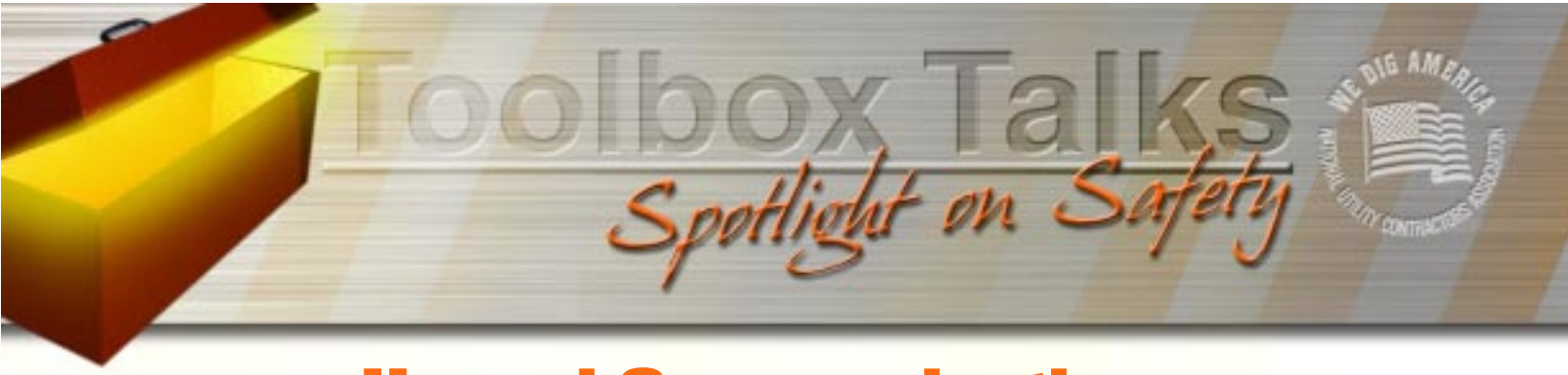
Refueling Construction Equipment

Taking heavy equipment to a service station or central location for refueling is not always practical, sometimes the fuel must be brought to the equipment. Refueling machinery and equipment can lead to an explosion if the fuel is not stored and handled properly.

When refueling equipment or machinery follow proper procedures:

- Store flammable or combustible liquids in approved containers, in tanks located underground, or in above-ground portable containers. All fuel storage tanks must be grounded.
- Transport fuel to the equipment in approved containers or tank trucks designed for this purpose. All containers used to handle gasoline must be approved by Underwriters Laboratories (UL), Factory Mutual (FM), or some other recognized testing organization. Never use plastic containers, glass bottles, or other makeshift containers to store or handle gasoline and other flammable materials.
- Always turn off the motor before refueling.
- Do not smoke or use open flames within 50 feet of areas where fuel is stored and where machines or equipment are refueled.
- Determine where the fuel fill opening is located with respect to a hot engine, exhaust pipe, or other ignition source. If it is located where fuel could spill and contact the ignition source, the equipment should be allowed to cool off before refueling begins.
- Connect or bond equipment to the dispensing container or truck to prevent static electricity. Bonding is achieved by connecting bonding wires between the dispensing container and the vehicle or equipment. Dispensing devices and nozzles must be approved by UL, FM, or some other approved testing organization. Approved hoses and nozzles attached to fuel pumps should be equipped with bonding wires to bond the equipment to the supply vehicles when the nozzle contacts the metal fill spill spout.
- Store a fire extinguisher, rated not less the 20 BC, within 75 feet of the refueling station and know how to use it.
- Always clean up spills before starting the engine.
- Wash off gasoline from your hands or skin with soap and water.
- Change your clothes immediately if you get gasoline on them.
- Shut off fuel pumps and close all containers when you are finished refueling.

Gasoline and other flammable materials can ignite, explode, and injure, maim, or kill unsuspecting workers if not handled properly. Follow the proper procedures and don't take chances when refueling equipment and machinery.



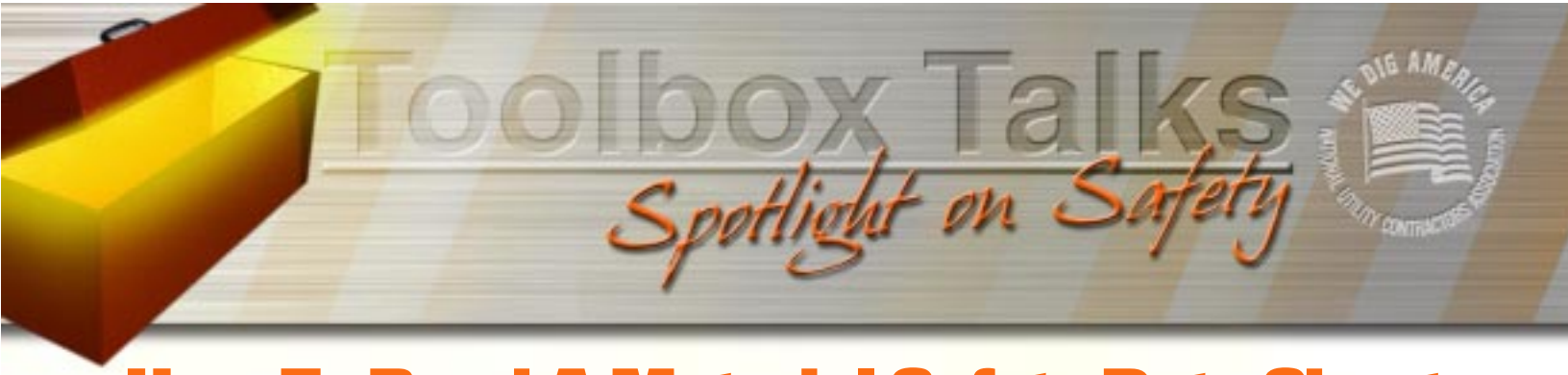
Hazard Communication—Your Right To Know

Construction workers often work with chemicals and other hazardous materials that can cause serious health problems or lead to fire or explosion. Because of the potential dangers and the necessity for you to know about the hazards associated with the materials you work with, this company has a Hazard Communication plan. The basic goal of the plan is to ensure that you are aware of the potential hazards and how to protect yourself.

You have a right to know about the chemicals and hazardous materials you work with, handle, or could be exposed to. To ensure that you have the information you need to work safely you should:

- Know the materials you are working with. If you are not sure about what you could be exposed to ask your foreman, supervisor, or designated hazard communication coordinator.
- Know where the Materials Safety Data Sheets (MSDSs) are located. They contain information about a specific product and are available for all chemicals and hazardous products used at your jobsite(s). They are located ___**(state where)**___.
- Ask to see the Material Safety Data Sheet and read the label on the product.
- Label all hazardous materials containers. Never use materials from containers that are not labeled.
- Make sure you know and understand the hazards associated with the chemicals used in your work areas.
- Know what you can do to protect yourself from potential hazards. This information can be found in the MSDS.
- Use the proper personal protective equipment, such as gloves and eye protection, when handling hazardous materials. This information can also be found in the MSDS.
- Check the first-aid section of the MSDS for more information about what to do if you get chemicals on your skin or in your eyes. Always rinse the exposed skin and/or flush out your eyes with clean water for at least 15 - 30 minutes and seek medical attention.
- Notify your supervisor in the event of a spill or leak. Do not attempt to clean up a spill or leak unless you have been trained how to handle hazardous material spills.

Working with chemicals does not have to be dangerous as long as you follow the proper procedures. You have the right to know what you are working with. If you don't know, ask! If you do not understand the information in the MSDS or on the label, ask your foreman for assistance. It is important that you understand the hazards and how to protect yourself from them.



How To Read A Material Safety Data Sheet

The Material Safety Data Sheet (MSDS) is designed to inform you about the hazards associated with the materials you work with, how to protect yourself from those hazards, and what to do if an emergency arises. The MSDSs for this jobsite are located ____**(state where)**___.

An MSDS informs you of:

- The material's physical and chemical properties,
- The potential hazards related to the material's use,
- How to protect yourself from chemical exposure, and
- What to do in the event of a spill, leak, or other emergency.

Most material safety data sheets have eight sections.

Section 1 – Material Identification: This section identifies the material's chemical and common names, and the manufacturer.

Section 2 – Ingredients and Hazards: This section lists the names of the chemicals that make up the product and the safe levels of exposure for each of the chemicals on the list.

Section 3 – Physical Data: This section lists the chemical's physical properties, including the material's boiling point, solubility in water, viscosity, specific gravity, melting point, evaporation rate, molecular weight, appearance, and odor. These characteristics are important for designing safe and healthful work practices.

Section 4 – Fire and Explosion Hazard Data: This section describes the material's fire and explosion potential. It also identifies the type of fire extinguishing agents and firefighting methods needed in the event of a fire or explosion.

Section 5 – Reactivity Data: This section provides information about the incompatibility of certain chemicals and substances with which the material may react violently. It also indicates any hazardous decomposition products.

Section 6 – Health Hazards: This section is considered to be one of the most important MSDS sections because it describes the acute and chronic health hazards of the chemical, along with signs and symptoms of exposure, safe levels of exposure, and any medical conditions that could be aggravated by exposure to the material. It also describes the routes of entry into the body, such as inhalation, skin absorption, ingestion, and/or injection.

Section 7 – Precautions For Safe Handling And Use: This section provides information about how to safely handle the material including recommendations for safe health practices, precautions that should taken during repair and maintenance, and procedures for cleaning up spills and leaks.

Section 8 – Control Measures: This section highlights accepted control measures that should be taken when using the product. They include engineering controls, safe handling procedures, and the type of personal protective equipment that should be used.

MSDSs are available to you upon request during normal business hours. If you have any questions about the chemical or the MSDS, contact your foreman or supervisor.

Overhead Power Lines

Never underestimate or ignore overhead power lines. You can be killed in an instant! Contact with power lines accounts for 90 percent of the electrocutions in the construction industry.

When equipment contacts or works too close to overhead lines, operators, riggers, and other workers are at risk of electrocution. Most overhead power line incidents involve cranes, but they can also involve backhoes, excavators, drilling rigs, dump trucks, and other equipment. You should also be careful when handling ladders, pipe, and other materials near power lines.

When working near overhead power lines follow the proper procedures:

- De-energize or ground overhead power lines before work is performed near the power lines. Protective measures (such as guarding, insulating the lines, or barrier protection) must be installed to prevent employees and equipment from contacting the lines.
- Stay at least 10 feet away from the overhead power lines. If the line voltage is more than 50,000 volts, the clearance for equipment and any unqualified personnel must be increased by 4 inches for each additional 10,000 volts.
- Notify the equipment operator if the equipment gets too close (within 10 feet) to the power line.
- Stay away from mechanical equipment when it is working near overhead power lines. In most cases, riggers and other workers standing on the ground near the equipment are the victims of overhead power line electrocutions.
- Move away from the power line and the equipment if the equipment contacts the power line or if the electricity arcs to the equipment. It is possible that the ground will become energized with electricity, therefore you should shuffle away using very small steps.
- Never work directly with electricity unless you are trained and qualified to do so, and always use the personal protective equipment required for the job you perform, such as rubber insulating gloves, sleeves, matting, blankets, and Class B hard hat.
- Never touch or move a power line with a shovel, pole, stick, branch, ladder or anything else that is not specifically designed for the purpose. Tools that are used to handle energized lines must be designed and constructed to withstand the voltages and stresses to which they are exposed. Even wood objects can conduct electricity if the wood is damp and at high enough voltages.
- Never attempt to remove trees or branches from power lines unless you have been specifically trained to work near power lines.
- Do not store equipment, tools, and materials under power lines.

Don’t underestimate the hazard and always stay clear of power lines until you are absolutely sure they have been de-energized. It only takes one mistake, very little current (60 milliamps), and a fraction of a second for an electrocution to happen. Don’t let it happen to you.

Sling Safety

All construction workers take part in materials handling. As a consequence, employees are often injured because slings are not maintained and used correctly. Using slings and rigging may look like an easy operation, but only workers who are authorized and have actually been trained in how to use slings and rigging are permitted to rig loads for lifting.

Slings are generally made of chain, wire rope, metal mesh, natural rope fiber, synthetic fiber rope, or synthetic web. Visually inspect all slings for cuts, tears, fraying, elongated or worn chain links, and damaged hardware prior to use. Never use a damaged sling!

Safe Lifting Practices

There are four primary factors that should be taken into consideration when using slings and rigging:

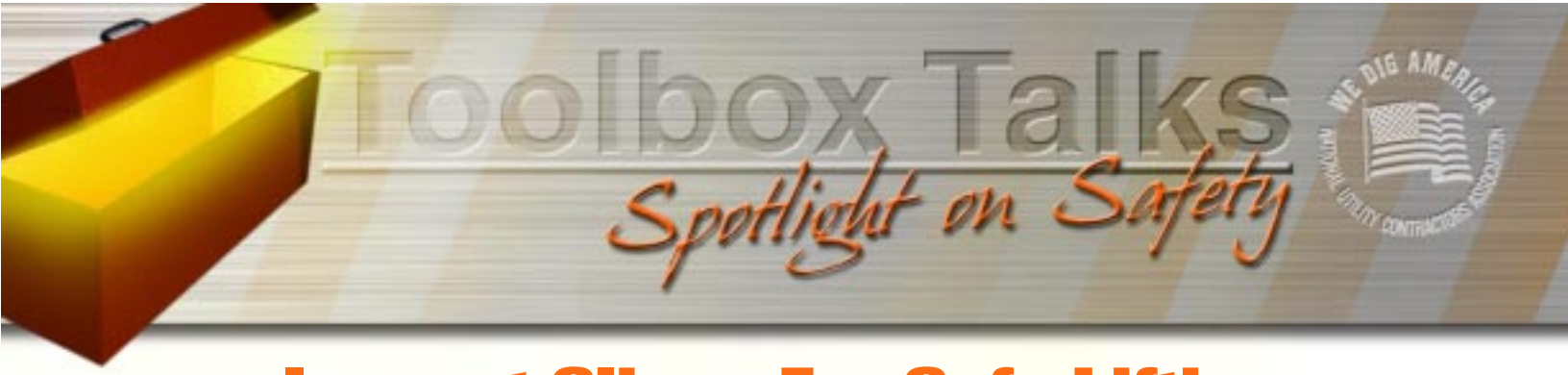
1. The size, weight, configuration, and center of gravity of the load.
2. The number of legs and the angle the sling makes with the horizontal line. As the angle formed by the sling leg and the horizontal line decreases, the load placed on the sling leg increases.
3. The rated capacity of slings varies depending on the type of sling and the type of connecting device or hitch. Never exceed the rated capacity of the sling.
4. The maintenance of the slings. Slings must be inspected before use. Damaged slings and rigging should be tagged and removed from service.

Some do's and don'ts to remember when using slings:

- Select one crew member to act as the signal-person. The equipment operator should take directions from that person only.
- Know the sling's rated capacity and never overload a sling. Use the proper hitch.
- If you must hold the sling in position be sure your hand is clear of any pinch points.
- Use tag lines to control the load.
- Never stand under or allow anyone else to stand under a raised load.
- Position yourself so you don't get caught in between the load and a stationary object.
- Stay away from stacked material that may be knocked over by a swinging load.
- Remove unnecessary objects from where the load will be placed.
- Keep your feet, hands, and body out from under the load and clear of pinch points when lowering or setting a load.
- Never leave a load suspended in the air.
- Never ride on the equipment or load.
- Never shorten slings with knots, bolts, or other makeshift devices.
- Never use damaged or kinked slings. Remove them from service and destroy them.
- Pad slings to protect them from the sharp edges of the loads they are lifting.

Using slings and rigging may look easy, but rigging, lifting, and moving loads is dangerous.

If you need assistance, ask your foreman or the equipment operator.



Inspect Slings For Safe Lifting

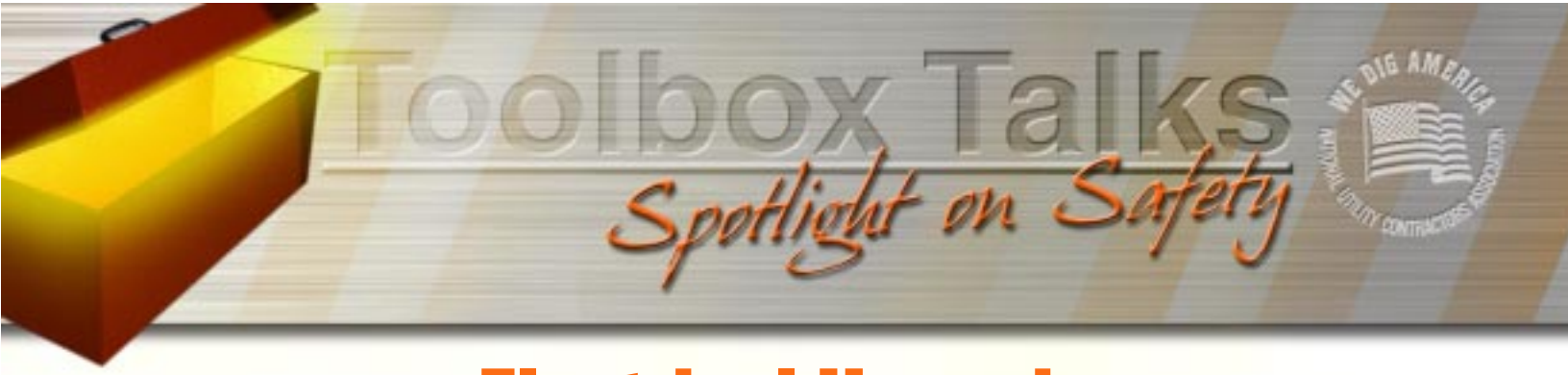
Slings wear out and should be replaced at regular intervals. Before using a sling, check its rated capacity and inspect it for damage. Always remember that damaged or defective slings can and do fail.

The following is an inspection check list to ensure slings are safe to use:

- Look for tears, holes, fraying, worn or torn stitches, and chemical damage when using fabric slings.
- Check chains for worn, damaged, twisted, or elongated links.
- Check wire rope slings for kinks, crushed sections, fraying, broken wires, corrosion, and stretched cable. Make sure the wire rope is kept greased or oiled.
- Never tie a knot in any sling because it will reduce the sling's lift capacity by at least 50 percent.
- Make sure that any slings exposed to chemicals will not be damaged by the exposure.
- Check to see that slings are tagged or marked with a load rating. Never exceed the rated load, and remember that the load increases as the horizontal angle formed by the sling legs decreases.
- Scheduled formal inspections of slings will be made **HOW OFTEN** by **WHOM.** Document sling inspections.
- Defective slings must be taken out of service immediately and destroyed. Employees are not permitted to take old slings.
- Insect the hardware (hooks, D-rings, etc.) to make sure they are not worn, bent, damaged, or defective.

If you decide that the sling is damaged or defective, remove it from service and tag it "Defective—Do Not Use." Inform your foreman.
Use another sling that is not damaged or defective.

Regular sling inspections will ensure that defective slings are removed from service before an accident occurs, which could cause injury, property damage, or damaged materials.



Electrical Hazards

Electricity is essential to modern life, both at home and on the job. Electricity has long been recognized as a serious workplace hazard because it exposes employees to electric shock, electrocution, burns, fires, and explosions.

Many construction operations require employees to work with electrical tools, electric pumps, extension cords, and generators. Each year approximately 100 construction workers who are not electricians are killed on the job, and most of them are killed by contact with overhead power lines. However, others are killed or seriously injured from contact with other forms of electricity. When you are working with electrical equipment, use caution and follow all electrical safety precautions.

- Inspect all electrical tools and extension cords each day before you use them.
  1. Check the insulation on all tools and extension cords to ensure they are not cut, punctured, or damaged. Remove unsafe tools and cords from service.
  2. Check the plug to make sure the ground prong has not been removed. Double insulated tools do not require a ground prong on the plug.
  3. Check the tool casing to ensure it is not cracked or damaged.
- Use only 3-wire extension cords when working with portable hand tools and make sure the tool's power source is properly grounded. Never operate an electric power tool that is not grounded unless the tool is double-insulated or battery-powered. Always protect electric cords from damage.
- Use ground-fault circuit interrupters (GFCI) when operating portable power tools. GFCIs must be used with all temporary 120 volt, 15- and 20-amp circuits including generators and extension cords, even when they are plugged directly into a permanent building circuit.
- Lock out and tag out all electrical circuits to equipment before working on or near exposed wiring. Only qualified electricians are permitted to work on electrical panels, boxes, motor controllers, and circuit breakers.
- Store all energized parts of electric circuits in approved electrical boxes or cabinets. All electric boxes and cabinets must be covered unless they are being worked on by a qualified electrician.
- Keep pipes, drill rods, metal ladders and other conductive objects away from underground and overhead electric power lines and energized circuits.
- Use extreme caution when digging by hand to avoid hitting an underground electric line.

Don't be fooled—even low voltage electricity can be dangerous. All it takes is 50 milliamps of current to cause extreme pain, respiratory arrest, severe muscular contractions, or death.

Working around electricity does not have to be dangerous if you follow the rules and procedures for working safely with electricity. Avoid a hair-raising experience.