MCAA TOOL BOX SAFETY TALKS

Based on the most common hazards in mechanical construction

MCAA ... Safety Excellence

MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA

Pub. SE-2

MCAA Tool Box Safety Talks
(Contents)

(See Instructions For The Tool Box Talks Presenter On The Back Of Each Talk)

MCAA Tool Box Safety Talks

#1

Falls From Portable Straight Ladders

On November 6, 1995 at 1:45 p.m., a 37-year-old worker was installing a ventilation system on a rooftop. When he started to lower himself from the roof to the ladder, the ladder fell forward. The mechanic fell 21 feet to his death.

- Falls from ladders are the leading cause of injury among mechanical construction workers.

- Reaching out from ladders and carrying tools, equipment and materials by hand are the leading causes of falls from ladders. Keep your hands free to climb and pull other items up by rope after you are safely off the ladder.

- Ladders are classified by the weight they are designed to hold safely. Make sure your ladder is designed to hold your weight plus the weight of your tool belt. Look for the ladder rating on the rails.
  - -Type IA - ladders are rated up to 300 pounds.
  - -Type I - ladders are rated up to 250 pounds.
  - -Type II - ladders are rated up to 225 pounds.
  - -Type III - ladders are rated up to 200 pounds.

- Inspect the ladder each time you are going to use it. If there is any damage to the ladder such as cracked, broken or missing rungs, cracked side rails, missing feet or any other damage, remove it from service and tell your supervisor immediately.

- Make sure the ladder you choose extends at least 3 feet above the roof, deck, platform or landing area.

- Set the ladder up on a level, non-slippery surface and secure it in place by bracing it at the bottom and/or tying it at the top.

- Set the ladder at the proper pitch. For each four feet of height the ladder should be one foot out from vertical. For example, a 24-foot ladder should be pitched out 6 feet from vertical.

- Make sure there is no mud or grease on the rungs or your shoes or boots.

If you have any comments, please write them on the back of this page.

Employee Signature _____

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Instructions For The Tool Box Safety Talk Presenter

Preparation:

1. Select the most appropriate talk for the week by looking through the Table of Contents on the back of the front cover.

2. Mark the talk that you choose with a pencil on the Table of Contents to remind you later which talks have already been used.

3. Photocopy the talk (one for each participant).

Presentation:

1. Answer any questions from the previous week's talk that you could not answer at the time of the talk. Then give a copy of the new talk to each participant.

2. Tell the participants to ask questions any time during the talk.

3. Read the talk slowly and clearly.

4. Relate any experiences you have had that deal with the topic of the talk.

5. Ask the participants to share their experiences with the group, but give them no more than one minute each to do so.

6. Ask whether there are any questions.

7. Ask the participants to sign the talk in the space at the bottom right hand corner.

8. Tell them to record any comments they have on the back of the talk.

9. Collect the signed talks and dismiss the group.

Follow Up:

1. Before filing the signed talks, be sure to read the comments on the back and respond accordingly.

2. Remember to get the answers to any questions you could not answer previously. Start the next week's talk by answering those questions.

MCAA Tool Box Safety Talks

Falls From Stepladders

#2

On April 3, 1995, a 59-year-old worker was using a 12-foot stepladder to install a clamp on the ceiling of a new building. The worker fell off the stepladder and ruptured his aorta which resulted in his death.

- Falls from ladders is the leading cause of injury among mechanical construction workers. Stepladders are involved in a large percentage of these falls.

- Inspect stepladders before you use them. If there is any damage, such as cracks, missing rungs, missing rivets, bending, warping, etc., take it out of service immediately so that it will not be used by anyone. Tell your supervisor about the broken ladder and get a replacement.

- Check each step for ice, mud, snow, grease, oil or anything else that could cause a slip. If one of these slip hazards is present clean the ladder off thoroughly before using it.

- Check the bottom of your work shoes or boots before using the ladder. There may be mud or grease on them as well.

- Avoid using any stepladder as a straight ladder. They are designed to support your weight only in a fully open position.

- Avoid using the top two rungs as steps.

- Don't use the supports on the back of the ladder as steps. They are not made to support your weight.

- Avoid using stepladders as scaffold or platform supports. They are not made to support or balance the weight that would be placed upon them.

- Make sure the ground is level under all four feet and that the ladder is in the fully open position before starting to climb.

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MCAA Tool Box Safety Talks

#3

Falls From Job-Made Ladders

Falls from ladders is one of the leading causes of injuries among mechanical construction workers. Many of those falls are from job-made ladders. Job-made ladders, however, are safe when they are built and used properly.

- When building ladders keep the height at 24 feet or less.
- Keep the width of single rung ladders between 16 inches and 20 inches. Keep the width of double rung ladders between 18 inches and 22 inches.
- Use only stress grade lumber for the side rails. Stress grade lumber is lumber inspected by a lumber grading agency which is recognized by the American Lumber Standards Committee (ALSC). The grading agency assigns allowable stress values to the lumber.
- Secure filler blocks tightly between the rungs along the rails to provide additional support for the rungs. Use only common nails and make sure they are flush with the surface.
- Make sure surfaces on the ladder are free of splinters and sharp edges.
- When setting up the ladder, place it on a solid, level foundation.
- Keep the ladder from slipping by tying it off at the top or securing it some other way.
- Always inspect the ladder each time you intend to use it. If you find any defects that compromise the structural integrity of the ladder, take it out of service until it can be repaired or replaced. If you are not sure, report to your supervisor immediately.
- When you are climbing up or down the ladder always face the ladder even when there are raised side rails attached. Keep contact with three points of the ladder at all times. In other words, only one hand or foot should be out of contact with the ladder at any one time.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Falls From Scaffolds While Working

#4

On May 9, 1995, a 55-year-old worker on a mobile scaffold was removing a strap from an air conditioning duct. The duct fell down striking the scaffold. The worker lost his balance and fell 11 feet to the concrete floor below. He died from the injuries to his head.

- Falls from scaffolds are a leading cause of injuries to mechanical construction workers. All falls from scaffolds can be prevented, no matter what type of scaffold you are using, if you follow a few simple rules.

- Inspect scaffolds before you start to work on them. Make sure the access ladders and guardrails are secured in place. If the scaffold does not look level and plumb, stay off it and report to your supervisor.

- When working 10 feet or more above a lower level, use a personal fall arrest system and/or a guardrail system for fall protection. Check with your supervisor to determine what fall protection to use.

- When access ladders are not a permanent part of the scaffold, make sure the portable access ladder extends at least 3 feet above the platform and secure it from slipping. Make sure it is set up on a level and solid base.

- Eliminate trip hazards by keeping scaffold work platforms clear of debris and unnecessary materials, tools and equipment. Watch carefully for slip hazards such as mud, grease or oil, ice, snow, etc. Check the scaffold ladder, platforms and walkways and check the bottoms of your work shoes or boots. Immediately remove all slip hazards.

- When using a mobile, rolling type scaffold be sure to lock the caster brakes before you climb aboard. And don't ride on it when it is being moved by someone below.

- Avoid carrying tools, materials and equipment by hand when climbing aboard the scaffold. Pull them up by rope after you are on the platform.

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MCAA Tool Box Safety Talks

Falls From Scaffolds During Erection & Disassembly

#5

On May 6, 1995, at approximately 1:00 p.m., two workers were dismantling a tubular welded frame scaffold. While one of the workers was lowering a scaffold frame to a lower level, it got caught on another part of the scaffold. While trying to free the scaffold frame, the worker lost his footing and fell 24 feet to his death. He was only 29-years-old.

- The two major hazards encountered by construction workers while erecting or dismantling scaffolds are falls and electrocutions. Make sure you have received proper training before you begin to erect or dismantle a scaffold.

- Keep in mind that a scaffold must be capable of supporting its own weight plus four times the maximum intended load. If anything you see indicates that a scaffold won't do this, stop the process and tell your supervisor immediately.

- Always keep the scaffold base on a solid, level foundation and keep every section level and plumb. Use all of the braces, hardware and equipment. Use only scaffold grade planking and make sure the platforms on all working levels are fully planked between the uprights and guardrail supports.

- "Supported Scaffolds" are used most frequently in our line of construction. Supported Scaffolds are any scaffolds supported by legs, poles, upright posts, frames, outrigger beams, brackets or similar rigid support. Supported Scaffolds more than four times higher than the width of the base must be kept from tipping by tying, bracing or guying. Check the manufacturer's recommendations on where and when to use ties, braces or guys.

- Watch carefully for sources of electrical power while erecting and dismantling scaffolds and avoid any contact with these sources.

- Discard any defective scaffold parts so they won't be used by others.

- When working on a scaffold more than 10-feet from a lower level, use fall protection such as guardrails and/or personal fall arrest systems. Check with your supervisor for the appropriate type of fall protection.

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Falls With Supported Scaffolds

On November 10, 1995, two workers were placing steel platforms on a scaffold approximately 12 feet off the ground. The scaffold was not braced or supported at the time. The weight caused the scaffold to break. The platforms fell and the workers rode the platform to the ground. The 48-year-old worker died from his injuries and the 44-year-old worker was hospitalized.

- Falls with falling scaffolds kill a significant number of mechanical construction workers every year. If a scaffold falls, it's because it was either not erected properly or more weight was added to it than it was intended to support. Falling scaffolds can always be prevented.

- Someone who has knowledge of and experience with the specific type of scaffold being erected should supervise the entire erection process.

- Inspect each and every part of the scaffold as it goes up. Discard any defective parts in such a way that others will not use them.

- Place scaffold legs, posts, polls, frames or uprights on base plates and mud sills or on other firm foundations. Make sure footings or anchorages for scaffolding are solid, level and capable of supporting the load without settling or displacement.

- Check the planking to be sure it is scaffold grade. If it is, it will be marked as such on the planks. If you are not sure, report to your supervisor before using the planking.

- When the scaffold is more than four times higher than the base is wide, keep it from tipping by tying or bracing it to the structure or by using guys. The person supervising the erection will tell you when and where to place them.

- Build each section level and plumb and use all of the braces.

- Install the railings in sequence with the erection process.

- Avoid overloading the scaffold with materials and equipment by bringing up with you only those items that you need right away.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#7

Falls From Aerial Lifts

On November 10, 1995, two workers were inside a new structiure working from an aerial lift. Th e 20-year-old worker was moving behind the other worker to reposition himself. He lost his balance and fell backwards off the lift 22 feet to his death.

- Aerial lifts are devices used to elevate workers and materials to work areas not accessible from ground level. They include extendable boom platforms, aerial ladders, articulating boom platforms, vertical towers or any combination of these.

- Mechanical construction workers are injured each year in falls from aerial lifts even when the lifts themselves do not fall over.

- To protect yourself from falling off a lift, there are several precautions to take.

  · Get the proper training before you operate or work on an aerial lift. Secure the safety rails in place before working the lift.

  · Make sure that the opening to the platform has a swinging gate or chain to keep workers from stepping, backing or falling through it. As soon as you reach the platform, secure the gate or chain in the closed position.

  · Keep your feet firmly on the platform floor. Avoid sitting or climbing on the edges or other areas of the lift.

  · Wear a full body harness and lanyard and attach it to the boom or basket. Do not attach the lanyard to any adjacent structures or objects.

- When there is another worker on the platform with you, communicate clearly with each other before you change positions on the platform and before the platform is moved. Let the other worker know where you are and what you are going to do.

  · Be careful climbing into and out of the platform. Falls from short distances injure mechanical construction workers each year, too.

If you have any comments, please ***write them on the back of this page.***

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#8

Falls With Aerial Lifts

On May 5, 1995, a 52-year-old worker was driving a scissor lift which was extended out to 22 feet. One wheel dropped into a 2-foot by 2-foot floor opening. The lift overturned and the worker fell 22 feet to his death.

- One of the major hazards associated with aerial lifts is falls with the lift.
- When the work platform is raised, the center of gravity is elevated. The higher the center of gravity the easier it is for the lift to fall over.
- Aerial lifts are designed to remain stable with the platforms raised, however, they can tip over if job site conditions are not just right. Make sure you have the proper training before you use the lift.
- Avoid using the lifts on uneven or unstable ground and avoid raising the platform any higher than you have to.
- Always use outriggers if your lift has them. Make sure the brakes are set when you do use outriggers.
- Avoid moving the lift with the platform raised. Lower the center of gravity before moving the lift.
- When moving the lift, move it slowly. Watch carefully for materials, equipment, tools and other objects that might be in the way and avoid them, even if you have to get out of the lift to move them.
- Be particularly careful around floor openings. Avoid them whenever you can, even if they are covered.
- The rated weight capacity of the lift platform is posted on the lift. Check it before you load it and don't exceed the limit. Distribute any load carried on the lift evenly to keep it stable.
- Inspect each lift before you use it. Stop work and report to your supervisor immediately if there are any mechanical problems with your lift.

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Falls From Roof Openings

#9

On August 26, 1995, at approximately 7:30 a.m., workers moved an existing roof top unit to enlarge the roof opening for a new system. While cutting out the roof decking, a 29-year-old worker fell 22 feet, striking the back of his head on the floor below. He never regained consciousness and died 9 days later from his injuries.

- Each time you prepare to work on a roof, remember that construction workers frequently fall through roof openings and that the resulting injuries are usually very serious.
- When working on roofs with holes large enough for a person to fall through use floor covers, guardrails or personal fall arrest systems to prevent falls.
- When working on a roof with a small hole, cover it with material that is strong enough to support at least twice the load that could be placed on it.
- Secure all floor covers in place so they can't be easily removed or unintentionally kicked off the hole. For example, a thick, strong plywood cover could be nailed to the roof.
- Label the cover boldly with the words "hole" or "cover."
- If it is a large hole, such as a hole for an air conditioning unit or building atrium, protect the hole with guardrails and toeboards.
- If guardrails are used, build them to withstand 200 pounds of any outward or downward force applied within 2 inches of the top edge at any point.
- If covers or guardrails are not available, use a personal fall arrest system which includes an anchorage, connectors, body harness and lanyard or lanyard/deceleration device.
- Holes in roofs that are not big enough to fall through, such as holes cut for pipe, etc., can still be hazardous. A worker could easily trip in the hole and fall over the edge or into an object. Be sure to cover even the smaller holes.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Falls From Edges

#10

On October 13, 1995, a 52-year-old plumber and his helper were laying a main water line in a concrete slab building. The plumber was adjusting a piece of copper pipe when he lost his balance and fell. He fell approximately 10 feet to a concrete surface and died from his head injuries.

- An edge is any elevated surface under construction where any end of the surface leads to a drop to a lower elevation. For example, the ends of the upper floors of a multi-story building which is still being built are considered edges. When working on edges, protect yourself from falls by using guardrails, personal fall arrest systems or safety nets.

- When guardrails are used, build them to withstand 200 pounds of any outward or downward force applied within 2 inches of the top at any point.

- When personal fall arrest systems are used, be sure the system will arrest a fall before there is contact with a surface or structures below. For example, in the situation above, the plumber who died fell only 10 feet. A personal fall arrest system with a deceleration device would not have prevented him from hitting the surface below. Guardrails would have been the best option to protect him from the fall.

- Also full body harnesses and double locking snap hooks provide the best protection on personal fall arrest systems, as opposed to body belts and non-locking snap hooks which can sometimes roll out.

- When nets are used, make sure they are high enough to prevent a falling worker from contacting the surface or any structure below. Keep the nets clear of construction debris at all times. Remember to extend nets outward from the outermost projection of the work surface as follows:
  - -for work performed up to 5 feet above the surface of the net, it should extend out 8 feet;
  - -for work performed from 5 to 10 feet above the surface of the net, it should extend out 10 feet; and
  - -for work performed over 10 feet above the surface of the net, it should extend out 13 feet.

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MCAA Tool Box Safety Talks

Falls From Vehicles & Construction Equipment

#11

On March 20, 1995, a 24-year-old worker was riding in the back of a pickup truck. He was sitting on the side of the truck bed. When the truck started forward the worker fell out backwards striking his head. He died from his head injuries.

On August 2, 1995, an operator was positioning a backhoe on a 30-degree slope. Another worker was riding on the front of the backhoe. The worker fell off and was run over by a front wheel. The force crushed his head and chest. He died on the spot at age 3 8.

- Falls from vehicles and equipment are common occurrences in construction. All of them can be easily prevented.
- Riding in the back of pickup trucks, flat beds, dump trucks or other similar vehicles is very hazardous because there is nothing restraining the riders if the vehicle comes to a sudden stop, hits another vehicle or object, or is hit by another vehicle.
- If you are being transported in a vehicle from one part of a job site to another, make sure the vehicle is equipped for passengers. It should have standard passenger seats and seat belts for each passenger. If it doesn't, or if all the seats are taken, don't ride in the vehicle. Walk or take another vehicle.
- Likewise, if you are not operating construction equipment, and there is no standard seat for another rider, don't ride on the equipment.
- Riding on construction equipment can be very hazardous even if the equipment is moving slowly or is not moving far. If you fall off, the operator may not know it because it is difficult for him to hear with the machine running.
- If you are loading or unloading materials, tools or equipment from a truck bed, make sure no one is in the driver's seat and no key in the ignition. Be extra careful to avoid slipping if the truck bed is muddy, wet or icy.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Hazards From Electric Arc Welding

#12

On July 27, 1995, a 51-year-old welder was using his arc welder while lying on a metal duct. The welder became conductive because his clothes were drenched with sweat from the heat in the tight quarters. He was electrocuted by as much as 135 amps of current traveling from the electrode to ground through his body.

- The biggest hazard in arc welding is not from heat, sparks, fumes or intense infrared radiation but from electrical current (electrocution).

- On most manual arc welding operations, the electric current ranges from 10 amps to 600 amps. Remember that it only takes 70 to 100 milliamps to kill most people and 70 milliamps is only a small part of one single amp.

- The trick is to keep yourself from becoming grounded. Make sure yo u are always insulated from the work itself because it is probably grounded . For example, if you are welding one pipe to another pipe that is already i n place, the new pipe also becomes grounded. If you are not insulated from it you too will become grounded.

- Inspect the stinger leads for damage. There can be no damage in the first 10 feet of active stinger lead. Minimal lead damage elsewhere can be repaired with vulcanizing or heat shrinking kits .

- Always keep yourself insulated from the electrode and electrode holder, especially if you are wet from sweat or some other source. Use well insulated electrode holders and welding cables.

- Keep your clothes and hands as dry as possible. Use insulation between your body and the ground such as a welding mat, where possible .

- Cover or otherwise arrange the cables to prevent falling sparks from burning through the insulation .

- Avoid changing electrodes with bare hands or wet gloves .

- Ground the welding unit according to the National Fire Protection Association's National Electrical Code (NFPA 70) .

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

No GFCI

#13

On August 27, 1995, a 32-year-old worker was cleaning out a clogged residential sewer line. He was using a sewer machine which was plugged into one of the receptacles. The soil was saturated with water. The worker was electrocuted while operating the sewer machine because the water made him the easiest path to ground. There was no Ground Fault Circuit Interrupter (GFCI) in use at the time.

- Ground Fault Circuit Interrupters (GFCI) can protect workers from some electrical hazards.

- If a worker is standing on a damp floor using a power tool with a damaged cord and comes into contact with either the hot or neutral wire, he or she will become the easiest path to ground. The current will flow through the worker to ground.

- GFCI prevents some electrocutions by detecting a difference in the amount of current flowing between the source of electricity and the tool. If there is even a slight difference it automatically shuts off the circuit.

- When a difference in current of 5 milliamps or more is detected, the GFCI trips the circuit in as little as 1/40th of a second.

- 5 milliamps is a very small part of one single amp. Most power tool receptacles are designed to trip at around 15 amps. But death from electrical shock can occur for most people at between 70 to 100 milliamps.

- Inspect GFCI protected circuits regularly because, like any mechanical device, they could fail.

- Also, use GFCI in conjunction with an assured equipment grounding program because GFCI won't detect line-to-line faults. In one case, a worker was electrocuted while using a power tool. The investigation showed that a drywall nail had been driven into a non-metallic cable, nicking the hot and ground wires. The ground wire became energized and the worker was electrocuted when he touched the metal casing of the power tool. The GFCI did not pick up the line-to-line fault.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Contact With Live Wires

#14

On November 6, 1995 two workers were extending an aluminum extension ladder when the ladder came into contact with an overhead power line. The line was carrying close to 20,000 volts. The 56 year old worker was kil .lled and the 46 year old worker was severely injured.

- Electrical accidents are the fourth leading cause of fatalities in construction.

- Typical overhead distribution lines carry 7,200 volts per line. Major transition lines carry 500,000 volts. Lines from a power pole to a residence carry 110 volts each. Even one residential line carries much more electrical current than is needed to kill a person.

- Electricity always takes the easiest path to ground so you must keep yourself from becoming grounded. The workers electrocuted and injured on November 6th allowed themselves to become the easiest path to ground. Aluminum ladders are highly conductive and the workers were standing on the ground when they allowed the ladder to contact the power line. The current went straight through the ladder and the workers to ground.

- If you have to work around electrical power sources, have the power cut off by the power company if at all possible. Make sure they lock out access to the power switch so it can't be turned on while you are working. If power can't be cut off, the power company can put insulators over power lines where there could be an exposure.

- Remember that the weather insulation on power lines wears out very quickly because of its exposure to heat, cold, sun, wind, rain, ice and snow. Even when the weather insulation is new it is not designed to insulate you from electrical current. Avoid all contact with power lines.

- Remind everyone working around you about the electrical hazards. A co-worker could unintentionally charge the work area around you and expose you to the current.

- Assume that all wires are live wires and treat them accordingly.

If you have any comments, **please *write them on the back of this page.***

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MCAA Tool Box Safety Talks

#15

No Grounding

On August 21, 1995, two workers were repairing the plumbing in a residence. One worker was in the kitchen handing tools to the other worker in a crawl space below. The 29-year-old worker in the crawl space began using a sawzall which was plugged into an outlet in the kitchen above. The ground plug had been removed from the sawzall. The worker became the most conductive path to ground and was electrocuted.

- Electrocutions are the fourth leading cause of fatalities in the construction industry. Many of them occur because electric powered tools and equipment are not properly grounded.

- Electricity always attempts to travel to ground, takes the path of least resistance and travels at the speed of light (186,000 miles per second).

- When working with electric powered tools and equipment, you can ensure that the current has a safe, easy, path to ground. If you don't, the easiest path to ground may be through your body causing severe injuries or death.

- Inspect the plug each time you prepare to use a tool or piece of equipment. If the tool or equipment has the two-prong type plug, it is probably double insulated to protect you from the current. Look for writing on the equipment that tells you it is double insulated. If there is no writing, look for the square inside the square symbol. Either of these assures you that it is. If you are not sure, don't use it. Report to your supervisor immediately.

- If it is the three-prong type plug and one of the prongs has been removed, do not use it. Take it to your supervisor immediately to ensure that it stays out of service until the plug is replaced by an electrician.

- Keep a circuit tester with you and check the receptacle before you plug into it to be sure it is grounded. The tester is easy to use and read. Simply plug it in and read the lights. If it indicates that the receptacle is not grounded, do not use it. Report it to your supervisor immediately.

- When using a portable generator, ground it properly before you start to use it.

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MCAA Tool Box Safety Talks

Live Wire Contact With Heavy Equipment

#16

On October 23, 1995, workers were laying 8-inch ductile pipe along the side of a dirt road. The backhoe being used to move the pipe came into contact with an overhead power line carrying 7200 volts. A 34-year-old worker on the ground had hold of the pipe to guide it into place. The worker was electrocuted.

- Electrocutions are the fourth leading cause of fatalities in construction. Many electrocutions occur when heavy equipment comes into contact with overhead power lines.

- When heavy equipment comes into contact with overhead power lines, the operator is usually not in immediate danger unless he or she tries to leave the cab. If you are operating equipment that contacts a power line, stay in the cab. Move the equipment well away from the hot line if you can. If you can't move it safely, don't leave the cab until the power line is de-energized.

- Remember that electricity can arc. Equipment can become energized even when it is not touching a live wire . Keep the equipment as far away from hot lines as possible and never get closer than 12 feet.

- In situations where you have to work especially close to power lines, have the power shut off before you start work. If power can't be shut off, the power company can install insulators on the lines before you begin work.

- Workers on the ground are in the most danger and should not touch equipment or materials (such as pipe) being moved by the equipment if the equipment is in contact with a power line.

- The ground around the equipment may be energized as well. Stay well away from energized equipment until the power is shut off.

- If you believe the ground may be energized keep others well away from the energized equipment. If you are standing on energized ground don't walk or run because the difference in the electrical charge between your feet may be enough to create an electrical path through your body. Shout for someone to have the power shut down, but warn them to stay away from the energized area.

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MCAA Tool Box Safety Talks

Damaged Power Tools & Equipment

#17

On July 12, 1995, an 18-year-old worker crawled underneath a house with a drop light to install aluminum duct work. While he was working, the drop light cord was cut on the sharp edge of the duct work. The worker came into contact with the exposed wires and died from the shock.

- Each year in the United States there are more than 20,000 electrical accidents and 700 electrical related deaths. Many of them occur as work-related deaths in the mechanical construction industry.

- A significant number of those worker fatalities are due to working with damaged electrical tools and equipment.

- Electrical tools can be extremely hazardous if they become damaged enough to cause the user to contact exposed live wires.

- Inspect each tool carefully before you use it. If there are cracks, cuts or abrasions on the cord take the tool out of service until an electrician can replace the cord. Don't try to fix it yourself.

- If the casing of a tool is broken or cracked anywhere discard the tool in such a way that it won't be used by others.

- Check the plug carefully, too. If the plug is the three-prong type and a prong is missing, take the tool out of service until an electrician can replace the plug.

- Before using the tool, check the area carefully for objects with sharp edges and other areas where the cord could be pinched, scraped or cut. Avoid these areas whenever possible. If you can't avoid them, take whatever measures are necessary to protect the cord.

- Store electric power tools in a waterproof tool box when they are not in use. Remember that the cords and other parts of tools become weather beaten if not stored properly and insulation can rot away exposing the wires.

- Avoid using all electrical powered tools in wet or damp locations.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Flammable & Combustible Liquids

#18

On December 1, 1995, a pipe welding crew was working in a petroleum storage facility. The three worker crew was sprayed with crude petroleum when a plugged pipeline section blew out. The petroleum was ignited by welding sparks and all three workers were fatally burned. They were age s 46,40 and 23.

- Flammable and combustible liquids used in and around mechanical construction can be very hazardous. Especially since there are so many potential sources of ignition such as welding sparks, flames from acetylene cutting torches, brazing operations, cigarettes, etc.

- Common flammable and combustible liquids used in our business include gasoline, other petroleum products, benzene and other cleaning solvents.

- Whenever possible substitute flammable or combustible liquids with non-flammable/combustible liquids that do the same job. Eliminating the hazard is the best option.

- When you can't substitute, keep the quantities of flammable/combustible liquids as small as possible. Keep only the amount you will use right away.

- Keep these liquids in containers designed specifically for their use. Metal safety cans with self-closing lids that are UL Approved are a good choice.

- Every container should be properly and clearly labeled so workers won't unintentionally use the wrong liquid. For example, don't use a container labeled for gasoline to store a cleaning solvent. Doing so could lead to a hazardous situation.

- Be constantly aware of the location of these liquids in relation to sources of ignition. Keep them well away from ignition sources even though they are in approved containers.

- Static electricity can be a source of ignition. When transferring one of these liquids from a drum to a smaller container protect yourself from this ignition source by grounding the drum first. Then bond the drum and container by attaching a conductive wire from the drum to the container.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Flammable & Explosive Gases

#19

On November 11, 1995, a 25-year-old worker entered a manhole. The worker was carrying a propane torch. While he was working, the propane canister fell over. The force of the fall caused the regulator to break off. The released propane vapors were ignited by the torch. The worker died in the structure.

- Flammable gases are prevalent in mechanical construction.
- Mechanical construction workers use flammable fuel gases regularly.
- The most common fuel gases used in our business are propane, butane and acetylene.
- Because there are so many potential sources of ignition in mechanical construction work, it is vital to keep fuel gases from being released into the an-.
- Uncontrolled burning gases are serious hazards as are gases that become explosive.
- An explosion is nothing more than rapidly accelerated combustion. That's why oxygen can be very hazardous.
- Think about how much more rapidly acetylene burns when oxygen is added. If the right amount of oxygen is released into the air with a flammable fuel gas and the mixture is ignited, an explosion will occur.
- Even though oxygen by itself is not flammable it should be treated like other fuel gases. Avoid releasing it into the air around you.
- Be especially careful to keep oxygen from coming into contact with oil, grease or other petroleum based substances.
- Fuel gases and oxygen must be stored properly. For example, propane should not be stored inside a building as a general rule. Ask your supervisor about proper storage.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Explosions

#20

On March 8, 1995, a 42-year-old pipe fitter was working in an excavation at an existing waste water treatment plant. He was using an acetylene cutting torch to cut a pipe. The pipe contained oxygen and the pipe fitter died from the ensuing explosion.

- Explosions occur in mechanical construction each year. However, they can be prevented by keeping ignition sources away from explosive substances.

- You don't have a whole lot of exposure to explosives in mechanical construction but you do have exposure to a number of flammable substances including gasoline, benzene cleaning solvents, propane, butane and acetylene. Any of these substances mixed with the right amount of oxygen and an ignition source can explode.

- Remember that oxygen, by itself, is not flammable or combustible but it does rapidly accelerate the rate of burning. Keep oxygen from releasing into the air around you by keeping oxygen cylinder valves shut off when not in use.

- In confined spaces the release of flammable liquid vapors or gases and the right amount of regular breathing air can be hazardous. If the mixture is just right and there is an ignition source, an explosion will occur.

- Keep all flammable substances away from ignition sources and sources of oxygen. And keep only small quantities of flammable liquids on hand. Store them in approved containers.

- Keep oxygen and acetylene cylinders separate when they are not being used. Store them at least 20 feet apart or keep a 5 foot high 1/2-hour rated noncombustible barrier between them.

- Make sure the valves on fuel gas cylinders are closed tightly when you finish working with them. Also inspect the valves and pressure gauges for leaks before and after you use the cylinders. If there is a leak, warn others to keep ignition sources away from the cylinder and report it to your supervisor immediately.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#21

Hard Hats

Hard hats are designed to protect workers from falling objects and other potential sources of head injuries.

- Falling objects include, tools, debris and materials. They may fall from the edge of a roof, work platform or scaffold platform or through a floor, wall or roof opening. Other potential sources of head injury include being hit by other workers carrying materials or backing up into stationary objects like pipe or duct work, etc.

- Hard hats are designed to absorb the force of falling objects. The force is distributed throughout the head, neck, spine and shoulders and not concentrated in one spot as it would be without a hard hat.

- To protect yourself from head injuries always wear your hard hat. Most hard hats only weigh 14 ounces and some of the newer ones weigh considerably less. Hard hats are easy to get used to wearing. Wear it everyday for a few days and you will forget it's there.

- Many workers believe the hats make them too hot. The truth is hard hats help to keep your head cooler than the outside air. Tests done at 110 degrees showed that the temperature inside the hard hat was 5 to 12 degrees cooler than the outside air.

- Be sure not to turn your hard hat around backwards like a baseball catcher because the bill in the front is designed to deflect falling objects away from your eyes and face. It also helps keep the sun out of your eyes and the rain off your face.

- Always inspect your hard hat before you wear it. If there are any defects whatsoever, discard the hat and get a new one.

- Never drill holes in your hard hat to let heat escape. Even a single hole will weaken it. Don't paint your hard hat either because paint covers up defects and weakens it as well. Hats with holes or paint are worthless and should be discarded. A sticker or two is okay as long as they are approved specifically for hard hats. Adhesives on some stickers weaken hard hats.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Eye & Face Protection

#22

Mechanical construction workers are exposed to eye hazards every day on the job. Countless workers have been spared from eye injuries and blindness because they chose to wear eye protection. Not as important but still worth consideration is the use of face protection for certain tasks.

- Depending on the source, flying particles can strike with a little bit of force or with a tremendous amount of force. When flying particles hit an eye, the potential damage ranges from temporary irritation to permanent blindness.

- Wear eye protection whenever there is potential exposure to flying particles, chemicals or other eye hazards such as ultraviolet radiation, infrared radiation or visible glare.

- Wear safety glasses with side shields for protection against flying particles. If you wear regular glasses you can have prescription safety glasses with side shields made or you can wear contact lenses under you safety glasses.

- Wear safety glasses with side shields under your welding helmet.

- Wear splash proof safety goggles when working with chemicals such as solvents or acids. If you wear regular glasses there are goggles made to fit over them. Otherwise you can wear contact lenses under the goggles.

- Wear shaded goggles designed specifically for cutting when using cutting torches.

- Attach a shaded filter plate to your welding helmet. The shade you need depends on the type of welding, size of the electrode and the amount of electrical current you are using. If you are not sure about the correct shade, use a #10 shade (minimum) or check with your supervisor.

- Wear face shields when using chemicals, grinding, chipping, wire brushing, etc. Always wear the appropriate safety glasses or goggles with the face shield. The shield by itself is not made to protect your eyes.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#23

Hearing Protection

Mechanical construction workers are constantly exposed to noise from power tools, machinery, construction equipment and other sources. Noise can be harmful unde rcertain conditions if you don't take measures to protect yourself.

- Whether noise is harmful depends on how loud it is and the length of time you are exposed to it. Determining what is too loud is difficult to do.

- Noise is measured in decibels. Exposure to 90 decibels over an 8 hour period is a recognized threshold for hearing damage. When you are exposed to this much noise for anywhere close to 8 hours make sure you protect your hearing. Noise levels below 90 decibels over an 8 hour period can still be damaging to some people so it's a good idea to always protect your hearing.

- Since noise above 90 decibels is even more damaging to your hearing, it's a good idea to protect yourself all the time no matter how long you are exposed to it.

- Since you don't have the equipment to measure noise on the job site, remember that an air compressor runs at around 90 decibels and a circular saw at around 100 decibels. Use this knowledge to gauge the noise around you.

- Another way to gauge the noise level is to determine whether you can hear a co-worker standing 3 feet away from you when he or she is not shouting. If not, it's probably too noisy.

- Also, if you hear a ringing sound or feel a tickling sensation in your ears, it's way too noisy. Whenever it's that noisy, wear hearing protection.

- There are different types of hearing protection and each blocks out a certain amount of noise. Ear muffs block out more noise than ear plugs. Some types of ear muffs block out more noise than other types of ear muffs. The same goes for ear plugs, too. Whatever you choose, make sure it blocks out enough sound to protect your hearing, but not so much that you can't hear what is going on around you. Make sure you can still hear a warning shout from a co-worker or a back-up alarm on a piece of equipment.

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MCAA Tool Box Safety Talks

#24

Foot Protection

With all of the safety concerns in mechanical construction, it's easy to forget about protecting your feet. However, foot injuries in mechanical construction occur each year to workers who don't protect their feet from potential foot hazards.

- Foot hazards in mechanical construction include:
  -dropping tools, materials or equipment on your feet;
  -setting down heavy objects on your feet;
  -heavy pipe rolling up on your feet; and
  -objects with wheels like vehicles, mobile lifts, mobile scaffolds, etc. rolling over your feet.

- The best means of protection is to avoid these potential foot hazards and any others by staying alert and thinking ahead about what could happen.

- Avoid carrying objects which are too heavy for one person alone. Also, avoid carrying too many items which could cause you to drop them.

- When carrying or moving a piece of equipment, machine or other heavy object, think about where your feet are before setting it down. Communicate constantly with those helping you and keep your feet clear.

- Use chocks to keep heavy pipe from rolling onto your feet.

- Make sure stacked pipe is properly secured against rolling off the stack onto your feet.

- When working around a vehicle, mobile scaffold, mobile lift or anything else on wheels, be extra alert. Know where it is at all times and work as far away from it as possible.

- Always wear protective footwear on the job. Wear work boots or work shoes with steel toes designed to protect you.

- When working around very heavy objects that could fall on your feet, wear metatarsal guards over your steel toed boots or shoes.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Hand Protection

#25

Hand injuries occur every day in mechanical construction. Some are severe, while others are minor, but they do occur frequently. Workers need injury-free hands to do their jobs as effectively as possible. So protect your hands from the obvious hand hazards.

- The obvious hand hazards include:
  -pinch points where hands or fingers get pinched between materials or equipment (for example, pinching your hands between pieces of pipe);
  -sharp or jagged edges on materials;
  -getting rings or bracelets caught in tools, materials or equipment;
  -unguarded tools and machines;
  -chemical burns and frostbite.

- Stay alert to avoid the pinch hazards. Think about what you are doing and what will happen next.

- Inspect materials before you move them. Wear leather gloves when handling objects with sharp or jagged edges or when you are exposed to hot metal or sparks. Always wear welding gloves when welding.

- Take off all rings and bracelets before you start work.

- Check for guards on all tools and machines that are supposed to have them. If any one of them is missing, damaged or otherwise inoperable, don't use the tool or machine. Take it out of service immediately and report it to your supervisor.

- When working with acids, solvents or other chemicals, use neoprene gloves. Use general purpose latex gloves for work with detergents and mastics. Check the label or Material Safety Data Sheet (MSDS) if you are not sure what type of glove to use.

- Wear gloves when it's cold and don't touch frozen metal with bare hands. If your fingers get so cold they hurt, stop work and warm them slowly.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#26

Manual Handling Of Materials

On December 30, 1995, the 29-year-old owner of a small plumbing business was working alone at a residential construction site. While attempting to move a crated water boiler into the basement, he lost control of the boiler and fell down the basement steps. The 500 pound unit crushed his head and killed him.

- Manual handling of materials is the leading cause of nonfatal injuries in the construction industry.
- Before moving construction materials check to see whether there is materials handling equipment available. If so, don't move them by hand.
- If materials must be moved by hand make an assessment as to how heavy and bulky the materials are. If you can't handle them easily by yourself, get help from one or more co-workers.
- When lifting materials, always use proper lifting techniques. Keep the object as close to your body as possible. Keep your back straight by keeping your butt down and your head up. Lift with your legs and avoid twisting your back while you lift and carry the materials.
- Be aware of situations where your hands could get pinched or crushed between materials and objects and avoid them. For example, if you are storing pipe on a concrete floor place a pallet or pipe rack on the ground to put the pipe on so your fingers won't be pinched between the pipe and the floor.
- Be aware of sharp edges. Protect your hands by wearing leather gloves.
- Watch carefully for hazards that could make you slip, trip, or fall while moving materials. Move the hazards or carefully go around them.
- If you are moving materials from overhead, such as stacked pipe, always wear your hard hat.
- Wear steel toed boots or shoes if heavy materials could roll or be dropped onto your feet.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Backs & Lifting

#27

Most back injuries that occur while performing mechanical construction are from improper lifting techniques or other improper manual handling of materials. By following a few simple steps you can protect yourself from back injuries.

- Many back injuries can be prevented by stretching the back muscles before you begin work. This is particularly true if you have to lift heavy objects during the day. Remember to re-stretch following lunch or long break periods. Suggested stretching exercises follow.

- **Stretching upper back -** Stand erect with your hands in front of your thighs and palms facing your body. Lift your hands toward your chin while exhaling. Keep elbows pointed out. Hold the position for a moment and slowly lower your hands. Do 2 sets of 12 with a minute rest between sets.

- **Stretching middle back -** Stand erect and raise your shoulders toward your ears. Hold the position for a moment and slowly lower your shoulders. Do 2 sets of 12 with a minute rest between sets.

- **Stretching lower back -** Get on your hands and knees and allow your back to sag. Arch your back upwards like a cat and bend your head forward. Hold the position for a moment and slowly return to the starting position. Do 2 sets of 20 with a minute rest between sets.

- Before moving any materials or equipment assess their weight as best you can. If there is any question in your mind about your ability to easily move them, don't go it alone. Get help from a co-worker.

- When preparing to lift an object, whether you are by yourself or getting help from a co-worker, follow these steps:
  - -get a firm grip on the object;
  - -get your body as close to the object as possible;
  - -get your back straight by putting your butt down and head up; and
  - -lift with your legs, keeping your back straight the whole time.

- Once you have the object up be sure not to twist your back. Move your whole body and always keep your back straight.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Trench & Excavation Collapses

#28

On November 6, 1995, at around 2:50 p.m., three workers were laying drain pipe in an excavation. The excavation was ove r 12-feet deep. A clod of dirt fell off a side wall and struck one of the workers on the head. The other two workers entered the excavation to see whether the first worker was badly hurt. The excavation collapsed and killed all three workers. They were ages 35, 30 and 40.

- Trench and excavation collapses are the third largest cause of fatalities in construction. Close to 100 construction workers die this way each year.

- A cubic foot of soil (1 foot by 1 foot by 1 foot)) weighs 90 to 140 pounds. A cubic yard (3 feet by 3 feet by 3 feet) weighs over 3000 pounds. That's about the weight of a small pickup truck. Even a seemingly small amount of soil can crush a person. Imagine being underneath a falling Ford Ranger.

- Even shallow trench collapses kill workers. Partially buried workers are frequently killed in collapses.

- Before entering a trench or excavation make sure a protective system is in place. The walls should be sloped back, benched back, supported by bracing or shoring or equipped with shields such as trench boxes. If at least one of these protective systems is not in place, or if you are not sure, don't enter the trench. Ask your supervisor for help.

- While working in a trench or excavation, if you see any change in the condition of the soil such as a crack in a wall or the appearance of water, get out immediately and report to your supervisor. Always have a ladder or other means of quick exit available within 25 feet of every worker.

- Keep large spoil piles, pipe, other materials and equipment away from the sides of the trench or excavation. Their weight may cause a collapse. Keep spoil piles at least 2 feet away from the edge.

- If you are around when a trench collapses, do not attempt to rescue your co-workers. All too frequently, untrained rescuers are killed after entering the collapsed trench or excavation.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Trench & Excavation Hazards

#29

Many mechanical construction workers are injured and killed in trench and excavation collapses each year. Although collapsing is the major hazard with trenches and excavations, there are others that you should be aware of, as well.

- Trenches and excavations can be deficient of oxygen or could contain hazardous concentrations of gases like carbon monoxide . Stay out of the trench or excavation and report to your supervisor if either hazard i is a possibility.

- Watch out for buried electrical cables that could cause injuries or electrocutions. Excavators are supposed to call local utilities before they dig, but it's safest to assume that they haven't. If you see a cable, assume it is hot. Get out immediately without coming into contact with it and report to your supervisor.

- Watch for water lines and avoid breaking them. Broken lines will cause trenches and excavations to cave in quickly. If you see water inside a trench or excavation, get out immediately and contact your supervisor.

- Watch for buried gas lines and other buried hazards. They could cause injuries. For example, a broken natural gas line could be ignited by a welding spark, torch, cigarette or other source.

- Be aware of falling and moving objects while working, especially when an equipment operator is lowering pipe, shoring materials or other objects into the trench or excavation. Keep well away from the process.

- Remember that changing weather conditions may affect the stability of the soil in a trench or excavation. When changes in weather occur, such as rain, snow, ice storms, heavy winds or extended periods of hot, dry, weather, stay out of the trench until it is inspected by someone with the knowledge and experience to know whether entering could be hazardous.

- Always maintain an accessible means of exiting the trench or excavation such as a ladder or ramp. There should be an accessible exit within 25 feet of every worker inside the trench or excavation.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#30

Welding Hazards

There are a significant number of occupational injuries from welding operations each year. Hazards from welding include electrocutions, eye damage, burns, toxic inhalants and fire. If you are welding or working around welding operations, be aware of these hazards.

- The biggest hazard from welding is the potential for electrocution. Be sure to insulate yourself from the work, which is probably already grounded, and the electrode and electrode holder. Avoid becoming grounded.

- To protect your eyes from ultraviolet and infrared radiation burns, put on proper eye protection before looking at an arc even for an instant. Different shades of filter plates can be attached to welding helmets. The shade needed depends on the type of welding, size of the electrode and the amount of electrical current. Check with your electrode supplier for the appropriate shade needed. If you are in doubt, use a #10 shade.

- If possible, isolate your work area to keep other workers from looking at the arc. You may want to erect a flame resistant screen around your work area.

- Wear flash goggles with side shields under your helmet to protect your eyes from slag fragments and other flying particles.

- Wear clothing that will protect your body from hot sparks such as flame resistant coveralls, welding gloves, flame resistant leggings and leather high top boots.

- Choose clothes that don't have pockets or cuffs in the legs or sleeves.

- Make sure your work area is well ventilated to protect you from inhalation hazards. If your work area can't be properly ventilated, you may need respiratory protection. Check with your supervisor before proceeding.

- Keep at least one Class ABC fire extinguisher readily accessible.

- Stop work at least ½ hour before leaving the site and check the welding area for smoldering materials.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Compressed Gas Cylinder Hazards

#31

Compressed gas cylinders present several potential hazards to mechanical construction workers. The main hazards are fire, explosion and cylinders propelled by escaping gas when valves get broken (cylinders will move out like a rocket destroying everything in their way).

- Whether you are using, transporting or storing cylinders, always keep them secured in their upright position with chains, strong wire or straps.
- Keep them away from all sources of electricity, sparks, flames and other sources of heat. Avoid subjecting them to heat over 125 degrees Fahrenheit. When they are not being used, always protect the valves by replacing the valve protection caps.
- Store oxygen cylinders separately from acetylene or other gas fuel cylinders. Separate them by at least 20 feet or a %-hour rated noncombustible barrier at least 5 feet high.
- Never take cylinders into confined spaces.
- Inspect all cylinders, hoses, valves and torches before using them. Take all defective parts out of service immediately and replace them with good ones. Clean out torch tips before use. Also, before connecting a regulator to a cylinder valve, clean out the valve by standing to one side and quickly open and closing the valve.
- Inspect the hoses and cutting torch valves for leaks after opening the cylinder valve. If there are any leaks, turn the cylinder valves off immediately. Take the hose and cutting torch assembly out of service.
- Only use friction lighters to light torches. Never light a torch with a match cigarette or any other source.
- Before removing a regulator close the cylinder valve and bleed the gas lines.
- Leave the wrench on the stem of the cylinder valve so it can be turned off quickly in an emergency.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#32

Hot Metal Hazards

Mechanical construction workers are frequently exposed to hot metals. There are several hazards to be aware of while you are working. The main hazards are inhalation of fumes, skin burns, eye hazards and fires. Mechanical construction workers are most frequently exposed when welding, cutting and soldering.

- Protect yourself from exposure to harmful concentrations of metal fumes. Two especially harmful sources which mechanical construction workers are exposed to are lead and zinc. When overexposed to lead fumes, lead accumulates in the body. It can cause severe kidney damage, reproductive defects in men and women and birth defects in unborn children. When overexposed to zinc fumes, workers can get metal fume fever which is similar to having a severe case of flu with fever, chills, nausea and vomiting. Other heavy metals which you could be exposed to are also hazardous.

- Make sure the area you are working in is well ventilated. If it is not, stop work and report the problem to your supervisor.

- Be aware of hot metals in your work area that you could come into contact with. Remember that molten metal will be propelled into the air if it comes into contact with moisture.

- Keep molten metal away from moisture and protect your skin by wearing fire resistant clothing.

- Always wear the proper eye protection. When working around molten metal, use flame resistant cup goggles and a face shield. If there is exposure to ultraviolet radiation, infrared radiation or visible glare, make sure you wear eye protection with appropriate shaded lenses. If you are not sure about what to wear, ask your supervisor before you start work.

- Be aware of the fire hazards when working around hot metals. Hot metals are an ignition source, so keep the area clear of combustible materials such as trash, grease, oily rags, etc. Also keep hot metals away from gas cylinders and flammable and combustible liquids like gasoline or solvents.

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MCAA Tool Box Safety Talks

Carbon Monoxide

#33

There are a significant number of occupational fatalities each year from over-exposure to carbon monoxide (CO). Be aware of carbon monoxide hazards.

- Carbon monoxide (abbreviated CO) is a colorless, odorless, tasteless gas.
- It is produced by any process where fossil fuels such as gasoline, diesel fuel, propane and home heating oil are burned.
- If you ever feel dizzy, nauseous, or get a headache while working near a source of CO, assume that there is a CO problem and get to fresh air immediately. Alert everyone else that could be exposed to stay out of the area. Shut off the source of CO only if you can do so without being exposed. Otherwise call the local fire department for help. Firefighters will enter the area with supplied air respirators.
- If you are working where carbon monoxide is being produced make sure the area you are working in has good ventilation.
- For example, if you are in a poorly ventilated space and plan to use a propane torch, install a temporary ventilation system before you light the torch.
- Also, when you are working in trenches or excavations, remember that CO is only slightly lighter than air. If there is equipment operating close by, like a backhoe or a loader, the CO may accumulate in the trench or excavation and you may be overcome by it.
- Be sure that all vehicles and construction equipment in your work area have well maintained exhaust systems.
- Be especially alert when working on a job site where other trades are present. They may not be aware of CO hazards and you may be expose.
- If a co-worker is overcome by CO, move the co-worker to fresh air away from the CO source. If you know how to administer mouth-to-mouth resuscitation and CPR, do so if needed. Call EMS for help.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Contact With Acids

#34

Each year workers receive severe burns, eye damage and other injuries from direct contact with acids . If you work around acids, be aware of the hazards they present.

- Acids are chemical compounds.

- The acids you are most likely to encounter on your job sites are:
  -Electrolyte Corrosive (battery acid);
  -Sulfuric Acid
  -Muriatic and Hydrochloric Acid;
  -Nitric Acid; and
  -Perchloric Acid.

- The major hazards associated with acids are burns to the skin and eyes, damage to lungs and other parts of the respiratory system, and fire.

- Always read the warning labels on acid containers.

- Check the Material Safety Data Sheet (MSDS) for the acid you may be exposed to. Check for the types of hazards the acid may present. Find out about the appropriate types of personal protective equipment needed and what to do if you or a co-worker are directly exposed.

- Make sure the area you will be working in has adequate ventilation.

- Personal protective equipment is always required for work with acids.

- At a minimum, wear splash-proof goggles and gloves designed specifically for use with acids.

- Respiratory protection may also be required depending on the type of acid and the amount of ventilation in the work area.

- You may want to use a face shield and an impermeable apron or bib. If you get acid on your clothes, immediately remove them and rinse the exposed area thoroughly with water.

- If an acid fire occurs, immediately evacuate and call the fire department.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Asbestos

#35

Asbestos is a widely used, mineral based material that is resistant to heat and chemical corrosion. Prior to 1980, it was used in the production of building materials such as pipe wrap, boiler wrap, ceiling tiles, floor tiles, insulation and wall board. Asbestos can be harmful to workers if it is inhaled or swallowed.

- Asbestos fibers are lightweight and become airborne with the slightest movement of the air around them. The fibers are harmful while airborne because they are too small to see and are easily inhaled and swallowed.

- Mechanical construction workers are exposed to airborne asbestos fibers when working in older buildings where pipe wrap, boiler wrap and other building materials become friable. This means that the materials are so worn that they easily crumble sending the lightweight fibers into the air.

- Workers who are exposed to asbestos can suffer adverse health effects such as the lung disease called asbestosis or cancer of the lungs, esophagus, stomach, colon and rectum. It may take 15 to 40 years following the exposure before symptoms appear.

- Smokers are 90 times more likely to get lung cancer than non-smokers with the same exposure to asbestos.

- While performing mechanical construction in existing buildings, beware of construction materials that may contain asbestos. If you must handle any of these materials, tell your supervisor first. You may need proper training and personal protective equipment before you begin work. It all depends on the concentration of airborne asbestos fibers and your length of exposure.

- In most cases where asbestos is present in excess of the pre-established concentrations, mechanical construction workers can be adequately protected with air filtering respirators and coveralls.

- Be sure to complete the decontamination process established by your employer before leaving work. You do not want to take invisible asbestos fibers home to your families.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#36

Heat Stroke

On July 11, 1995, at around 2:50 p.m., a 22-year-old worker on the roof of a building collapsed for no apparent reason. The air temperature that day was 101 degrees Fahrenheit and the humidity was 35%. The worker died that day from heat stroke. His core body temperature was 108 degrees Fahrenheit at the time of his death.

- In mechanical construction we are often exposed to extreme heat. Working in confined spaces, in buildings that are not air conditioned/ventilated or on roofs or in trenches in the hot summer sun can be very hazardous.
- The worst potential hazard is heat stroke which is a life threatening condition. Heat stroke occurs when the body loses its ability to sweat. The body must sweat to keep its temperature within its normal range.
- When heat stroke occurs, the body temperature can get so high that brain damage and death can happen fairly quickly.
- Symptoms of heat stroke include hot, red skin, very small pupils and very high body temperature.
- To protect yourself from this hazard, take frequent breaks in a cool shady place.
- Drink plenty of water each time you break.
- Choose lightweight clothing with breathable fabric if your type of work allows it. Avoid dark clothing which absorbs heat.
- If you are wearing heavy protective clothes to weld, etc., do the work early in the morning or later in the afternoon to avoid mid-day heat and direct sunlight if you are working outside.
- If you see any co-worker exhibit heat stroke symptoms, send someone to call for Emergency Medical Services. Place the worker on his or her back in a shady place and apply cool water or cool wet towels. Prop the worker's feet up 8 to 10 inches above the ground to treat for shock.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#37

Heat Exhaustion & Heat Cramps

Heat exhaustion and heat cramps occur frequently in mechanical construction workers performing work in hot environments. Although they are not initially life-threatening, they can lead to more serious problems .

- Symptoms of heat exhaustion include pale and moist skin, heavy sweating, dilated pupils, headache, nausea, dizziness and vomiting. When you are working hard in a hot environment and your body is working properly, you are sweating heavily to cool your body. The loss of fluid in your body causes blood flow to slow which could result in a form of shock.

- Protect yourself from heat exhaustion by keeping fluids in your body. Drink water frequently throughout the day. Take breaks to cool down and replace body fluids.

- If a co-worker shows any symptoms ge t him or her to a cool place and call for Emergency Medical Services. Plac e them on their back and prop their feet up 8 to 10 inches above the ground. Cool the victim by loosening their clothing, fanning and placing cold packs on top of their clothes. If the person is fully conscious and can safely drink water, give him or her 1/2 glass every 15 minutes.

Heat cramps are muscle spasms from heavy exertion. The cramps are usually in the stomach or legs.

- Protect yourself from heat cramps by keeping plenty of fluid in your body. Drink water frequently throughout your work day.

- If you or a co-worker show signs of heat cramps get to a cool place . Drink ½ glass of water every 15 minutes for an hour.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Hypothermia & Frostbite

#38

Mechanical construction workers are frequently exposed to cold conditions especially in the winter. There are two potential hazards faced in cold conditions. They are hypothermia and frostbite.

- Conditions do not have to be extremely cold for workers to suffer from hypothermia. Hypothermia results from the loss of body temperature. It can occur even when the temperature is well above freezing. Symptoms of hypothermia include shivering, apathy, loss of consciousness, decreasing pulse rate and decreasing breathing rate . Death can occur as well. Protect yourself from hypothermia by dressing properly. Whenever you will be exposed to cold for any period of time, wear warm clothes and pay attention to what your body tells you.

- Remember that most body heat escapes from the head, underarms and groin area. Block the heat from escaping in these areas and dress in layers so you can remove some clothes when you get hot and put them back on when you start to get cold . If you start to shiver uncontrollably, get out of the cold. Warm back up, then return to work. Eating nourishing food will help keep your body warm, too.

- If a co-worker shows signs of hypothermia immediately call for emergency medical services. Get the victim out of the cold and warm his or her body slowly. Don't give them food or drink.

Frostbite occurs in freezing weather. Frostbite results from ice crystals forming in body tissue, usually on the ears, nose, cheeks, chin, fingers or toes . The symptoms of frostbite are slightly flushed skin (first sign), white or grayish yellow skin and, finally, blueish gray skin. Pain is usually felt at first, but may go away.

- To protect yourself from frostbite, keep your ears, nose, cheeks, chin, fingers and toes covered with warm clothing when exposed to freezing weather. Anytime any body part gets so cold that it starts to hurt, get out of the cold. Get warm, then go back to work.

- If you or a co-worker show signs of frostbite, get to a warm place. Place the frozen body part in warm water (not hot). Call a health care provider.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Hazardous Substances

#39

On February 26, 1995, a 62-year-old pipe fitter was connecting pipes to system pumps in a refinery. Another contractor's crew was removing a defective sight level gauge from a propane relief drum within a scrubber system. Product, containing hydrogen sulfide, leaked out of the gauge and was inhaled by the pipe titter. He died from hydrogen sulfide poisoning.

- If you are working around any chemical substances in the form of gases, mists, vapors, fumes, particles, liquids, solids or any other form, you have the right to know what hazards are associated with those substances.

- Check the label on the substance you are concerned about. If there is not enough information there, your employer should have a Material Safety Data Sheet or MSDS for each substance. Check the label or MSDS to find out what you are working with, what the hazards are and how you can protect yourself.

- The three primary ways workers get hazardous substances into their bodies are by inhaling them, swallowing them or absorbing them through their skin. Check the label and MSDS for each substance.

- You need to know how they get into your body to know how to protect yourself. If a substance presents an inhalation hazard, you may need special ventilation or may need to wear a respirator.

- If a substance can be swallowed, you will need to keep food and drinks away from the work area and wash yourself thoroughly before eating and drinking. It may also require the use of a respirator.

- If a substance can be absorbed through the skin, you will have to keep the substance off your skin by wearing protective clothing and gloves.

- The label and MSDS will give you all of this information. Follow their instructions carefully and you should have adequate protection. If you are not sure about any substances, ask your supervisor before you start work.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Working Under The Influence Of Alcohol Or Drugs

#40

Working while under the influence of alcohol or drugs temporarily changes people, both mentally and physically. Frequently the effects of the changes cause individuals to make decisions or do things that they wouldn't otherwise do. These individuals are much more likely to be involved in a job site accident.

- Remember that being under the influence includes illegal drugs, alcohol, some prescription drugs and some non-prescription drugs. Mental and physical changes that take place while still under the influence are as follows.

  -It changes the way you ordinarily think.

  -It becomes very difficult to concentrate on what you are doing.

  -Your mind loses its ability to make good judgements.

  -Your reflexes are slowed.

  -You lose depth perception.

  -It changes sleep patterns so you are unlikely to get the sleep you need.

- Remember that you can still be under the influence for many hours after taking a substance, especially after partying heavily the night before.

- How long you are impaired depends on what you are using, the amount you use, your body weight and what other substances you have in your body. For example, some over-the-counter drugs, when mixed with alcohol, can cause severe impairment.

- Now that you know the effects of drugs and alcohol on the mind and body would you want to be performing a hazardous task with co-workers who are still under the influence? Neither would they.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#41

Vehicle Driving Hazards

The leading cause of all occupational fatalities each year is highway accidents. There are so many other hazards to think about that we forget how hazardous a road trip can be. Whether you are traveling from one job site to another or just leaving the job site for lunch, don't forget to drive defensively.

- Defensive driving means anticipating what other drivers are going to do and adjusting your driving to avoid a collision. For example, it's usually pretty easy to tell when another driver is going to cut in front of you from another lane. When you see it about to happen, slow down and let the driver in.

- Always buckle up, even for short trips. The impact of being struck by another vehicle doesn't change just because you are only driving a few blocks for lunch.

- Obey the speed limits. Even a five mile per hour collision will make your head whip back sharply. The faster you go, the more force your body will have to endure if there is a collision.

- Remember that heavier vehicles take longer to stop than lighter vehicles. A truck loaded with pipe will take several seconds longer to stop than the same empty truck going the same speed.

- Adjust your speed and driving habits based on weather conditions. It takes longer to stop on wet roads and even longer to stop on icy roads. Be especially careful on bridges and overpasses when the temperature is at freezing or below.

- Leave several extra vehicle lengths between your vehicle and the vehicle you are following. Remember it will take a few seconds for you to react to what is happening ahead.

- Obey all traffic rules and regulations. Watch carefully for signs and read each of them as you go. Don't drive any vehicle unless you kn ow it is in good mechanical cond ition.

- Avoid driving aggressively. Aggressive drivers are the most hazardous.

If you have any comments, p/ease write them on the back of this page.

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MCAA Tool Box Safety Talks

Poor Housekeeping

#42

Poor housekeeping on the job site is a frequent cause of workplace accidents and worker injuries. These types of accidents can easily be prevented by keeping the workplace clean. Good housekeeping makes jobs more efficient and safer.

- Many of the injuries that occur from poor housekeeping are caused by construction materials, scrap, debris and trash left laying around the job site. They become slipping and tripping hazards.
- Keep all of the materials stored on the job site in a neat and orderly way.
- Clean up scraps, debris and trash as the work progresses.
- Focus on keeping walkways, ramps, ladder platforms, scaffolds and stairways free from excess materials, scrap and debris.
- Put tools away in a job box as you finish with them . If you are not using them at the time, don't leave them lying around.
- Keep hoses, power cords and welding leads from laying in or across heavily traveled areas.
- Keep mud and other slick substances off walkways, ramps, ladders, platforms, scaffolds and stairways. If you see slippery surfaces while you are working, tell your supervisor immediately.
- Throw away greasy, oily rags and other flammable materials in approved storage containers.
- Remember that a cleaner job site is always a much safer job site.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Vehicle Pipe Racks

#43

The mechanical construction business frequently requires the transportation of pipe on vehicles equipped with pipe racks. Improperly installed racks or pipe improperly secured to the rack can be extremely hazardous to others on the road or construction site.

- Make sure the pipe racks are securely bolted in place. Use lock washers to keep the nuts from vibrating loose.
- Check the rack frequently to make sure it is secured in place.
- When using a pickup truck, install a steel grate over the back window to keep pipe and other objects from flying through due to an accident or sudden stop.
- Install safety stops on pipe racks for vans and pickups.
- Avoid overloading the racks with too much pipe.
- Avoid stacking the pipe too high in the rack as well. Place the pipe so the tie-downs will work effectively.
- Use nylon straps with ratchets, chain binders or come-alongs as tie-downs to secure the pipe to the rack.
- Use as many tie-downs as you need to effectively secure the load you are transporting.
- Recheck the security of the tie-downs before you start off.
- Secure ladders to the rack in the same way.
- Use warning flags to mark the end of the pipe or ladders sticking out over the back of the rack. This helps to alert other drivers.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

The First 30 Days On The Job

#44

The first 30 days of work on the job are the most hazardous. If you are consciously aware of this when you start work, you will be in the best position to prevent injuries to yourself and others.

- One in every four workers injured on the job is injured in the first 30 days, In other words, 25% of job site injuries occur in the first 30 days.

- Injuries occur most frequently to workers in their first 30 days on the job when:

  -workers are new to the business;

  -workers are experienced in a trade, but change to another; or

  -workers change from one company to another even when performing the same trade.

- If you fit into any of these categories, remember that over 90% of all accidents are caused by unsafe acts committed by workers.

- Get all the training you can before you start. Pay close attention to what the instructors are saying and ask specific questions about the safety and health aspects of the job.

- Much of what you need to know will come from on-the-job training. In other words you will learn it as you go. Always be thinking about working safely.

- Watch the veterans carefully and ask questions of them.

- Learn from them the tricks of the trade that allow you to perform your work more safely.

- Be aware when you are working with others who are in their first 30 days as well. They may not be aware of how hazardous the job can be at first. Teach them what you have learned about working safely.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Confined Spaces

#45

On September 19, 1995, a 51-year -old worker entered into an existing sewer ejector access pit through a manhole. The worker did not test the air in the pit before entry. The pit was deficient of oxygen and the worker suffocated.

- In mechanical construction we frequently have to enter into confined spaces. A confined space is any space that is large enough for an employee to enter and work but which has limited access and which is not designed for continuous worker occupancy. Examples are pits, process vessels, utility vaults, bins, pipelines, tunnels, shafts, sewers, manholes, boilers and ducts.

- The primary hazards in confined spaces are lack of oxygen, toxic gases or vapors and flammable or explosive atmospheres. Never trust your senses to detect lack of oxygen or toxic substances. Human senses can't detect lack of oxygen or toxic gases and vapors which are odorless and tasteless. Avoid entering a confined space until you know it has been tested by someone qualified to do so. Wait for your supervisor to tell you it's safe to enter.

- If you have to work in a confined space that lacks oxygen or contains toxic or harmful substances, don't enter until you receive the proper training.

- Do as much work as possible outside the space to limit the time inside and ventilate the space as well as possible.

- Make sure pipelines are valved off and locked or tagged out before entering.

- If you have to do welding or cutting inside a confined space, you are creating a hazardous atmosphere. Be sure to use an adequate ventilation system.

- Sometimes conditions in confined spaces change while you are working. There should always be an attendant outside the confined space who is in constant contact with the worker inside. The attendant should be properly trained in confined space rescue procedures.

- If a co-worker collapses in a confined space, do not attempt a rescue unless you are properly trained to do so. Call Emergency Medical Services.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Missing Portable Tool Guards

#46

On August 3, 1995, a 30-year-old worker was grinding the end of a IO-foot pipe. The guard on the grinding wheel had been removed. The wheel flew off the grinder and hit the pipe where it broke up into pieces. A fragment of the wheel ricocheted upward and struck the worker in the forehead. He died from the injury to his head.

- Tool guards are devices attached to tools to protect the user from the tool's point of operation . The point of operation is the area on the tool where the work is actually being performed.

- The guards are designed specifically to protect the user. However, they are frequently removed from tools because they seem to get in the way of the work. Guards protect the user from rapidly moving parts such as abrasive wheels, wire brushes and saw blades.

- Guards also protect the user and others in the area from flying fragments and sparks.

- Inspect the tool an d tool guard before you start to use it.

- Never remove a tool guard except to clean the tool. Make sure the power source is shut off. Then clean the tool and immediately replace the guard. Avoid using materials to wedge guards open.

- Before you use the tool, make sure the guard is adjusted properly. The manufacturer's instruction will tell you how the guard should be adjusted.

- On grinders, the guard should cover the spindle end, nut and flange projections.

- If you find portable tools with missing or defective guards, take them to your supervisor immediately.

- Only use attachments such as abrasive wheels, wire brushes, blades, etc. that are designed specifically for the tool being used. Never modify an attachment to fit or use off sizes.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Struck By Falling Objects

#47

On November 2, 1995, at approximately 11:00 a.m., a 39-year-old worker on a scaffold was struck on the head by a scaffold rod which had fallen from above. The worker died 3 1/2 hours later from the injury to his head.

- Falling objects present serious hazards for mechanica lconstruction workers.

- Falling objects include tools, pipe and other building materials and construction equipment. Even hardware (such as nails, nuts and bolts) can cause severe injuries if they fall far enough. To protect yourself always wear your hard hat and, where you can, erect some type of canopy to keep objects from hitting you at all.

- It's usually uncomfortable to wear a hard hat at first. The muscles in your neck and shoulders may even get sore. But the typical hard hat only weighs 14 ounces. Newer hard hats weigh considerably less. You can get used to wearing any hard hat just by wearing it regularly. Before long you will forget it's there.

- Many workers complain that hard hats are too hot to wear, particularly in the summer. The truth is that the temperature inside the hard hat can be much cooler than the temperature outside the hat. Tests done at 110 degrees showed that the temperature inside the hard hat was 5 to 12 degrees cooler than the outside air. Never drill holes in your hat to let heat escape. Even a single hole will significantly weaken your hard hat.

- Hard hats are designed to absorb the force of falling objects. The force received by the head, neck, spine and shoulders is significantly less than the force received on top of the hard hat.

- Always wear your hard hat while working.

- If you have to work under a scaffold, roof, leading edge, ladder, open door or window or any area where objects could fall, consider erecting some type of canopy to protect yourself. Place toeboards and screens on overhead guardrails, hang a sturdy net or erect a solid canopy overhead.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Clothing Caught In Equipment

#48

On March 7, 1995, workers were using a directional drilling machine to run a drain line under a parkway. The 28-year-old worker responsible for attaching 10 foot lengths of steel pipe to the reamer head got his loose clothing tangled on one of the rotating pipes. The force of the rotating pipe broke his back, killing him.

- Injuries from clothing caught in powered equipment, machines and power tools can be extremely serious.
- Since we may not know from day-to-day what equipment, machines or tools we will be working with, it's best to dress each day as if there will be an exposure.
- Always wear clothing that is fairly snug against your body.
- Tuck in your shirt before starting work, even if it's just a T-shirt.
- Avoid long sleeved shirts when weather permits. When you do wear a long sleeved shirt, roll the sleeves up in a way that will keep them from getting caught in equipment or tools.
- When wearing a sweatshirt with a hood or a hooded jacket, choose one with a hood that fits snugly. If you take the hood off while working, don't let it hang back. Tuck it inside the garment.
- Make sure that all safety guards that protect the point of operation on equipment, machines and tools are in place before turning them on.
- Leave jewelry at home. Rings, bracelets, necklaces, watches and even hair bands can be caught up in moving parts.
- If you have long hair, wear it up or tuck it inside your hard hat.
- When job site conditions and work tasks permit, wear clothing that will easily tear away from your body if you do get tangled up in power equipment or tools.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Crushed By Construction Equipment

#49

On November 3, 1995, a 19-year-old worker was working in a trench when a backhoe started to slip slowly into the trench. The operator yelled for the worker to get out, but the backhoe picked up speed as it slipped and pinned the worker against the wall of the trench, crushing him to death.

On October 10, 1995, a 24-year-old worker was in a trench disconnecting a piece of pipe from a sling. The other end of the sling was attached to a backhoe bucket. The operator lost site of the worker and moved the bucket. The worker was crushed to death against the side of the trench.

- Many of the fatalities and injuries in mechanical construction occur from working around construction equipment.
- It's very difficult for operators to see and hear while working their equipment. Don't count on them to protect you. Protect yourself.
- Be especially alert when any construction equipment is near by.
- Remember that operators of equipment being used by other trades may not know you are working in the area. Let them know that you are working in the area and tell them exactly where you will be.
- When back up alarms are being used constantly it is easy for you to tune the sound out. You may hear it subconsciously, but it may not register in your mind that danger is nearby. Always listen consciously for backup alarms.
- When working with an equipment operator, maintain contact with hand signals or two-way radio, if possible. Make sure the operator can see you. If you have to be out of the operator's field of view for any period of time, communicate with him first. Be sure, in your own mind, that the operator knows exactly where you will be.
- While working, be alert for problems that could occur with the equipment, like the backhoe that slipped into the trench, killing the worker. Make sure you always leave yourself a way out.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

#50

Struck By Equipment

On September 18, 1995, a materials handling truck backed over a 26-year-old worker who was wearing ear plugs, and a hooded sweatshirt and rain jacket with the hoods up. The worker did not hear the truck and was killed by the impact.

- A major hazard in mechanical construction is the continuous presence of construction equipment.
- Because working around equipment is something you do so frequently, it is easy to forget it presents a serious hazard.
- For example, it's easy to become desensitized to equipment backup alarms when you hear them all the time. You may hear the alarm, but subconsciously not make the connection between the alarm and danger.
- Make a conscious effort to listen for backup alarms.
- Make sure the equipment operators in your area know you are there.
- Make sure the equipment operators can see you. If you have to be out of their field of view for any period of time, make sure you communicate with them clearly before you leave their view.
- Be especially aware of equipment being used by workers in other trades who may not know you are there.
- If there is equipment operating without backup alarms, let your supervisor know immediately.
- Be aware of operators trying to position equipment in awkward places without someone to guide them. Stay well away from those areas until the equipment is in place.
- Be careful about wearing hooded garments or other clothes that may obstruct your view. Make sure that the hearing protection you choose does not completely block out the sound of horns, backup alarms or equipment engines.

If you have any comments, please write them on the back of this page.

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MCAA Tool Box Safety Talks

Uncontrolled Sources Of Energy (Lockout/Tagout)

#51

On September 18, 1995, a 38-year-old worker was checking out a flood damaged air conditioning unit. The worker reached out to move damaged duct work and contacted the unit. Current to the unit had not been shut off. The worker was electrocuted.

- Unprotected sources of stored energy can be very hazardous to mechanical construction workers. Examples of stored energy that we may encounter on a job site include:

  -electrical (such as panel boxes);
  -mechanical (such as mechanical jacks);
  -hydraulic (such as an aerial lift);
  -pneumatic (such as an air compressor); or
  -thermal (such as steam lines).

- Workers can be protected from these hazards if the sources of energy are locked out and tagged out. Lockout means that the source of energy can't be turned on because a locking device has been placed on the switch, lever, valve, etc. Tagout means there is a warning tag attached to the energy source controls to stop others from turning on the source of energy.

- If a mechanic has to perform maintenance or repair on any machinery, equipment or process with stored energy, it should be locked out and tagged out. Only qualified mechanics should engage in lockout/tagout operations.

- Electricity should be locked out or tagged out at the panel box.

- Steam, hydraulic and air-line systems should be shut off and bled out. Otherwise even when the valves are in the off position, there is still hazardous energy stored in the pipes. The valves should be locked out and tagged out.

- Only the mechanic who locked out or tagged out a source of energy should remove the lock and tag.

- Always make sure your procedures comply with your company's lockout/tagout program.

If you have any comments, p/ease write them on the back of this page.

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MCAA Tool Box Safety Talks

#52

Scissor Lift Hazards

Falls from elevations are the leading cause of fatalities among construction workers. Falls with and from scissor lifts account for a significant number of these fatalities.

- Before operating a scissor lift, inspect the entire area in which the lift will be used. If you find potential hazards such as drop offs, floor holes, bumps or debris in the path of travel, take the time to remove or otherwise protect yourself from the hazards.

- Also, inspect the area overhead for obstructions such as sprinkler equipment and ceiling beams and electrical hazards such as live wires and light fixtures.

- Plan ahead on how to carefully work around the obstructions.

- If you have been assigned to work near electrical hazards, have the source of electricity de-energized. If this can't be done, stay well away from electrical hazards unless you are in a lift designed by the manufacturer specifically for working near them. If you are unsure, check with your supervisor before starting work.

- Inspect the lift itself before starting it. Look for hydraulic system leaks and check all of the fluid levels, especially the hydraulic fluid.

- Inspect the tires for wear. Remember that the stability of the lift hinges on the tires. Take your time and do a thorough inspection. Also check all controls, safety devices, personal protective devices and warning placards or control markings.

- After starting the lift, perform a functional test by testing all the controls and safety devices . If any part of the lift during the inspection or the functional test appears even slightly defective, take the lift out of service immediately and report to your supervisor.

- Make sure you have received training on the same brand and model lift that you will be using for work.

If you have any comments, please write them on the back of this page.

Employee Signature_____

Date_____