MCAA Toolbox Safety Talks

Volume III

MCAA MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA, INC.

MCAA Toolbox Safety Talks

Table of Contents

(See instructions for the Toolbox Talks Presenter on the back of each talk)

MCAA Toolbox Safety Talks

Toolbox Talk #_____

The undersigned workers have participated in safety training covered by the MCAA Toolbox Safety Talk that corresponds to the number in the space above.

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MCAA Toolbox Safety Talks

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The Moral Imperative

#1

A mechanical construction worker whose crew had been removing an old 2-inch condensate-return steam line arrived at work early one morning. A length of the pipe had been uncovered and raised by backhoe the day before. The worker decided not to wait for the backhoe operator to arrive to place the trench box back into the excavation. He entered the excavation to cut and remove the length of pipe. The excavation caved in, killing him.

- There are many reasons why safety is so important to mechanical construction companies.
- There are, of course, business reasons for safety stemming from the costs of incidents and worker injuries. However, the most important part of every company's safety initiative is the health, safety, and well being of each and every worker.
- Every contractor knows that his workers are his most valuable resource.
- The contractor described the victim referenced above as irreplaceable both as a person and as a worker.
- The worker was a father, a good family man, and a good friend to many. He also had a great deal of experience in the industry, was dedicated to his work, had risen to the rank of foreman, and had become a good leader.
- Our company can't function successfully without you. We care about each of you as individuals and we respect your mechanical skills and work ethic. Therefore, our company is committed to trying to provide each of you with a safe place to work.
- We will provide you with the safety training and equipment you need to get your work done safely, and we will monitor our work areas for things that could be hazardous to you.
- However, we need your help to provide you with a safe place to work and to get you home to your families safely every day. We ask that you pay close attention to all of the safety training you receive and implement what you learn; use the safety equipment and guards that are provided for you; help us monitor the jobsite for hazards every day; and report any hazards or potential hazards you find to your supervisor immediately.

Instructions For The Toolbox Safety Talk Presenter

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MCAA Toolbox Safety Talks

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Direct Costs of Injuries

#2

Our desire that you get home safely to your families each and every day is without question the most important reason for our company's safety initiative. However, there are other reasons for our focus on safety as well. Being a safe company makes us more competitive because there is a business side to safety regarding the costs associated with accidents that result in injury. In this talk we will discuss the *Direct Costs* associated with accidents that result in worker injuries.

- *Direct Costs* are all of the costs associated with worker injury that are covered by workers' compensation insurance. They include medical treatment, hospitalization, prescription drugs, and wage replacement.
- Mechanical construction companies pay a premium to their workers' compensation insurance carrier every year. However, the premium isn't a fixed premium.
- A base premium is multiplied by an Experience Modification Rate (EMR). The EMR is based on the costs of injuries that occur over the first three of the past four years. Let's assume that our base workers' comp premium is $250,000.
- If our company has more workers' comp losses than the insurance industry expects over that three-year period, our EMR will exceed 1. Assume our EMR is 1.5. Our final premium would be: 1.5 x $250,000 = $375,000.
- If our company has fewer workers' comp losses than the insurance industry expects over that three-year period, our EMR will be less than one. Assume our EMR is 0.5. Our final premium would be: 0.5 x $250,000 = $125,000.
- Many construction owners, construction managers, and/or general contractors won't allow us to bid on a job if our EMR is above the average EMR of 1.
- Preventing injuries allows us to be much more competitive when bidding jobs and therefore generates more work for everyone in the company.
- Help us to be more competitive by paying close attention to safety each and every day. Don't attempt any job unless you are sure it is safe to do so. And let your supervisor know immediately if you have any questions.

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Indirect Costs of Accidents

#3

Always remember that this company is committed to helping you keep yourself safe and healthy at work so that you can enjoy your life every day. We also want to keep you safe and healthy so that this company can remain competitive in the mechanical industry marketplace. To stay competitive we must strive to eliminate our *Indirect Costs*.

- Indirect Costs are all of the costs associated with accidents that are not covered by workers' compensation insurance. We refer to these as hidden costs or out-of-pocket costs.

Indirect Costs include:

- *Injured Worker Costs*—These costs include: transporting the injured worker; lost productivity the day the injury occurred; lost productivity when the worker goes in for follow- up treatment; and lost productivity when the worker is back to work full time, but still isn't up to full speed.
- *Crew of the Injured Worker Costs*—These costs include: assisting the injured worker; additional work due to the accident; lost productivity the day of the accident; and lost productivity due to subsequent inspections and accident investigations.
- *Crews in the Vicinity of the Accident*—These costs include: other crews standing around watching and talking about the accident (depending on the severity of the injuries, this phenomenon often occurs for several days).
- *Replacement Worker Costs*—These costs include: getting another worker up and running. Even though we have the luxury of obtaining highly skilled workers from our union hall, there is still a cost associated with getting the worker familiar with the job and up to full speed. There are also costs associated with safety training and jobsite orientation for the replacement worker.
- *Supervisory and Administrative Staff*—These costs include: staff's time assisting the injured worker; the accident investigation process; preparing the reports; and interview time with the media, OSHA, owners, and other contractors.
- *Damaged Property*—These costs include: replacing damaged materials and repairing the damage.
- Typically, *Indirect Costs* are 2 to 20 times more than direct costs, which are covered by workers' compensation insurance. Implement our safe work practices with every task on every day. Stay cognizant about your surroundings. If you're not sure about the safety or health risks associated with any task, please don't attempt it. We want you to get your questions answered before you start to tackle each task.

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#4

Mechanical Industry's Top Five Hazards

It's important to be aware of as many jobsite hazards as possible, but we need to know how to identify the most common hazards in mechanical construction and service and how to protect ourselves from those hazards. The top five hazards are a great place to start.

- Manual Handling of Materials—Most injuries that occur when we are moving materials by hand are low back injuries and cuts and pinches to our hands. Prevention: Use material moving equipment whenever possible; if you have to lift or carry an object, use proper lifting techniques; get help moving heavy or bulky objects; and wear leather work gloves when moving materials, especially sheet metal and pipe.
- Struck By Objects—Most of these injuries in our industry are from tools or materials falling from ladders, aerial lifts, mobile scaffolds, etc. We are also being struck by construction vehicles/equipment. Prevention: always wear your hardhat; make sure aerial lifts, scaffolds, and overhead work areas have guardrails equipped with toe boards; avoid walking under ladders while in use; avoid becoming desensitized to back-up alarms; and stay aware of the vehicles/equipment around you.
- Falls From Elevations—Most of our falls are from ladders. However, we are still falling from aerial lifts, mobile scaffolds, and elevated work areas with guardrails. Prevention: Avoid reaching out too far when working on a ladder. Don't carry tools or materials in your hands when climbing up or down a ladder. Always close and latch the gate or chain on aerial lifts and mobile scaffolds; and, never step up on the mid-rail to extend your reach.
- Objects in the Eyes—Most of these injuries occur because the victim isn't wearing safety glasses or goggles. However, on rare occasions, particles can fall in behind safety glasses and lodge in an eye. Prevention: Always wear safety glasses or safety goggles; choose sharp-looking, comfortable, fog-resistant safety eyewear because you will be much more likely to use it, and, if you're working where rust, pipe insulation, fireproofing material, etc. could fall in behind your safety glasses, use safety goggles.
- Slips and Trips—These injuries occur most often due to poor housekeeping. Prevention: pick up scrap materials (especially pipe) from your work area frequently; keep extension cords and welding hoses out of main walkways as much as possible.

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#5

Daily Personal Safety Checklist

One of the toughest things about jobsite safety is keeping it at the top of the priority list. It's easy to become desensitized to safety when you're working so hard to get a job done on time and within budget. The following checklist of questions is intended to help you keep safety foremost in your mind. Think through each question on the checklist before you start work each day. For example, when you get to the "other safety equipment" line, it may occur to you that you will have to move pipe or sheet metal by hand that day and that you will need a pair of leather work gloves to do so safely. Add to the checklist whenever necessary to cover specific hazards.

____ Will I have to move a lot of heavy or sharp materials by hand today?

____ Will I be working where I could fall from an elevation?

____ Will I be in an area where I could be struck by a falling object, vehicle, or equipment?

____ How will I protect my eyes from flying objects and ultraviolet and infrared radiation?

____ What slip/trip hazards need to be removed from my work area?

____ Do I have my hardhat?

____ Do I have safety glasses or safety goggles?

____ Do I have steel-toed work boots?

____ Do I need other safety equipment, i.e., fall protection, welding and cutting gear, respirator, etc.?

____ Have I received safety training for all of the unique situations I will encounter today, i.e., working in excavations, working in confined spaces, using a respirator, etc.?

____ Are all of my tools and equipment in good shape with appropriate guards in place?

____ Have I checked outlets, tools, and equipment cords for electrical hazards?

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Learn Each Jobsite

#6

When you get to a new jobsite it's a good idea to get to know it as quickly as you can. Doing so will help you be more productive while working and will prepare you to handle an emergency situation should one occur. At a minimum, learn the following things about your jobsites as soon as you arrive:

- Whether portable telephones work in that particular location
- Where the land line telephones are located
- Where emergency telephone numbers are posted
- Where the automated external defibrillators (AED) are located (if applicable)
- Who on the jobsite is qualified to use the AEDs
- Who on the jobsite is qualified to perform CPR
- Where the first aid kits are located
- What is included in the first aid kits
- Where emergency eye wash stations or eye wash bottles are located
- Where safety showers are located (if applicable)
- Where fire extinguishers and fire blankets are located
- Where and how the electrical power sources can be de-energized
- Locations of high hazard areas, i.e., excavations, confined spaces, high traffic areas, etc.
- Storage locations of hazardous chemical substances
- Locations of exits and emergency escape routes

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Recordable Injuries

#7

Contractors are required to record certain work related injuries. It's important that a company never record an injury unless it's absolutely necessary to comply with the law. If you experience an injury or an illness on the job, whether or not it has to be recorded depends on specific criteria. A work related injury or illness is recordable if it:

- Results in a fatality
- Results in the loss of consciousness
- Results in days away from work
- Results in restricted work
- Results in the victim being transferred to another job, or
- Requires medical treatment *beyond* first aid.

Regardless of whether a physician or other licensed healthcare provider administers treatment, the following are considered first aid cases and *are not recordable:*

- Use of non-prescription drugs at non-prescription doses
- Tetanus immunizations
- Cleaning, flushing, or soaking wounds on the surface of the skin
- Use of wound coverings such as Band-Aids, gauze pads, butterfly bandages, etc.
- Use of hot or cold therapy
- Use of non-rigid means of support such as elastic bandages and wraps
- Use of temporary immobilization devices such as backboards and neck collars while transporting a victim
- Drilling of finger or toe nails to relieve pressure or draining a blister
- Use of eye patches
- Removing foreign bodies from the eye using only irrigation or cotton swabs
- Removing splinters or foreign material from areas other than the eye by irrigation, cotton swabs, or other simple means
- Use of finger guards
- Use of massages other than physical therapy or chiropractic treatment
- Drinking fluids for relief of heat stress

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Reporting Near Misses

#8

A near miss is an incident that occurs on the job, but does not result in worker injury. For example, if a backhoe nearly hits a worker, but the worker moves out of the way just before being struck, that's a near miss. Another example of a near miss would be if someone dropped a pipe hanger off a mobile scaffold and the hanger barely missed hitting a worker walking below.

Near misses should be reported to your supervisor for the following reasons.

- The supervisor will investigate near misses the same way he would if it were an accident that did cause an injury.
- The investigation will reveal how the near miss occurred.
- The supervisor, along with you and the other workers, will determine how to prevent similar incidents from occurring in the future.
- The company will describe the incident and prevention methods in a toolbox talk, safety training session, or company meeting to the workers throughout the company.

Here's how to report a near miss to your supervisor.

- Describe the incident. For example, one of our guys was almost hit by a pipe hanger that fell off my scaffold.
- Give the time and location of the incident. For example, it happened around 8 o'clock this morning on the third floor about 30 feet from the center stairwell.
- Describe who was working in the area. For example, the electricians were up there running wire and there were two masons cutting block.
- Explain what happened. For example, I inadvertently kicked the hanger off the scaffold while I was drilling a hole to hang it.
- Describe how you think it could be prevented in the future. For example, I think we should make sure all of our mobile scaffolds are equipped with toe boards and we should keep all of the hangers in boxes until we are ready to use them.

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Jobsite Safety Responsibilities

#9

The responsibility for jobsite safety in the mechanical construction and service industry is twofold. Construction companies should provide safe workplaces for all of their workers. This is a smart business practice and is critical to the success of all companies. However, approximately 90 percent of all jobsite accidents are caused by workers' errors and not by unsafe jobsite conditions. Workers are the most important part of the process.

The Company's Responsibilities:

- Train workers to recognize and avoid common jobsite hazards.
- Train workers to use safe work practices at all times while on the jobsite.
- Ensure that workers use the appropriate personal protective equipment.
- Ensure that workers' tools/equipment are in good condition and safe to use.
- Enforce safe work practices.
- Strive to maintain a safe workplace.

The Workers' Responsibilities:

- Pay close attention to all safety training.
- Learn and implement safe work practices as quickly as possible.
- Use personal protective equipment whenever it's needed or required.
- Keep your tools and equipment in good condition.
- Refuse to use tools or equipment that are defective.
- Report to your supervisor immediately anytime you think that a jobsite situation or condition could be hazardous.

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General Safety Initiatives

#10

Some jobs require more detailed attention to safety than others. For example, safe entry into confined spaces can get pretty complicated. Conversely, installing a prefabricated plumbing assembly at ground level may not be as hazardous. However, there are some general safety initiatives that you should implement daily no matter what you're going to be doing that day.

- *Pre-Task Planning*—Before you start a task, determine not just what you need to complete the task, but what you need to complete the task safely. This will include tools, construction equipment, materials, and personal protective equipment. You also may need to get direction from someone else with expertise on a specific construction process that will involve you.
- *Inspect What You Will Use*—Carefully inspect all of the tools and equipment that you will need, including the safety equipment. If any of it is in disrepair, don't use it. Place a warning tag on it immediately and turn it in to your supervisor so no one else will use it.
- *Use the Right Tool*—Use tools only for the purpose for which they are intended. A careful preplanning process will keep you from having to improvise with tools on the jobsite.
- *Dress Properly for Work*—Wear clothes that are appropriate for the climate. Select clothes that are flame retardant and that don't have cuffs in the pants legs or shirtsleeves. Make sure that nothing on the clothing is loose enough to get caught up in energized equipment. Wear leather high-top work boots with steel toes. Leave rings, watches, chains, earrings, and other jewelry at home while you are working.
- *Use Personal Protective Equipment*—Don't go anywhere on the jobsite without wearing your hardhat and safety glasses or safety goggles unless you're in the jobsite trailer or some other specially designated "safe place." When welding or cutting use the shaded lens (or lenses) that is appropriate for the specified task. Make sure you use hearing protection when needed as well.
- *Pay Attention to the Housekeeping in Your Work Area*—Reduce the slip and trip hazards in your work area by picking up scrap materials throughout the day. Unless you're holding them in your hand because you're using them, keep your tools in your tool belt. Try to place welding hoses and extension cords so that they are not lying across frequently used walkways.
- *Be Alert to What's Going on Around You*—Pay attention to what the other trades are doing, especially if moving equipment or machinery is involved.

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MCAA Toolbox Safety Talks

MCAA

Critical Housekeeping

#11

Housekeeping in our industry means keeping work areas cleaned up throughout each day. Good housekeeping is critical for a couple of reasons. One is that poor housekeeping accounts for most of the injuries that result from slips and trips in the workplace. The other reason is that poor housekeeping draws a lot of extra attention from safety compliance officers. It's not always easy in the mechanical industry because we are often working as subcontractors and don't have control over what the other trades do. However, keeping our own work areas clean will go a long way toward creating a safer workplace.

- Keep your building materials in neat piles or stacks away from busy walkways.
- Take the time to pick up your work areas as you go along each day.
- Keep pieces of scrap materials out of major walkways and busy work areas.
- Whenever possible, arrange welding hoses and extension cords so they are not laying across major walkways or in the middle of busy work areas.
- Don't forget to pick up trash as you go along, too. Even though it may not be as much of a slip/trip hazard as a piece of scrap pipe, it still could draw unwanted attention.
- If water, oil, or some other liquid is spilled, clean it up right away or report it to your supervisor immediately.
- Make sure that flammable liquids and gas cylinders are put away and properly stored as soon as you are finished using them for the day, even if it's still early in the day.
- If you see an object laying around on the jobsite that is a likely trip hazard, pick it up and move it to a safe place. Don't assume someone else will do it. They probably won't.
- Pay special attention to stairways and steps where a slip/trip is more likely to result in a severe injury. When workers are carrying loads, it's often difficult to see the step in front of them and they may not see materials, scraps, trash, or other objects on the steps.
- Report poor housekeeping practices to your supervisor if you think they are likely to result in an accident.

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MCAA Toolbox Safety Talks

MCAA

Solvents

#12

The solvents we use in the mechanical industry are liquids that dissolve other substances. Examples include gasoline, acetone, naphtha, mineral spirits, turpentine, benzene, alcohol perchloroethylene, and trichloroethane. We use some of these solvents as pipe degreasers and cleaning fluids. Some solvents are hazardous to humans because they emit toxic vapors that can easily be inhaled and/or they can be absorbed through the skin. Certain solvents can depress the central nervous system, preventing the brain and spinal cord from doing their normal jobs. Some of them can cause severe skin irritation. Most organic solvents like those listed above are flammable, and under the right conditions can be explosive. Almost all organic solvents can cause a narcotic effect in humans. Here is how you can protect yourself when working with or around solvents.

- Read the solvent's container label before you use it and follow its directions for use and recommended precautions.
- Don't allow yourself to become overexposed to solvent vapors.
- Make sure the area you're working in is well ventilated before you open a solvent container.
- If you have to use a solvent in a poorly ventilated area, talk to your supervisor about getting set up to use a respirator before you start the work.
- Always wear splash-proof safety goggles when working with solvents.
- Wear long sleeves and the appropriate type of gloves to keep solvents off your skin. Natural rubber gloves are not useful for protection against some organic solvents. Always check the solvent's Material Safety Data Sheet (MSDS) or label to determine what type of gloves you should wear.
- Don't use solvents anywhere vapors could come into contact with ignition sources such as welding or grinding sparks, torch flames, lighted cigarettes, etc.
- Keep solvents in proper, tightly closed containers when you're not using them.
- Store solvents in cool storage areas away from ignition sources and preferably well away from construction activity.

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MCAA Toolbox Safety Talks

MCAA

Corrosives

#13

Corrosives are substances that cause visible destruction or permanent changes to human skin tissue at the site of contact. They come in several forms including compressed gases, liquids, and solids like granules and powders. In addition to skin damage, some corrosives give off vapors that can be harmful when inhaled by humans. Sometimes the result is severe lung damage. We use a number of corrosives in the mechanical industry including: electrolyte corrosive (battery acid), hydrochloric and muriatic acid, hydrofluoric acid, nitric acid, sulfuric acid, perchloric acid, sodium hydroxide (caustic soda or lye), potassium hydroxide (caustic potash), and ammonium hydroxide. Knowing which corrosives you're working with makes it easy to keep yourself from becoming overexposed to them. Here's what you should do.

- Read the container label to find out how to use the substance safely. Follow the instructions and hazard warnings on the label.
- If you're not sure about something or if you want more information, read the Material Safety Data Sheet (MSDS) for the substance.
- Pay close attention when reading the label or MSDS so you will know what to do if an accident occurs. This includes first aid treatment for exposure by inhalation, surface exposure to skin and eyes, and what to do if the substance is spilled.
- Always wear splash-proof safety goggles when working with corrosives.
- Wear gloves that are impermeable to the corrosive you are using. Select the type of gloves recommended on the substance's container label or MSDS because some types of gloves don't provide suitable protection against corrosives.
- Be careful not to spill or splash the substance on your clothing or skin. If the situation requires more protection, you can use impermeable aprons or coveralls designed to protect you from corrosives.
- If you get a corrosive on your clothing, remove that article of clothing immediately and flush the exposed skin thoroughly with water.
- Follow the manufacturers' recommendations when it comes to storing corrosives. This information can also be found on the label or MSDS.

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MCAA Toolbox Safety Talks

MCAA

Gases

#14

Mechanical construction workers come into contact with a variety of gases each day on the jobsite. Not all gases are toxic or explosive, but they still can be hazardous. Some of the most common hazards that you should know about, which are associated with gases found on jobsites, are as follows:

- Some gases, such as nitrogen, which is not toxic, can displace oxygen in enclosed or confined spaces.
- Inhaling gas mixtures that exclude an adequate supply of oxygen can result in asphyxiation.
- Some of the recognizable symptoms of oxygen deprivation in the body include dizziness, nausea, loss of balance, fainting, hypothermia, slurred speech, convulsions, difficulty in movement, and reduced or loss of consciousness.
- If you begin to feel any of these symptoms or see someone else suffering from them, assume that the oxygen supply is inadequate and get everyone to fresh air immediately.
- Acetylene is extremely flammable in both high and low oxygen concentrations and can easily be ignited by heat, sparks, or flames.
- Presumably empty acetylene cylinders contain acetone and are, therefore, still flammable.
- Propane mixed with the right concentration of oxygen is extremely flammable and can easily be ignited.
- Oxygen is not flammable, but rapidly accelerates the rate of combustion. Extremely rapid combustion results in an explosion.
- Oxygen enriched atmospheres turn some materials that aren't flammable under ordinary circumstances into flammable materials.
- Compressed gas cylinders are under extreme pressure and can be projected like missiles if valves are broken by improper handling and/or storage.
- To avoid safety issues, carefully follow the handling, storage, and proper use procedures described on gas container labels and Material Safety Data Sheets (MSDS).

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MCAA Toolbox Safety Talks

MCAA

Metals

#15

Metals in their natural state are not generally hazardous. However, in the mechanical industry we frequently change metals from their natural state when welding, cutting, soldering, or brazing. The most significant hazard is overexposure to metal fumes from inhalation. Here is what to watch out for whenever you work around metals:

- Some of the common and potentially hazardous metals that we could be exposed to include lead, zinc, manganese, and hexavalent chromium.
- Older pipes used in construction often contain lead. Even pipes that aren't made from lead may have been painted with a lead based paint. Heating and cutting these pipes can result in lead exposure. And, even though it's a rare occurrence these days, some jobs still require the use of lead, which is usually heated in melting pots. Fumes from melted lead become airborne and can easily be inhaled. Overexposure to lead can result in lead poisoning.
- Welding, brazing, or cutting galvanized metal generates zinc fumes, which could result in metal fume fever.
- Certain types of welding rods generate manganese fumes, which can affect the nervous system.
- Welding and cutting stainless steel pipe may result in exposure to hexavalent chromium, which is thought to be carcinogenic in humans.
- The good news is that it's not hard to protect yourself from overexposure to metal fumes.
- Before you start work, determine which metal or metals you'll be working with and whether there are hazards associated with those metals and the type of work you will be performing. Determine what you have to do to keep from becoming overexposed. If you're not sure, check with your supervisor before starting.
- Whenever you are welding, cutting, brazing, or soldering, make absolutely sure that the ventilation in your work area is adequate for the task.
- If the ventilation is poor, respiratory protection may be required. Check with your supervisor before you resort to using a respirator. There are specific respirator program, training, selection, and fit test requirements that must be met before you use respiratory protection.

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MCAA Toolbox Safety Talks

MCAA

Fiberglass

#16

Fiberglass is a fibrous material made from glass. It has a number of functions including reinforcing plastics, rubber, and paper. However, in the mechanical industry our exposure to fiberglass is mostly from thermal insulation products used in construction. Exposure to fiberglass can cause skin, eye, and lung irritation. When you have to work around materials that are made from fiberglass, you should protect yourself by adhering to the following protective methods:

- Use dust collection systems if fiberglass material has to be disturbed to the point that it could create a high exposure level.
- Keep your work area as clean as possible. Remove scrap fiberglass materials from your work area as soon as possible.
- Wear loose-fitting clothing including a long sleeve shirt and trousers as opposed to shorts. The looser fit will help prevent fibers from getting rubbed through the material into your skin, but be sure that your clothing isn't so loose that it could get caught up in machinery, power tools, or equipment. Wear heavy-duty work gloves to protect your hands.
- Protect your eyes from irritation by wearing safety glasses or safety goggles. You may also want to consider wearing a face shield over your eye protection to keep fibers off your face and to reduce the concentration of fibers in your breathing zone.
- A nuisance dust respirator will help protect you from lung irritation, but check with your supervisor before you use one. There are several respirator program, training, selection, and fit test requirements that must be met before you use respiratory protection.
- Shower after you work around fiberglass, but try not to rub or scratch your skin. Doing so could increase the irritation. Use warm water and a mild soap.
- Make sure you wash your work cloths separately from other clothes so that fibers don't work their way into other clothes. After removing your work clothes from the washer, you may want to run the washer through a complete cycle without clothes in it to clean out any leftover fibers.

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MCAA Toolbox Safety Talks

MCAA

Adhesives

#17

In the mechanical industry, adhesives are used to bond materials such as pipe and duct insulation and plastic pipe joints. Adhesives can be hazardous if they're not used and stored properly. Here is what you should know to protect yourself from common hazards associated with adhesives.

- Inhalation of vapors produced by the evaporation of chemicals in adhesives creates the biggest potential for a health hazard. Overexposure due to excessive inhalation of adhesive vapors can result in dizziness, nausea, drowsiness, and unconsciousness.

- Make sure you use adhesives only in well-ventilated areas.

- If you have to use an adhesive in an area that isn't well ventilated and you can't improve the ventilation with fans or by some other means, you may need to use a respirator. Check with your supervisor before using a respirator. There are several respirator program, training, selection, and fit test requirements that must be met before you use a respirator.

- Adhesives also can get into your body by being absorbed through your skin. So wear the appropriate type of rubber or neoprene gloves when using adhesives. Be sure to check the label or Material Safety Data Sheet (MSDS) to determine the type of gloves you should wear.

- Protect your eyes by wearing safety glasses or safety goggles when working with adhesives.

- Many adhesives are flammable. Make sure you don't expose adhesives to ignition sources such as welding or grinding sparks, lighted cigarettes, torch flames, etc.

- Be sure to store adhesives in their original containers and keep them in a cool, safe place.

- Clean up spills immediately by following the adhesive manufacturer's recommendations for cleanup. You can find that information on the container label or on the product's MSDS.

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MCAA Toolbox Safety Talks

MCAA

Manganese

#18

Manganese is a metal that is used in many welding rods. Although carbon steel welding rods have higher concentrations of manganese than stainless steel welding rods there isn't a whole lot of manganese in either type of rod. Overexposure to manganese usually takes place in poorly ventilated areas where there are several welding operations going on simultaneously. Here is what you should know about manganese and welding in the mechanical industry:

- Fumes created by welding can generate airborne concentrations of manganese, which can be harmful if inhaled in large concentrations.
- Overexposure to manganese can severely affect the nervous system and result in symptoms that are similar to Parkinson's disease such as tremors, loss of balance, poor memory, slurred speech, lack of facial expression, and sleep disorders.
- If you're not sure whether the welding rods you are using contain manganese, check the manufacturer's Material Safety Data Sheet (MSDS) for that specific rod. Look for the section that lists the ingredients, which is usually section #2. If you find that the welding rod contains manganese, you need to make sure that you don't end up working in an enclosed area where several welding operations are taking place.
- Ventilation is the key to protecting yourself from overexposure to manganese.
- Make sure that your work area is well ventilated. If it's not, try to improve the ventilation by opening doors and windows if applicable and/or incorporating portable blowers or fans.
- If you are in a situation where you can't establish adequate ventilation, you will probably need to wear a respirator.
- Make sure that you meet with your supervisor before using a respirator. There are several specific requirements that must be met before respirators can be used such as establishing a company respirator program, user training, proper respirator selection, and respirator fit testing.

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MCAA Toolbox Safety Talks

MCAA

Silica

#19

Silica is a hard, glassy mineral found in different forms such as quartz and sand. The primary source of silica in the construction industry is concrete, brick, and block. Exposure to airborne concentrations of silica in the mechanical construction industry is predominantly from drilling or cutting into concrete. There is minimal exposure to silica when drilling holes to install pipe hangers or to run pipe through concrete walls. There is also minimal exposure when walking through areas where other trades are cutting brick, block, or concrete. However, if you have to work in those areas while cutting is taking place, there may be significant exposure. Here is what you need to know to protect yourself from silica:

- The primary route of entry for silica into the human body is through inhalation.
- Overexposure to silica can cause the lung disease silicosis and it is a suspect carcinogen.
- Some trades such as sand blasters, rock drillers, and masons can have significant exposure to silica.
- Exposure to silica in our industry is usually minimal, but it's still a good idea to reduce our exposure.
- Make sure that your work area is well ventilated.
- Use hammer drills equipped with dust vacuum systems when drilling pipe hanger holes.
- When cutting concrete or drilling large holes to run pipe, use a wet system to keep the dust from becoming airborne.
- To avoid exposure once the water from the wet system dries out, vacuum it up immediately with an appropriate wet vacuum system.
- If you have to work in an area where another trade is creating dust from cutting or drilling concrete, brick, block, or any other silica-containing materials, check with your supervisor to determine whether you need to wear a respirator while working in that area.
- Never use a respirator without checking with your supervisor first. There are several requirements covering a company respirator program, user training, respirator selection, and fit testing that must be met before you can use a respirator.

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MCAA Toolbox Safety Talks

MCAA

Radio Frequency (RF) Exposure

#20

Radio frequency (RF) is a range of frequencies at which radiation is useful for communication. RF is non-ionizing radiation such as that emitted by microwave ovens, cellular telephones, radios, high frequency welders, and cellular telephone, radio, and TV towers. The primary health effect is heating of body parts. However, it's not easy to become overexposed to RF. In fact, researchers aren't sure whether harmful effects occur when exposures aren't intense enough to cause significant heating in the human body. However, it's still a good idea to keep RF exposure to a minimum. Here is what you should know about RF exposure.

- Some exposure occurs when mechanical industry workers are working near cellular telephone, radio, or television towers.
- Distance offers the best protection. The farther away from the towers you are, the better off you will be with regard to exposure.
- Minimize the amount of time you need to spend working close to the towers by carefully planning the job ahead of time. All planning should be done well away from the towers.
- Think through the entire process of each specific work task so that you can prepare tools, equipment, and materials in advance. This action will help you minimize the amount of time you have to spend at the jobsite.
- Only take the tools, equipment, and materials that you will use that day to limit pickup time at the end of the day.
- Set up the jobsite trailer or your jobsite office a good distance from the tower whenever possible.
- Establish a designated lunch and break area that is well away from the tower.
- Make sure you leave the tower area when you take your breaks and don't skip any of the breaks that you are allotted.

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MCAA Toolbox Safety Talks

MCAA

#21

Mold

Molds are fungi that are present just about everywhere indoors and out. Mold needs moisture, temperatures between 40 and 100 degrees Fahrenheit, and a food source such as cellulose or carbon based material to thrive. Many building materials such as the cardboard backing in sheetrock, subflooring, ceiling tiles, etc. provide a food source for mold. There is undoubtedly mold in your work areas, but it's not likely to be a problem to your health. Here is what you need to know about mold on the jobsite.

- There are approximately 1,000 species of mold in the United States. The majority of molds pose little or no health risks to humans.
- Contrary to what you read and hear there is no such thing as "toxic mold." Some types of mold can produce mycotoxins, which may or may not prove to be toxic to humans. There is currently no conclusive research that allows us to make the determination one way or another.
- Some people may be sensitive to mycotoxins or may react if exposed to large concentrations. It's best to limit your exposure as much as possible until the scientific community it sure about the health effects of mycotoxins.
- The two types of mold that are most often associated with mycotoxins are Strachybotrys, or black mold, and Aspergillus, which has similar characteristics.
- These molds can be found on cellulose or carbon-based building materials that have become wet due to leaky roofs or pipes, condensation problems, high humidity, or other moisture problems. However, you are exposed to much higher concentrations of these and other types of molds when you are outdoors than when you are indoors.
- Molds are not particularly allergenic. The small percentage of the population that is allergic to mold is most likely allergic to other things as well. Mold allergies cause symptoms such as cough, congestion, runny nose, eye irritation, and aggravation of asthma. In other words, the same allergy symptoms you would have if you were allergic to hay or family pets.
- If you believe you are having allergic reactions to mold, let your supervisor know immediately. You can use a respirator after your company meets several requirements including establishing a respirator program, user training, respirator selection, and fit testing.

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MCAA Toolbox Safety Talks

MCAA

Air Purifying Respirators

#22

When harmful concentrations of gases, vapors, or particulates are present in the workplace it's best to remove them by improving ventilation in the work area. However, there are situations where breathing air can't be made safe through engineering controls. When this happens, workers may have to wear respirators to protect themselves from airborne hazards. Here are some of the basics about the safe use of air-purifying respirators.

- Read your company's respiratory protection program, which describes how the company will provide respiratory protection to you safely.
- Make sure the atmosphere in your work area has been tested before you use a respirator. The tests will determine how much oxygen is present and identify any respiratory hazards, both of which are critical to proper respirator selection. If the oxygen content is too low, then air-purifying respirators can't be used safely.
- Make sure you receive proper training before you attempt to use a respirator.
- Choose a respirator that provides suitable protection against the identified hazards.
- Don't wear facial hair that grows where the respirator will be in contact with your face.
- Make sure you successfully complete the fit test process to ensure that the respirator you use has an effective seal against your face.
- Keep your respirator clean and in good condition.
- Only use cartridges, canisters, and filters designed to work effectively against the specified respiratory hazards.
- Replace the filters as soon as you can smell or taste any substance while breathing through the respirator or when there is a change in breathing resistance.
- Make sure that you store your respirator in a sealed bag or container so that it will stay clean and prolong the effectiveness of the filters.
- Store your respirator in a cool, dry place.

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MCAA Toolbox Safety Talks

MCAA

Air Purifying Respirator Selection

#23

Air-purifying respirators are designed to filter out harmful gases, vapors, and particulates that become airborne on jobsites. The important thing to remember is that not all respirators are created equal. There are a variety of respirators, cartridges, canisters, and filters to choose from, each designed for specific applications. Your company will conduct exposure monitoring to help you with the respirator selection process. The bottom line is that you need to select a respirator that will provide you adequate protection against the identified hazards and the highest degree of comfort possible. Here are some key concepts to keep in mind.

- Familiarize yourself with your company's written respiratory protection program, which will cover specific details about respirator selection for mechanical industry applications.
- There must be an adequate concentration of oxygen in the air to use an air-purifying respirator safely.
- Atmospheric contaminants must be identified and quantified before you can select the appropriate respirator.
- Respirators must be certified by the National Institute for Occupational Safety and Health. Look for "NIOSH" on the respirator.
- Once you know what type of respirator is appropriate, you should try on several different models and sizes to ensure that you get a tight seal and comfortable fit.
- Be sure to successfully complete the fit test process. The process will fit you to a specific brand and model respirator, which creates a good seal with your face and is as comfortable as possible.
- Air-purifying respirators for gases and vapors should have end of service life indicators (ESLI). These indicators will let you know when you should change the cartridges or canisters. If the conditions don't allow for ESLI, a change schedule for cartridges and canisters must be established. Air-purifying respirators for particulates must be equipped with filters that have been approved by NIOSH.
- Remember that the type of respirator, cartridges, canisters, or filters you will need depend on the type of airborne hazards and the amount of each present in the jobsite's atmosphere. Make sure you check with your supervisor before using any respirator.

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MCAA Toolbox Safety Talks

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Air Purifying Respirator Fit Testing

#24

A properly fitted respirator is critical to protecting yourself from harmful airborne gases, vapors, and particulates. The process is relatively easy and can be done very quickly. There are several ways that proper fit testing can be done for air-purifying respirators. Here is what you can expect from the fit test process.

- Fit testing is performed to ensure that there is a good seal between your face and the respirator you choose to wear.
- There are two types of fit tests, quantitative and qualitative. A quantitative fit test is done with electronic equipment that actually measures and quantifies the amount of leakage in the respirator. The qualitative fit test doesn't measure the amount of leakage, but indicates whether or not there is discernable leakage.
- Regardless of the type of fit test you will perform, you will be asked to wear the respirator while the tester exposes you to a harmless test substance such as banana oil, saccharin, irritant smoke, or a commercial aerosol designed for fit testing.
- Depending upon the type of fit test and the test substance being used, you may have to enter a test chamber or use a test enclosure that covers your head and face.
- You will be asked to perform a variety of exercises that simulate the movements, positions, and facial expressions that you experience while working including: normal breathing, deep breathing, turning your head from side to side, moving your head up and down, talking, grimacing, bending over, and again normal breathing.
- If you don't smell or sense the test substance at any time throughout the process or if the test instruments indicate no leakage then you have a good fitting respirator.
- If the respirator fails, you will have to go through the fit testing process again with a different model and/or size respirator.
- Be sure to cooperate fully with the tester so that the respirator you end up using on the job will afford you adequate protection. Always check with your supervisor before using any respirator.

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MCAA Toolbox Safety Talks

MCAA

Air Purifying Respirator Use

#25

Once you have received the proper training, selected the appropriate respirator, and completed the fit testing process you will be ready to use your respirator. Using it properly is just as important as everything else required in a safe respiratory protection process. Here are some basic things that you should know about using your air-purifying respirator:

- You won't get a good seal if you wear facial hair anywhere that the respirator comes in contact with your face. Keep that part of your face clean-shaven.
- If you have a condition that prohibits a good seal don't wear a respirator, but don't expose yourself to the hazards either. Ask for reassignment to another task or another jobsite.
- Make sure that your glasses or personal protective equipment don't interfere with the seal.
- Always conduct a "user seal check" each time you put on your respirator. If you're not sure how to do it, check with your supervisor.
- Always leave the exposure area before you remove your respirator for any reason.
- Leave the exposure area immediately when you detect gas or vapor breakthrough.
- Leave the exposure area immediately whenever changes in breathing resistance occur.
- If you detect leakage in the seal or if any of the respirator's components are damaged or are not working properly, leave the exposure area immediately.
- Be sure to replace cartridges, canisters, and filters with the correct replacements. They are color coded and labeled to make it easy for you to obtain the correct replacement.
- Make sure that your respirator is working properly before returning to the exposure area.

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MCAA Toolbox Safety Talks

MCAA

#26

Air Purifying Respirator Maintenance & Care

Air-purifying respirators require maintenance and care just like the rest of the tools and equipment we use in the mechanical industry. The better cared for respirators are more effective and functional longer than those without adequate care. Here are the basics about air-purifying respirator maintenance and care:

- If you are the sole user of your respirator, clean and disinfect it regularly.
- If you are sharing a respirator with others, it should be cleaned and disinfected each time before it changes users.
- Disassemble the respirator to clean it. Do not wash the cartridges, canisters, or filters. Use warm water and a mild detergent to clean the parts. Rinse the parts with water and immerse them for two minutes in a disinfecting agent suitable for respirator parts.
- Become familiar with your respirator and inspect it each time before you use it.
- During the inspection, concentrate on tightness of the connections and the overall condition of each part.
- Look carefully at the face piece, straps, and valves. If any of the parts are excessively worn or damaged, check with your supervisor or check the company's written respiratory protection program to determine how to get the respirator repaired or replaced.
- Only those individuals who are qualified to make repairs on the respirators should attempt to make them.
- Inspect the cartridges, canisters, and filters. If any of them look worn or damaged, replace them before using the respirator.
- Store your respirator in a clean, sealed bag or container to keep it clean and prolong the life of the cartridges, canisters, or filters.
- Choose a storage area that's cool, dry, and out of direct sunlight.

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MCAA Toolbox Safety Talks

MCAA

Excessive Noise Levels

#27

No matter what we do for a living, all of us lose some of our hearing ability as we age. However, excessive noise from any source can contribute to hearing loss. Noise is measured in decibels. The higher the decibel, the less time you can be exposed to it without experiencing hearing loss. The maximum safe noise level in our industry is 90 decibels over an eight-hour time weighted average. If the exposure time is longer or the decibels are greater, we need to use hearing protection. Here is what you should know to help you determine whether you are exposed to excessive noise levels and how to protect yourself when it does occur.

- Normal conversation is approximately 60 decibels. Your gas powered lawnmower or chainsaw generates around 100 decibels or more.
- If you believe that noise levels are anywhere near this loud or louder, it's a good indication that you should be using hearing protection.
- It's difficult to tell just how loud some of the equipment is out on the jobsite. So, if you can't have a normal 60 decibel conversation at a distance of two or three feet because of noise in your area, it's a good idea to use hearing protection. If you have to shout to be heard at that distance, it's most likely too loud in your work area.
- You may not need it, but you won't know the exact noise level unless you have a noise level reader or a dosimeter to measure the noise level. It's always best to err on the side of caution.
- If you believe that noise levels are too loud, or if you're not quite sure about the noise level, select some sort of hearing protection equipment.
- Choose comfortable hearing protection. You can use either earplugs or earmuffs, but each style has its own "Noise Reduction Rating." (NRR)
- Make sure that you choose hearing protection that reduces noise to a comfortable level, but doesn't reduce it to the point that you can't hear warning sounds like vehicle engines, back-up alarms, or someone's warning shout.
- If you choose earplugs, make sure you insert them properly. If you're not sure how to do this, check with your supervisor. Use new, disposable earplugs each day or make sure you carefully clean the reusable ones with warm water and a mild detergent before each use.

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MCAA Toolbox Safety Talks

MCAA

Hearing Protection

#28

The type of hearing protection you need depends upon the amount of noise you will be exposed to and the length of time you will be exposed to it. In the mechanical industry, if you are exposed to noise levels that exceed those shown in the chart below, you need to use hearing protection devices such as earplugs or earmuffs. It's not easy to guess how many decibels you are exposed to without some frame of reference. Try to gauge jobsite noise levels by comparing them to other noise levels from sources that you are familiar with such as:

- Air Compressors—around 90 decibels
- Circular Saws—around 100 decibels
- Gas Powered Lawnmowers—around 100 decibels
- Chainsaws—around 100 decibels

When choosing hearing protection devices, check the packaging to determine the Noise Reduction Rating (NRR). Make sure that what you use will reduce the noise level to an acceptable range based on the length of time you anticipate being exposed to it.

Duration Per Day/Hours	Sound Level In Decibels
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

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MCAA Toolbox Safety Talks

MCAA

Welding Radiation

#29

Electric arcs and gas flames from welding and cutting produce ultraviolet and infrared radiation. With repeated exposure, mechanical workers can become overexposed and suffer damage to their eyes and skin. Protecting yourself from overexposure to welding radiation is easy to do. Here is what you should know about welding radiation.

- Ultraviolet radiation can cause the equivalent of a sunburn to the surface of the eye. The injury is painful and disabling, but it is usually temporary.
- Ultraviolet radiation also can cause the equivalent of severe sunburn to exposed skin.
- Infrared radiation heats exposed skin tissue, but isn't harmful unless it's hot enough to cause a thermal burn.
- However, infrared radiation can cause permanent eye damage if the welder or others nearby stare directly into the arc without eye protection.
- Protect your skin by wearing long sleeve shirts and full-length trousers made from a flame resistant material (no synthetic fabrics). Be sure that there are no pockets in the shirt or cuffs in the trousers.
- Always use a welding hood with the appropriate shaded lens. You will need a #10, #12, or #14 shaded lens for electric arc welding depending on the size of the electrode and the amount of current being generated.
- For gas metal arc welding you will need a #11, #12, or #14 shaded lens depending on the amount of current being generated.
- Check with your supervisor before you start to weld to ensure that you have the appropriate shaded lens.
- Be sure to wear a pair of safety glasses or safety goggles under your welding hood.
- Never look at a welding arc even for an instant without proper eye protection.
- Use welding screens around your welding area to protect others who may otherwise look at the arc without protection.

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MCAA Toolbox Safety Talks

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#30

Oxy-Fuel Welding/Cutting Flashbacks

Flashback is extremely rapid burning in the torch, hose, and/or regulator of an oxy-fuel cutting/welding rig. If a flashback occurs, it could cause personal injury and equipment damage. Here are some things that you should know about flashbacks and flashback prevention:

- There are several causes of flashbacks, including loose connections, hose leaks, incorrect pressures, operator error, and gas starvation at the preheat flame.
- Flashbacks usually start with a popping sound, which sometimes turns into a whistling sound if the gases are not shut off immediately. Flashbacks sometimes occur without warning.
- When flashbacks start, the gases are burning inside the torch. If the gases aren't shut off immediately, the torch could melt or the flame could travel back beyond the mixer and cause an explosion in the hoses or regulators.
- If you believe a flashback is occurring, shut off oxygen and fuel valves as quickly as you can. Then remove the hoses and have the torch and equipment inspected by someone qualified to do so properly.
- The best way to prevent flashback is to use a torch equipped with a flashback arrestor. If your torch does not have an arrestor, you can easily attach one.
- Flashback arrestors are designed to stop the flame from backing up into the system.
- Check valves also can be installed to help with flashback protection, but should not be used as substitutes for flashback arrestors. Check valves allow gas to flow only one way so there won't be a reverse flow. However, some flashbacks occur so quickly that check valves can't stop them.
- Always inspect the equipment before you start work. Don't use damaged or excessively worn parts.
- Be sure not to exceed the recommended pressure settings.
- Don't hold the torch tip too close to the work.

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MCAA Toolbox Safety Talks

MCAA

General Vehicle Safety

#31

Some of us in the mechanical industry don't drive company vehicles as part of our daily jobs, but most of us end up operating them at one time or another. When we do operate vehicles, we can't control everything that happens out on the roads. However, if we control the things that we can, the chance of getting in an accident, or getting injured if an accident does occur, is greatly reduced. Here are some basic points to remember when operating a vehicle.

- In close to 90 percent of vehicle accidents there is room enough left to live in the driver and passenger seating areas. However, the victims must remain in their seats to benefit from this phenomenon. The point here is…Buckle up! And require your passengers to buckle up as well.
- The force of impact increases exponentially with each mile an hour of increased speed. Stay within the speed limit.
- Other drivers won't know what you are planning to do if you don't let them know. Always signal before changing lanes or turning.
- Quite a few drivers ignore traffic signals or gamble with the timing at traffic lights every day. Pay close attention to traffic signals and obey them so that you won't meet up with one of the gamblers.
- It's tough changing lanes in traffic when you can't see what is immediately beside you or what's coming up to the side or rear of your vehicle. Adjust the side and rear view mirrors before you start to drive.
- It's tough backing up big vehicles, especially vans and trucks. Never back up any distance more than you have to in order to get your vehicle moving forward. Whenever possible, park the vehicle so you won't have to back it up to get it out.
- Poorly maintained vehicles are more likely to be involved in accidents than vehicles that are well maintained. Make sure that the manufacturer's recommended maintenance procedures are followed and report any vehicle problems or defects to your supervisor immediately.
- Bad weather increases the chance of vehicle accidents. Stay informed about the weather. In bad weather conditions such as rain, snow, ice, and heavy wind, slow down considerably and allow extra distance between your vehicle and the vehicle in front of you. Allow other drivers more time to see your signals before you change lanes or turn.

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MCAA Toolbox Safety Talks

MCAA

Pre-Trip Vehicle Inspections

#32

Many of the vehicle accidents that occur in the mechanical industry are caused by the operators error or by errors committed by operators of other vehicles. However, some accidents are caused by vehicle malfunctions due to poor vehicle maintenance. Good vehicle maintenance practices have other benefits too. Properly maintained vehicles will last longer and won't be subject to frequent breakdowns, which affect productivity and profitability. Here are some basic pre-trip inspection procedures that will help you ensure that the vehicle you're driving is in suitable condition.

- Check the inside of the vehicle for objects that could affect your ability to control the vehicle. Look for objects such as cans, bottles, etc. that could interfere with the brake, accelerator, or your ability to access and use them effectively.
- Remove all objects from the dashboard including papers, clipboards, etc., because they can produce glare and affect your ability to see.
- Make sure there is nothing in the operator or passenger compartments that could become airborne if a sudden stop or collision does occur.
- Make sure the seatbelts are securely in place and working properly.
- Start the engine and check the gauges to make sure they show normal operating ranges. Also check the defroster, windshield wipers, and horn.
- Outside the vehicle, make sure all of the lights and signals are working properly. Look for wear and damage to the tires and check the tire pressure on each tire to be sure that each of them is within the manufacturer's recommended pressure range.
- Look for fluid leaks under the vehicle such as brake fluid, oil, coolant, etc.
- Finally, check the emergency equipment. Make sure there is an adequate, readily accessible supply of emergency flares on board. If the vehicle is equipped with a fire extinguisher, make sure it has been inspected recently and that it hasn't been used.
- If you find any problems with the vehicle while you are inspecting or using it, contact your supervisor immediately to let him know about the problem so that it can be corrected as soon as possible. Don't operate the vehicle if its condition could be hazardous to you or other operators.

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MCAA Toolbox Safety Talks

MCAA

Vehicle Breakdowns

#33

Even properly maintained vehicles break down sometimes. In some cases it's just a matter of pulling well off the road and calling for help. In other cases the vehicle simply won't move or it breaks down in a potentially hazardous place such as just below the crest of a hill or on a busy freeway. Here are some basic procedures to help you make the area as safe as possible when your vehicle breaks down.

- If your vehicle breaks down, you should act quickly to prevent compounding the problem with an accident.
- Put on your emergency flashers immediately. If you can still move the vehicle, such as if you have a flat tire, look for a safe, flat place off the road and move to it slowly. Turn off the ignition switch and apply the parking break.
- If you can't move the vehicle, you should still turn off the ignition switch and apply the parking break.
- Assess the situation immediately. In most cases the biggest concern is alerting other drivers so that they will slow down and become more cautious as they pass your vehicle.
- Get out of the vehicle on the side that is opposite the approaching traffic. Light a flare and walk back toward the approaching traffic from the shoulder or the area next to the road.
- Place the flare a considerable distance behind the vehicle. Consider how long it takes to stop at high rates of speed and place the flair accordingly. If there is a hill close behind the vehicle, place the flare at the top of the hill so that approaching traffic will see it from a distance. Place the flare on the shoulder or off to the side of the road if your vehicle is completely off the road. If your vehicle is in the roadway, place the flare in the middle of the lane.
- Add additional flares and place them increasingly closer to the vehicle.
- Be sure not to put yourself in any danger as you place the flares.
- Call for help, but stay well off the road while you're waiting for assistance to arrive.

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MCAA Toolbox Safety Talks

MCAA

Refueling

#34

Fuel is a constant in the mechanical industry. We use it for vehicles, portable generators, gas- powered welding units, gas powered tools, etc. Filling up is easy and doesn't take a great deal of thought. However, we should probably think about it more than we do because if conditions are just right, an ordinary fill-up could result in a harmful fire or explosion. Here is what you should know about refueling vehicles and equipment.

- It's a rare occurrence, but static electricity generated from clothing fabric rubbing against vehicle upholstery has been responsible for more than one vehicle fire. Some of them resulted in fatalities. Before you approach the pump, close the vehicle doors. Don't allow any of the doors to be opened until the nozzle has been placed back on the pump after fueling.
- There are many more common ignition sources about which you should be aware. Make sure that the vehicle is turned off before you start fueling and never smoke or allow anyone else to smoke where fueling is taking place.
- When fueling equipment, if the tank is near a hot manifold, muffler, or any other hot equipment parts, let them cool before you start fueling.
- When you transfer fuel from a can, mobile tank, or fuel truck, make sure that the nozzle stays in contact with the fuel tank (bonded) so that static electricity generated from the fueling process won't ignite the fuel vapors.
- When filling a gas can, remove it from the vehicle and place it on the ground before you start to fill it. This will prevent static electricity from being generated from gas can contact with truck bed liners or other materials.
- Be extremely careful not to spill fuel because it could flow onto hot equipment and ignite.
- Be sure not to overfill vehicle and equipment tanks, especially on hot days or when the vehicle or equipment will be in direct sunlight. The heat makes gas expand and overfilled tanks often overflow.
- After fueling is completed, drain any remaining fuel from the hose back into the tank.
- Clean up any fuel spills immediately. If you're not sure how to do this, check with your supervisor.

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MCAA Toolbox Safety Talks

MCAA

Approaching An Injured Victim

#35

When someone is injured on the jobsite, it's human nature to want to provide assistance immediately. However, there is a right and wrong way to approach an injured victim. If you approach the victim properly, you won't be putting yourself in any danger and you won't make the victim's condition any worse. Here are some important things to remember when you go to aid an injured victim.

- The first thing you need to do when you determine that someone is badly injured is to send at least two people, independently of one another, to call for emergency medical assistance. That way if one of them fails to make the call help will still be on the way.
- Always assess the situation before you approach to make sure there is nothing hazardous in the area that could turn you into a victim as well. Look for hazards such equipment in contact with power lines, excavation hazards, etc. If you go down too, you won't be able to help the victim and will make things worse for other rescuers.
- If someone goes down in a confined space, you won't be able to see whether the atmosphere inside is safe to enter. Do not enter the space unless you are specifically trained to conduct confined space rescues and you have the equipment to do so safely.
- If you are able to approach the victim safely, don't move him unless there is an immediate threat to his life. Moving an injured victim can result in more severe injuries and possibly paralysis.
- If there is blood or other bodily fluid on the victim, don't proceed without putting on impermeable medical response gloves. Keep your safety glasses or safety goggles on to protect your eyes as well. These measures will help you protect yourself from bloodborne pathogens such as hepatitis B and HIV.
- If you're trained to administer first aid, follow your training. Check for breathing first, bleeding second, and then treat the victim for shock. If you're not trained to administer first aid, continue to shout for help from someone who knows what to do. Make sure that the victim doesn't get cold, which is part of the treatment for shock. Cover the victim with a blanket or coat if necessary.
- Watch for the emergency medical response team and guide them to the victim as quickly as possible.

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MCAA Toolbox Safety Talks

MCAA

Avoiding Infections

#36

Most of us in the mechanical trades tend to ignore insignificant cuts and scrapes. They are usually nothing more than a minor nuisance and in most cases they heal without any problems. However, even minor cuts and scrapes can become major problems if we allow them to become infected. It's wise for us to take a little time to treat them immediately when they first occur and to keep treating them until the scabs are in place forming good barriers against infection. Here are a few basic things that you should know to help you prevent infections.

- Minor cuts, scrapes, and punctures aren't a big deal as long as they don't become infected. They don't require medical treatment beyond first aid and they don't have to be recorded.

- However, if minor cuts and scrapes do become infected, medical treatment beyond first aid will be necessary and the injury will have to be recorded. Also, medical expenses will have to be paid by the employer either out of pocket or through workers' compensation insurance.

- Recordable injuries and unnecessary workers' compensation expenditures make mechanical construction companies less competitive. They reduce bid list eligibility for jobs offered by many construction owners, construction managers, and general contractors and make it difficult for us to offer competitive bids when we do make the bid lists.

- If you get a minor cut or scrape, stop the bleeding by applying direct pressure with a sterile piece of gauze. Wash the wound thoroughly with warm, clean water and anti-bacterial soap or hydrogen peroxide.

- Treat the wound with an anti-bacterial ointment and cover it with a sterile bandage or Band-Aid.

- Continue to keep the wound clean, treated, and bandaged until a solid scab forms.

- Keep an eye on the scab. If it gets cracked open or starts to bleed, clean, treat, and bandage it again.

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MCAA Toolbox Safety Talks

MCAA

Burns

#37

In the mechanical industry we're exposed to many sources of heat, all of which can result in burns. Our primary exposures are from hot work, chemicals, and electricity. Severe burns are extremely painful and damaged or destroyed skin can no longer provide a barrier against infectious organisms trying to enter into the body. Here are some important things that you should know about burns that could occur while working in the mechanical industry.

- First Degree Burns are the least serious type of burns because they only involve the outside layer of skin. The burned skin is usually pink or red with mild swelling. The victim usually feels tenderness or minor pain. Treatment includes cooling the hot skin with water and using non-prescription antibiotic creams.
- Second Degree Burns are the second most serious of the burns. These burns involve both the outside layer and the second layer of skin. The skin is usually bright red and blistered from the heat. The victim experiences both swelling and pain. A qualified health care provider should administer treatment.
- Third Degree Burns are the most serious type of burns. They involve all layers of the skin and can include damage to other organs, tissues, and bones. In many cases the victims don't feel pain because all of the nerve endings in the burn areas have been destroyed. Immediate medical attention is required for these burns.
- Thermal burns occur in our industry from unprotected contact with slag, sparks, or flames. Be extremely careful when performing hot work. Don't wear synthetic clothing, which can increase the severity of burns. Wear long trousers without cuffs, long sleeve shirts without pockets, and welding gloves. If you get a flammable substance on your clothes, avoid all ignition sources and change them immediately.
- Chemical burns are caused by skin contact with acids or alkali substances such as battery acid, caustic potash, and lye. Keep the chemicals off of your clothing and skin. Wear safety goggles, use a face shield, and use impermeable gloves when working with these types of substances.
- Electrical burns occur when the human body becomes electricity's easiest path to ground. When working with or around electricity, make sure that you never become part of an energized circuit. Always keep yourself insulated form the circuit especially when electric arc welding.

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MCAA Toolbox Safety Talks

MCAA

Synthetic Slings

#38

Synthetic web slings are usually made from nylon, polyester, or polypropylene. These materials can become abraded, cut, or experience other damage during normal use. Damage to synthetic slings makes them more susceptible to failure when under the stress of a load so they should be inspected regularly. Here are some things that you should know about synthetic slings.

- There is no precise requirement for how often slings should be inspected. It really depends on how often they are used, the conditions in the workplace, and the established service life of the sling.
- It only takes a minute or two to inspect a sling. Whenever possible, inspect them before each use.
- Make sure the sling has an identification tag that shows the name or trademark of its manufacturer, the rated capacity for the type of hitch, and the type of material used to make the sling.
- Immediately remove the sling from service if there is no identification tag or if any of the following are apparent:
  - Surface cuts, edge cuts, punctures, or tears
  - Broken or worn stitches around end fittings
  - Melted or charred surfaces
  - Acid or caustic burns
  - Worn, distorted, or crushed fittings
  - Permanent stretch
  - Any other visual defects that could affect the strength of the sling
- When you take a sling out of service, tag it with a “Danger—Do Not Use” tag. Ask your supervisor where to put it for disposal or repair.
- Don’t use nylon web slings around acids or phenolics.
- Don’t use polyester or polypropylene web slings around caustics.
- Only the manufacturer of the sling should make repairs to it.
- Repaired slings must be capable of withstanding stress up to twice the rated capacity.

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MCAA Toolbox Safety Talks

MCAA

Wire Rope Slings

#39

Wire rope slings are used frequently in the mechanical industry. They are functional, durable tools that make our jobs easier and help keep us safe from rigging hazards. However, wire rope slings are not infallible. They need to be inspected before each use and repaired or replaced when damaged. Here are a few things that you should know about working with wire rope slings.

- When inspecting wire rope slings look for the following:
  - Broken or damaged wires or strands
  - Rust or corrosion
  - Kinks or sharp bends
  - Damage to fittings
  - Broken seizing wire
  - Any other signs of damage
- Damaged slings should be taken out of service immediately and inspected by someone who is qualified to determine whether they should be repaired, replaced, or discarded.
- When you take a damaged sling out of service, tag it with a "Danger—Do Not Use" tag. Ask your supervisor where to take it for evaluation by a qualified person.
- Make sure that wire rope slings aren't exposed to bad weather, temperatures over 200 degrees Fahrenheit, or chemical substances.
- Ropes that are knotted should be taken out of service immediately and discarded.
- Protect wire rope slings from sharp corners by using irons, blocks, or similar devices.
- Make sure that each leg on a wire rope sling is secured at the hook so the hook won't slip on the sling.
- Single-leg wire rope slings should not be used alone because the load could spin and damage the sling.
- Use a shackle to protect the sling when making choker hitches.
- To prevent weakening the sling, don't bend the eyes of slings around corners and don't make a complete turn with the sling around the crane hook.

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MCAA Toolbox Safety Talks

MCAA

Materials Storage

#40

Because we use so many different types of materials in the mechanical industry it's important for us to store the materials so that they are easy to find and safe and easy to access. Doing so will help you protect yourself and others from injury and make you more productive at the jobsite and/or storage facility. Here are some important points about safe material storage.

- Have all of your materials delivered as close to the jobsite storage area as possible so that you won't have far to move them.
- When you have to move materials, use material moving equipment—such as lifts, carts, and hand trucks—whenever possible to reduce the amount of manual lifting and carrying.
- If you have to move materials by hand, be sure to use proper lifting techniques and get help for heavy or bulky items.
- Stack pipe in pipe racks or in neatly arranged, chocked stacks to keep the pipe from rolling.
- Pipe, fittings, hangers, and other different sized materials should be stacked according to size so no one will be endangered while trying to dig materials out of a pile or stack.
- Stack bagged materials in steadily decreasing widths as you go up (sort of like a pyramid) so the stack can't be easily knocked over.
- Cartons should never be stacked any higher than the height listed on the cartons.
- Keep cartons dry so they won't weaken and collapse.
- Materials should never be stacked so high that they are hard to reach. This holds true for material stacks that will be accessed by hand and for those accessed by lifts.
- Be sure to leave aisles and pathways in the storage areas to allow easy access to the materials for workers and for material moving equipment where applicable.

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MCAA Toolbox Safety Talks

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Chemicals Storage

#41

Some of the chemicals we use in the mechanical industry can be pretty hazardous. Under the right conditions, some of them are capable of generating physical hazards such as fires or explosions. Others may generate health hazards such as burns or inhalation hazards. Some chemicals react with others to generate special hazards such as oxygen rapidly accelerating combustion when mixed with burning acetylene. Hazardous chemicals should be stored properly so they won't be capable of generating these types of hazards. Here are some key points concerning chemical storage.

- Whenever possible, store hazardous chemicals in a detached storage shed or small building that is not part of the structure being built.
- Store chemicals that react together away from each other. For example, store oxygen and acetylene cylinders at least 20 feet apart or with a five foot high, half hour fire resistance rated non-combustible barrier between them.
- Be sure that cylinders are stored in an upright position and secured in place so that they can't be knocked over. Make sure cylinder caps are tightly placed on all cylinders.
- Store acids away from water because some acids react violently with water.
- Keep acids tightly sealed in their original containers and in a cool, dry storage area where they won't be disturbed until they're needed.
- Store flammable liquids such as solvents in their original containers.
- Store gasoline in safety containers with self-closing lids designed specifically for gasoline use.
- Keep all flammable liquid containers in well-ventilated, cool storage areas away from ignition sources such as welding, grinding, or cutting sparks; torch flames; cigarettes; etc. Never allow anyone to smoke in hazardous chemical storage areas.
- It's best to store flammable liquids in fire and explosion resistant rooms or in vented metal storage cabinets.
- If you're not sure how to store a hazardous chemical safely, check the container label or Material Safety Data Sheet (MSDS).

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MCAA Toolbox Safety Talks

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#42

Portable Abrasive Grinding Wheels

We use grinders so often in the mechanical industry that it isn't hard to forget about the potential hazards that go along with using them. Abrasive wheels move at such a high rate of speed that they can remove flesh and launch potentially deadly wheel fragments when they break up. There are other hazards, too. Sparks are potential ignition sources and can cause eye injuries, and flying fragments or particles from a broken wheel can cause eye injuries as well. Here are some things that you should remember when working with portable grinders.

- Before you start work, check the wheel to make sure it is properly and securely attached to the grinder.
- Make sure that the guard is in place and attached securely. It should cover at least half the grinding wheel. Don't use a grinder without a guard. Even though the abrasive wheel technology is better today than it was a few years back, some wheels can still break. When they do, fragments can fly off the wheel at the speed of a bullet.
- Check to make sure that the size of the grinder wheel is compatible with the motor speed of the grinder. Doing so will prevent over-speed of the wheel, which is harmful to the grinder and could result in an injury.
- Make sure that there are no flammable materials around the area.
- Wear safety glasses and a face shield whenever you use a grinder.
- Make sure the grinder is running smoothly without vibration. If you sense a problem, take it out of service immediately and attach a "Danger—Do Not Use" tag to it so that no one else will use it. Ask your supervisor where to take it so that it can later be evaluated for replacement or repair.
- Keep a firm grip and apply pressure firmly, but don't apply so much pressure that the motor starts to lag and lower the RPM.
- It's best not to use the constant on switch. That way if there is a problem, the wheel will slow to a stop as soon as you take your finger off the switch.

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MCAA Toolbox Safety Talks

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Hand Operated Jacks & Lifts

#43

Jacks and lifts are useful tools in the mechanical industry because much of the material and equipment is extremely heavy. However, these devices can be hazardous if they are not used properly. Here are some basic points about the safe use of hand operated jacks and lifts.

- Before using a jack or lift, inspect it for damage such as hydraulic leaks, damaged casters or wheels, dysfunctional brakes, broken safeties or catches, or any other problems that could make them hazardous.
- Become familiar with the manufacturer's recommendations for safe use and proper maintenance of the equipment. Be sure to closely follow the manufacturer's recommendations.
- Make sure you know the maximum lift capacity for each jack or lift that you use and don't exceed that capacity.
- Place the lift directly under the position at which the materials or equipment is to be lifted.
- Check the load distribution frequently so that the load won't become unbalanced and overturn.
- Before lifting the load, make sure that there is nothing in the way that will obstruct the process.
- Be sure that the load won't come in contact with power lines or other sources of electricity.
- Before moving loaded mobile jacks or lifts, make sure that the load is properly balanced and properly secured in place.
- Don't move loaded jacks or lifts over uneven or non-level surfaces.
- Stay out from under the overhead load until it is secured in place or removed from the jack or lift at an upper level.
- If you aren't sure about how to safely operate the jack or lift, check with your supervisor.

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MCAA Toolbox Safety Talks

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Powder Actuated Tools

#44

Powder actuated tools propel fasteners much like a gun propels a bullet. An explosive powder is detonated inside a cartridge that propels the fastener into place at an extremely high rate of speed. These useful tools are safe when used properly. The major hazards involved with powder actuated tools are flying and ricocheting fasteners from accidental discharge, and flying particles at impact. Here are some basic points for using powder actuated tools safely.

- Make sure that you have the proper training before you attempt to operate a powder actuated tool.
- Become familiar with the manufacturer's recommendations for safe use and maintenance of the tool. Be sure to follow the recommendations closely.
- Hold the tool firmly at all times so that you won't drop it.
- Always hold the tool with the barrel pointed at the ground, but not towards your feet or those of others nearby.
- Be sure that you don't ever point the front of the barrel at anyone.
- Check to see that the guard is in place and hasn't been bypassed.
- Keep your fingers and hands away from the front of the barrel.
- Don't rest the tool against your body when loading or making adjustments to it.
- Be sure to use only the proper load.
- Always wear safety glasses when using powder actuated tools or when working anywhere near them.
- If the tool fails to fire, keep it firmly in place against the working surface for the period of time recommended by the manufacturer for misfires.
- Make sure that the cartridges and the tool are locked up when they are not in use.

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MCAA Toolbox Safety Talks

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#45

Grounding Portable Generators & Welding Machines

The use of portable generators and welding machines to power hand tools and equipment such as grinders, drills, floodlights, etc. can be hazardous when they are not properly grounded. These machines, which are powered by gasoline or propane, generate a tremendous amount of electricity. The amount of current generated is much more than what's necessary to kill a person. Here are some basic points regarding the use of portable generators and welders.

- Electricity always follows the path of least resistance to ground (earth).
- That path can be right through a human body, which can result in death or severe injuries including 3rd degree burns.
- When using portable generators or welding machines, be sure that they are properly grounded before you start the machine.
- Grounding involves running a ground wire from the machine to an appropriate grounded source, such as a grounding rod driven several feet into the ground.
- The ground wire can also be attached from the machine to the main steel structure of a building or a building's established electrical ground system.
- Become familiar with the manufacturer's recommendations for grounding each type of machine that you will use.
- Follow the manufacturer's recommendations carefully.
- If you're not sure what to do, check with your supervisor before you start work.
- Take the time to learn how to properly ground portable generators and welders. Implementing what you learn before you start the machine will help you keep yourself from becoming electricity's easiest path to ground.

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MCAA Toolbox Safety Talks

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Warning Signs

#46

There are so many potential hazards on jobsites that a system for warning workers about hazards was developed to help prevent jobsite injuries. The mechanical trade is only one of many trades on the jobsite at any given time, so we have to be concerned about the hazards created by others as well as the hazards associated with our own work. Here are some basic warning signs to watch out for on the site.

- Danger Signs are usually red in color. These signs represent an immediate, existing hazard such as high-voltage power lines. An example would be the sign that reads "Danger—High Voltage."
- Caution Signs are usually yellow in color. These signs represent a warning to workers about a potential hazard, or are used to advise workers about necessary safe work practices. An example would be a sign that reads "Caution, Wear Safety Glasses At All Times On This Jobsite."
- Safety Signs are usually green in color. These signs represent reminders to the workers about accident prevention. An example would be a sign that reads "Safety First— Watch Your Step."
- Notice Signs are usually blue in color. These signs represent instructions to the workers that are not necessarily related to safety. An example would be a sign that reads "Notice—No Dumping In This Area."
- There are more specific signs that you should be aware of as well, such as:
  - Flammable Gases or Liquids—The standard symbol for flammable gases or liquids is a straight line on the bottom with flames rising up to resemble a campfire.
  - Inhalation Hazards—The standard symbol for inhalation hazards has the skull and crossbones poison symbol at the top and reads "Inhalation Hazards" in the middle.
  - Corrosives—The standard symbol for corrosives is a hand being burned by a dripping liquid.
  - Oxidizers—The standard symbol for an oxidizer is a circle with flames rising up from the top half of the circle.
  - Reactive With Water—The standard symbol for reactivity with water is a large "W" with a horizontal line through the middle of it.
- Keep an eye out for warning signs and pay attention to them when you see them.

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MCAA Toolbox Safety Talks

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Barricades

#47

Barricades are obstructions in walkways, pathways, work areas, etc. that deter others from entering into the area. The purpose of a barricade is to prevent others from approaching a potentially hazardous area. For example, in you were hanging pipe from a building's upper- level leading edge and others could walk under your work area, you could erect a barricade below to force them to walk around the area. Doing so would prevent them from being struck by a dropped tool, pipe hanger, fitting, or other materials. Here are some basic types of barricades that you can use when you are in a situation that requires an extra level of safety protection for workers in the area.

- Use welding screens in your work area whenever possible. A welding screen is really a type of barricade. The screen keeps sparks from flying out too far, keeps others from looking at the arc, and keeps them from walking into the welding area.
- Use yellow and black plastic tape to mark off an area that you don't want other workers to walk through.
- If you don't have commercial barricade tape, use rope and tie short strands of orange surveyors tape every two or three feet so that they hang down to make the barricade visible to equipment operators and others in the area.
- You may want to use a physical form of barricade instead of tape or rope.
- Erect a physical barricade by using sawhorses and 2" x 4" boards or securely brace sheets of plywood around the off limits area.
- Another effective type of barricade is a short wooden fence such as a snow fence. Also, there are several manufacturers that make orange plastic barricade fencing. These types of fencing can be reused several times before they need to be replaced.
- Many fence companies make chain-link fence that is supported by posts held in place by blocks poured from concrete. These barricades can be useful and are very durable.

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MCAA Toolbox Safety Talks

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Night Work

#48

Some jobs require that we work at night. Night work involves a few additional hazards that need to be considered in addition to the hazards that are associated with mechanical industry work at any time of day. Here are some things to remember when you end up working at night.

- It can be difficult to get your body adjusted to sleeping during the day and working at night. The result is usually acute or short-term fatigue, which lasts until your body gets used to the change.
- When you are tired it can affect your judgment and ability to make good decisions. It also prevents you from being as alert as you would be otherwise.
- Try to get as much sleep as your body needs. If you're having a difficult time sleeping during the day, make sure the room is very dark, cool, and quiet. If it isn't quiet enough for you to sleep, consider using a fan or something else that generates "white noise." This will help drown out the noises that are keeping you awake.
- Once on the jobsite make sure that the lighting in your immediate work area is adequate for you to do your job safely.
- If necessary, add additional, temporary lighting so that you can see your work as well at night as you can during the day.
- Erect barricades wherever they are needed to keep you from stepping into a hazardous situation due to the poor lighting.
- Don't move around unknown areas at the site without an adequate source of portable light.
- Take breaks whenever they are permitted and don't skip any of them. Take the time to sit down and rest.
- Don't eat foods with high sugar content, which will ultimately make you feel sluggish and tired.

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MCAA Toolbox Safety Talks

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Pressure Testing

#49

The two most common types of pressure testing for piping systems are hydrostatic testing and pneumatic testing. Hydrostatic testing is less dangerous than pneumatic testing, but both methods can be hazardous if not performed properly. Here are some things that you should consider before you start to test a system.

- In hydrostatic testing, water is pumped into the piping system and pressurized with air or nitrogen. This method is the less hazardous of the two because water can't be compressed. Therefore, the system is not under as much pressure as it would be in a pneumatic test.
- If a system fails during a hydrostatic test it becomes apparent immediately. Water sprays out from the failed area until the pressure equalizes.
- Damage from hydrostatic testing is usually limited to typical water damage.
- In pneumatic testing, air is compressed inside the test area, which generates a tremendous amount of energy. The stored energy can be extremely hazardous if the system fails to contain it.
- If a system fails during pneumatic testing, the energy released from the failed area can send fittings or system fragments flying through the air at high rates of speed, making them extremely hazardous to anyone in the area.
- The most common failure with pneumatic testing is to employ too much pressure to the system. Never employ more than 6 psi to the system.
- When conducting pneumatic tests be sure to:
  - Use a gauge that's graduated no more than three times the test pressure
  - Vent trapped air
  - Depressurize the system
  - Use extreme caution when removing the test plugs
- Whenever possible, use hydrostatic testing instead of pneumatic testing.
- Remember that either test can be tricky during cold weather because temperatures below freezing can make steel somewhat brittle. Be sure to check things out with your supervisor before you conduct pressure tests in cold conditions.

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MCAA Toolbox Safety Talks

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Prefabrication Shop Safety

#50

Prefabrication shops have many of the same hazards that we typically find on jobsites. They also have a few hazards that aren't common on jobsites, but prefabrication shops can be safe places to work provided that you follow some basic safety guidelines. Doing so will help you protect yourself from the most common prefabrication shop hazards. Here are some basic things that you should know about prefabrication shop safety.

- Make sure that the clothes you wear aren't so loose that they could get caught up in shop machinery or equipment. Don't wear bracelets, necklaces, rings, watches, or anything else that could get caught on moving parts.
- If you have long hair, make sure that it is put up so that it won't get caught up in machinery or equipment.
- Always wear safety glasses or safety goggles and a hardhat anytime you are in the shop. Use other personal protective equipment such as face shields, welding helmets, welding gloves, work gloves, etc. whenever they're needed for a specified task.
- Be sure to use welding screens whenever you're welding inside the shop.
- Whenever possible use materials moving equipment such as overhead cranes, forklifts, etc. whenever you have to move materials. When you have to move materials by hand, get help for the heavy and/or bulky objects and always use proper lifting techniques.
- Make sure the shop ventilation system is working properly, especially when welding or cutting is taking place. Overexposure to metal fumes can be harmful.
- Be sure that trucks, equipment, cars, or anything else with an internal combustion engine is not running inside the shop or near the ventilation system outside. Doing so will prevent the buildup of carbon monoxide in the shop.
- Occasionally check pipe racks for damage. Pay close attention to the rollers. Damaged pipe racks should be repaired immediately so you won't be exposed to falling pipe.
- Clean and straighten the shop as you work throughout the day. Tools, materials, trash, liquid spills, or anything else that could cause someone to trip or slip should be addressed immediately.

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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. Tell them to record any comments they have on the back of the talk.
8. Collect the comments.
9. Have each participant sign the training documentation sheet and dismiss the group.
10. File the training documentation sheet where you can access it quickly if needed.

Follow-up:

1. Be sure to read the comments you collected 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 Toolbox Safety Talks

MCAA

Workplace Lighting

#51

It's extremely important to have adequate lighting in your work area. Often it's not an issue, but when it's too dark to see well, mechanical work can become hazardous. Low light in your work area also slows you down and makes you much less productive. Here is what you should know about workplace lighting.

- Lighting is measured in foot-candles.
- An illuminance meter is needed to measure light. These meters can give a direct reading of light in foot-candles.
- All construction areas, ramps, runways, corridors, stairways, etc. should have adequate lighting.
- For general construction areas you should have at least 5 foot-candles of light to do the job safely.
- In mechanical equipment rooms you should have closer to 10 foot-candles of light.
- Prefabrication shops also require 10 foot-candles.
- It's difficult to determine how many foot-candles of light are in your work area without some frame of reference.
- If you find yourself working slower than usual, straining or squinting to see better, or are just generally having a hard time seeing, there is probably not enough light in your work area.
- Some companies have access to illuminance meters and it's best to measure the light whenever possible, but many companies don't have access to a meter. When that's the case, it's best to add temporary lighting to your work area until you can see well enough to do your work safely and efficiently.
- Don't force yourself to work in low light conditions that are unsafe or unproductive.
- If you have any questions or concerns about the lighting in your work area, check with your supervisor.

Instructions For The Toolbox 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. Each time you choose a new talk, make a mark by the title of the talk on the Table of Contents page so you will have a record of the talks already used.
3. Photocopy the talk (one for each participant).
4. Make a photocopy of the generic training documentation sheet and write in the number of the Toolbox Talk in the blank at the top of the sheet underneath the title.

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 at any time during the talk.
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MCAA Toolbox Safety Talks

MCAA

Line Breaking

#52

Line breaking is the practice of cutting into an existing piping system. It's typically done to add onto or repair an existing system. Line breaking can be hazardous if it's not performed properly. Here are some important things to consider when line breaking.

- The most important thing is to make sure that the system is safely secured against the release of stored energy such as high pressure or hazardous substances like flammable liquids.
- Breaking into an existing line can be hazardous because the system could be under extreme pressure and could expel the contents at high speed.
- The line breaking process could also ignite flammable gases or liquids that are present in the system.
- Before you start the line breaking process, make sure you know what's inside the pipe and the potential hazards associated with breaking into the system.
- Make sure that you wear safety goggles and gloves and any other personal protective equipment that may be appropriate, such as a face shield.
- Shut off the flow to the area that you will be working on.
- Lockout the shutoff valve so that it can't be turned on accidentally while line breaking is taking place.
- Flush and/or purge the system.
- If you're tying into an existing mechanical service, it's imperative that you don't inadvertently connect to the wrong mechanical service or assemble the tied-in system to flow in the wrong direction.
- Make sure that you understand and closely follow your company's tie-in procedures.

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