the traditional high-silica-containing abrasive is becoming more common in the United States. The United States Navy has banned silica sand or any abrasive materials containing greater than 1 percent crystalline silica by weight for abrasive blasting on ships. However, even with a low-silica-content abrasive (less than 1 percent free silica), work in containment structures or in confined spaces may result in hazardous exposures.



## **Toolbox Talk**

### **Disaster Recovery**

#### **Overview**

Disaster recovery is the ability to respond to an interruption in services by implementing a plan to restore an organization's critical business functions. These disasters could be anything from floods, tornadoes, fire, and computer hackers. To ease the recovery process, plans need to be made well in advance. Plans for backup systems, locations, and equipment should be in place to minimize down time.

#### **After Disaster Steps**

- Gather staff off-site to assign tasks and review salvage priorities. Create a team big enough for the work.
- Establish a "Command Center" with office equipment (computers, photocopier) and communications tools (walkie-talkies, cellular phones).
- Create a secure salvage area with locks, fans, tables, shelves, plastic sheeting, drying materials and clean water.
- Notify emergency officials of the extent of damage. Contact peer or professional groups for help.
- Appoint a media liaison to report conditions and need for help/volunteers.
- Verify financial resources: amount and terms of insurance, government assistance, potential outside funding.
- Contact service providers for generator, freezer, and drying or freeze-drying services.
- Arrange for repairs to security system
- Stabilize
- Document
- Assess the damage
- Establish Priorities

You should have emergency telephone numbers nearby for easy access. Include telephone numbers for the police, fire department, ambulance, poison control center, and the nearest hospital.

You may also want to have non-emergency telephone numbers on hand for facilities such as the local emergency management office, local American Red Cross chapter, insurance representative or risk manager, and staff emergency office.





## **Toolbox Talk**

### **Guarding – Forging Machines**

#### **Overview**

Forging" means the product of work on metal formed to a desired shape by impact or pressure in hammers, forging machines (upsetters), presses, rolls, and related forming equipment. Forging hammers, counterblow equipment and high-energy-rate forging machines impart impact to the workpiece, while most other types of forging equipment impart squeeze pressure in shaping the stock. Some metals can be forged at room temperature, but the majority of metals are made more plastic for forging by heating.

#### **Safety Measures When Forging**

- Thermostatic control of heating elements need to be provided to prevent over heating
- Fixed or permanent lead pot installations shall to be exhausted
- Portable units shall only be used in areas where good general ventilation is provided
- Personal Protective Equipment shall be worn
- Covered container shall be provided to store dross skimmings'
- Equipment shall be kept clean

#### **Inspection/Maintenance**

It is responsibility of the employer to maintain all forge shop equipment in a condition which will insure continued safe operation. This responsibility includes:

- Establishing periodic and regular maintenance safety checks and keeping certification records of these inspections which include the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, for the forging machine which was inspected.
- Scheduling and recording the inspection of guards and point of operation protection devices at frequent and regular intervals. Recording of inspections shall be in the form of a certification record which includes the date the inspection was performed, the signature of the person who performed the inspection and the serial number, or other identifier, of the equipment inspected.
- Training personnel for the proper inspection and maintenance of forging machinery and equipment.
- All overhead parts shall be fastened or protected in such a manner that they will not fly off or fall in event of failure.



## **Toolbox Talk Drugs and Alcohol**

### **Overview**

The employer has a responsibility to provide a safe and productive work environment, free from all recognized hazards to all of its employees. A particular concern is drug and alcohol abuse which can both have a serious effect on an employee's productivity and job performance. It may also jeopardize the safety of themselves, other employees, or even pedestrians. The following drug and alcohol policy guidelines have been implemented to promote the safety of all employees.

In this policy, the term "substance abuse" means:

- the use of illegal drugs, legal drugs (by prescription, over-the-counter, or through illegal possession), or alcohol, in the amounts hazardous toward an individual's health or the safety of the community
- the use of such substances on one's own initiative and without medical supervision, especially in large doses that may lead to psychological dependency, tolerance, and/or abnormal behavior
- the use of a drug(s) for reasons other than therapeutic purposes.

### **Testing Frequency**

- All Job Classifications
- Post-Offer Employment
- Reasonable Suspicion
- Post-Accident
- Request of Proof
- Random

### **Expectations**

- Employees are expected to arrive at work fit for duty. Arrival at work with performance altering drugs and/or alcohol in your system is prohibited.
- Employees taking prescription medications that may affect work performance must report this information to management prior to beginning their work day.
- Employees expected to perform their jobs in a safe manner. This use of a chemical substance that would interfere with personal safety or the safety of others is prohibited.
- All employees are expected to conduct themselves in a legal and lawful manner while on company property or on company business.
- The sale, possession, providing, distributing, or use of an illegal substance on company property or while on company business is strictly prohibited.
- Employees are expected to cooperate with management in the diagnosis of a substance abuse problem, including participation in a substance abuse urinalysis.
- Counseling and/or rehabilitation may be a condition of continued employment in the event of a diagnosis of a substance abuse problem.



## **Toolbox Talk**

### **Rigging Material Handling**

Rigging equipment must never be loaded in excess of its recommended safe working load. Safe working load charts are available in the construction regulations (1926.251, Tables H- 1 through H-20) for each type of sling.

When not in use, rigging equipment should be removed from the immediate work area so as to not prevent a hazard to employees, to protect the sling from jobsite hazards such as dirt, oil, grease, and not being walked on or run over by construction traffic.

Custom lifting equipment (grabs, hooks, clamps, etc.) designed for specific functions such as lifting modular panels, prefabricated structures, and similar materials, must be marked to indicate its safe working loads. Such equipment must be proof-tested prior to use to 125 percent of its rated load.

Your competent person must visually inspect all slings, fastenings, and attachments for damage or defects at the following frequencies. Damaged or defective equipment shall not be used and must be immediately removed from service

- Prior to use on each shift.
- As necessary during operations to ensure continued integrity of the sling, especially if the sling is subjected to heavy stresses.

### **General Industry Rules That Apply To Construction**

OSHA has determined that the following general industry rules (1910.184) also apply to construction applications.

- Slings must not be shortened with knots or bolts or other makeshift devices.
- Sling legs that have been kinked must not be used.
- Slings used in a basket hitch must have the loads balanced to prevent slippage.
- Slings must be padded or protected from load sharp edges.
- Hands or fingers must not be placed between the sling and its load while the sling is being tightened around the load.

### **Other Safety Rules**

- Suspended loads must be kept clear of all obstructions.
- Crane operators should avoid sudden starts and stops when moving suspended loads.
- Employees must remain clear of loads about to be lifted and suspended.
- Tag lines should be used unless their use creates an unsafe condition.
- All shock loading is prohibited.
- Latches must be in place on all hooks, thus eliminating the hook throat opening.
- All employees shall be kept clear of loads about to be lifted and of suspended loads



## **Toolbox Talk Manlifts**

### **Overview**

A manlift is a device consisting of a power-driven endless belt moving in one direction only, and provided with steps or platforms and handholds attached to it for the transportation of personnel from floor to floor.

### **Operating Rules**

There should be no freight, packaged goods, pipe, lumber, or construction materials to be handled on any manlift.

### **Inspections**

All manlifts shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until properly repaired.

Inspections should include:

- Steps
- Stops Fastenings
- Rails
- Rail supports and fastenings
- Rollers and slides
- Belt and belt tensions
- Handholds and fastenings
- Floor landings
- Guardrails
- Lubrication
- Limit switches
- Warning signs and lights
- Illumination
- Drive pulleys
- Bottom pulley and clearance
- Pulley supports
- Motor
- Driving mechanism
- Brake
- Electrical switches
- Vibration and misalignment

There should be a record of all inspections that are conducted. They should include (dates, signatures of personnel who conducted the inspection, serial number or identifier of the manlift inspected.) These should all be kept in a safe location.





## **Toolbox Talk**

### **Sanitation in the Workplace**

OSHA has a standard (**1910.141**) for work place sanitation. It covers a multitude of things:

#### **Vermin Control**

Every enclosed workplace must be equipped and maintained to prevent entrance or harborage of rodents, insects, and other vermin. An operative extermination program must be established where such things are identified.

#### **Eating and Drinking Areas**

All employee food service facilities must be carried out according to hygienic principles. All employment where all or part of food service is provided, the food dispensed must be protected from contamination.

#### **Water supply, both potable and non-potable**

The sanitation standard for general industry defines "potable water" as water that meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in **42 CFR Part 72**, or water which is approved for drinking purposes by the State or local authority having jurisdiction. If the water your company uses for drinking and personal service rooms meets the appropriate definition of potable water, then OSHA's standard is satisfied. The sanitation standard does not require testing of the water, that the water be piped, and it does not bar the use of bottled water

#### **Toilet and washing facilities**

The sanitation standard is intended to ensure that employers provide employees with sanitary and available toilet facilities.

#### **Sanitary Storage**

Whenever a particular standard, such as HAZWOPER, requires the use of personal protective equipment, OSHA's Sanitation Standard at **1910.141(e)** requires that employers provide change rooms based on the potential for contamination with toxic materials. OSHA also requires that employees are provided with privacy while changing their clothes and separate storage facilities for both street and work clothes. As such, this requirement only applies to situations where employees must change their clothes (i.e., take off their street clothes).



## **Toolbox Talk**

### **Abrasive Wheel Grinders**

#### **Overview**

Abrasive wheels and grinding machines come in many styles, sizes, and designs. Both bench-style and pedestal (stand) grinders are commonly found in many industries. These grinders often have either two abrasive wheels, or one abrasive wheel and one special-purpose wheel such as a wire brush, buffing wheel, or sandstone wheel.

These types of grinders normally come with the manufacturer's safety guard covering most of the wheel including the spindle end, nut, and flange projection. These guards must be strong enough to withstand the effects of a bursting wheel. In addition, a tool/work rest and transparent shields are often provided.

#### **Hazards**

Grinding machines are powerful and are designed to operate at very high speeds. If a grinding wheel shatters while in use, the fragments can travel at more than 300 miles per hour. In addition, the wheels found on these machines (abrasive, polishing, wire, etc.) often rotate at several thousand rpms. The potential for serious injury from shooting fragments and the rotating wheel assemblies (including the flange, spindle end, and nut) is great. To ensure that grinding wheels are safely used in your workplace, know the hazards and how to control them.

#### **Solutions**

Abrasive wheels used on bench and pedestal grinding machines must be equipped with safety guards. The safety guard encloses most of the wheel — covering the flange, spindle end, and nut projection — while allowing maximum exposure of the wheel periphery. The exposure of the wheel should not exceed 90 degrees or one-fourth of the periphery.

Because the safety guard is designed to restrain the pieces of a shattered grinding wheel, the distance between the safety guard and the top periphery of the wheel must not be more than 1/4-inch. If this distance is greater because of the decreased size of the abrasive wheel, then a "tongue guard" must be installed to protect workers from flying fragments in case of wheel breakage. This "tongue guard" should be adjustable to maintain the maximum 1/4-inch distance between it and the wheel.

An adjustable tool/work rest must also be installed and maintained at a maximum clearance of 1/8-inch between it and the face of the wheel. In addition to offering a stable working position, this small clearance must be maintained to prevent the operator's hands or the work from being jammed between the wheel and the rest, which may cause serious injury or wheel breakage.

All abrasive wheels must be closely inspected and ring-tested before mounting to ensure that they are free from cracks or other defects. Wheels should be tapped gently with a light, nonmetallic instrument. A stable and undamaged wheel will give a clear metallic tone or "ring." If a wheel sounds cracked (dead), do not use it. This is known as the "ring test."

