

Material Safety Data Sheets, commonly called MSDS, have come to be very important documents. Every workplace should have readily-accessible MSDS for all the hazardous materials that are used or stored there. This week's safety brief takes a look at the content of an MSDS and provides important information for its use.

First of all, the time to become familiar with a material's MSDS is **before** you begin using the material. If you have responsibility for procuring hazardous material, you should obtain an advance copy of the MSDS to review the safety information before the order is placed. Many companies and other institutions require approval of hazardous materials before they are purchased. The MSDS contains information that is very useful in the approval process.

Once a material is brought into the workplace, everyone who uses it should review the MSDS. You wouldn't want to wait for an emergency to learn about the material's hazardous properties! Suppose the material catches fire. The MSDS specifies fire-fighting procedures for the material. However, your chances of successfully extinguishing the blaze are very small if you waste valuable time running to review the MSDS.

There are other good reasons to review the MSDS before using a material. By doing so, you will learn what personal protective equipment is required when using it. You will also learn what conditions to avoid when working with the material, such as heat and sparks. MSDS also tell you what materials should not be brought into contact with the hazardous material, and how to store and dispose of it.

The information on an MSDS is typically grouped into these categories:

- hazard ratings, such as NFPA (National Fire Protection Association) ratings
- name and address of the material's manufacturer or importer
- identity: by common name, synonyms, and chemical abstract number of the material
- physical and chemical characteristics, such as the material's appearance, odor, specific gravity, and melting point
- fire and explosion data, such as the material's flash point, explosion hazards, and recommended fire extinguishing practices
- physical hazards, such as the material's stability, incompatible material information, and hazardous decomposition products
- health hazards, such as inhalation and ingestion hazards, carcinogen classification, and basic first aid information
- special precautions, and spill or leak procedures such as storage, clean-up, and disposal information
- special protection information, such as personal protective equipment recommendations

Remember, the best time to learn the content of the MSDS is before you use the material. And be aware, mistakes can and do happen. If you are using a material that doesn't seem to fit the description on its MSDS, do not use the material; contact your site's safety personnel immediately. There could have been a mix-up in the labeling, or with the information on the MSDS. The material may also be out-of-spec and could be dangerous to use as planned.

MSDS contain a wealth of useful information for you to use when working with a hazardous material, and have proven to be very valuable, convenient tools in protecting people from danger. But MSDS are only as useful as you make them. Take the time to review the MSDS for every hazardous material you use.

# Safety Meeting Report

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## Wear Your Hard Hat

Your hard hat is one of the most important tools you can bring to any job site. Hard hats not only reduce your chances of serious injury by falling objects, but they protect you when you bump your head on things -- like machinery, ductwork, ceiling tie wires, and forms. Non-conductive hard hats protect you from electrical shock and burns. You never know when a piece of concrete, a small rock, or a tool is going to fall several stories and hit your head. A single injury of this kind can disable you for life, or even end your life.

However, many people assume that since they've never had any accidents before, they don't really need to wear a hard hat. Don't fall victim to a false sense of security. Your hard hat may just save your life, and there are few occasions on any construction job when a hard hat should not be worn.

### Proper Wear and Care of Hard Hats

The better care you take of your hard hat, the better care it will take of you. Here are some suggestions for proper care and use of your hard hat:

1. Properly adjust suspension systems to maintain clearance between your head and the shell of the hat.
2. Don't cut holes for ventilation.
3. Don't heat and bend your hard hat.
4. Don't substitute a "bump cap" -- these aren't strong enough.
5. Don't paint your hard hat.
6. Don't put anything under your hard hat except your head -- this includes cigarettes or notebooks.
7. Don't wear your hat backwards.
8. Never wear metal hard hats around electrical work.

### Hard Hats: Myth vs. Fact

**Myth:** "It's too heavy."

**Fact:** Hard hats are only a few ounces heavier than a cloth cap, but the extra protection you get is worth the extra weight.

**Myth:** "It's too hot."

**Fact:** Measurements taken in hot weather show that the temperature under a hard hat is often cooler than it is outside.

**Myth:** "It gives me a headache."

**Fact:** A thump on the head from something that has fallen two floors will give you a worse one. There is, however, no medical reason why a properly adjusted hard hat should cause a headache. Don't alter the suspension system or the hard hat, because you won't get the designed protection.

**Myth:** "It won't stay on."

**Fact:** That's right, it won't in a high wind. A chin strap will solve this problem. Otherwise, you will find that a hard hat stays put no matter how much stooping or bending you have to do -- if it's fitted properly.

**Myth:** "It's noisy."

**Fact:** That's your imagination. In fact, tests show that properly worn hard hats will shield your ears from noise to some extent.

The hard hat is a useful piece of safety equipment. But like any other protective device, it must be properly adjusted and worn, and kept in good condition to give you maximum protection.

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## Handling 55 Gallon Drums Safely

In the typical workplace, drums are used to store material, to ship it, to dispense it for use, and to store wastes. All of these drums must be moved occasionally. Like most things, there's a right way to move a drum-and several wrong ways. You can help prevent injuries by moving drums safely.

At least four serious injuries can occur if a drum is not handled safely:

- fractures
- lacerations
- hernias
- back strain

All these injuries are painful and require a long time to heal. By taking a few precautions before you attempt to move a drum, you can help prevent these serious and painful injuries. Here is a recap of how to safely move a drum.

Before moving a drum, put on a pair of thick gloves, which will help protect your hands. Also follow this preliminary checklist:

- Check to see how much room there is to move the drum.
- Plan your route in advance. Don't wait until the drum is in motion.
- Check the route for anything that might cause you or your equipment to trip or slip.
- Check the drum to make sure it isn't warped. This could cause the drum to slip.
- Check the drum for burrs, which could cause a laceration.
- Check the drum for liquids, which could cause you to lose your grip.
- Check the bung to make sure it is tight enough to prevent leaks.
- If you are using a pallet to move a drum, make sure the pallet is in good condition.

There are four ways to "break," or initially move a drum from its standing position. These are: pulling, pushing, combinations of pulling and pushing, the drag/pull method, and the push/pull method. Pulling is necessary when drums are grouped closely together. Pushing is used when there is ample room to work. The drag/pull method is used when there are tight spots in the area you are "breaking" the drum. The push/pull method is used when drums are located beside a wall.

To pull the drum, grip the near chime with one hand and the far chime with the other. Brace your foot at an angle across the bottom chime. Your hands and feet should form a straight line. Check the position of your fingers for possible pinch points. Now you are ready to pull back on the drum.

To push the drum, place your hands near the chime at shoulder width. Move your shoulders low and close to the drum. Slowly push forward with your legs until you feel the drum reach its balance point.

When using the drag/pull method, place your hands at the near position, at shoulder width. Brace the drum with your foot to prevent it from sliding, and shift your weight to the rear foot. Pull and drag it a few inches to the left, then to the right.

To use the push/pull method, use one hand to pull the far chime. Use the other hand to push against the wall.

If a drum starts to fall, get away from it as quickly as possible. If the contents spill, follow your work site's procedures for reporting a spill.

If two people are moving a drum, both people can push or pull the drum, or one can push while the other pulls. When rolling the drum, it is safer for one person to roll it.

To roll a drum, in this case to the left, follow these steps:

- Place your left hand high on the chime and your right hand low.
- Use both hands to roll the drum.
- As your right hand reaches the top, quickly switch the left hand to the top position.
- Lift your hands and place them into position. Do not slide your hands because you may cut or burn them.
- Keep your feet separated and do not slide them. Use the side step.
- Turn your body slightly away from the drum, but not too far away.
- Stay close and ahead of the drum.

When you reach your destination, place the drum in its position using the reverse of the push, pull, drag/pull, or push/pull method.

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Back disorders are listed in the "top ten" leading workplace injuries published by the National Institute of Occupational Safety and Health. They account for 27 percent of all nonfatal injuries and illnesses involving days away from work. It's no wonder. Your back is a sophisticated piece of machinery made up of numerous muscles, bones, nerves, and supporting tissues. It's a machine you use every day, probably in ways you don't even notice.

Just like the finest machinery, your back requires proper care to keep it working. If it's not working right, you'll suffer. An injured back affects your ability to move your limbs, your hips, your neck, and your head. Injuries to the back can be very debilitating, causing a lot of pain, time away from work, and often requiring physical therapy or even surgery. Everyone whose job involves stressful lifting or awkward postures is at risk for a back injury. Here are some tips to keep your back in optimum condition:

While lifting:

- Don't bend over an object you are lifting. Bend your knees, squatting in front of the object to reach it.
- Lift the object slowly and carefully, using your leg and arm muscles to lift, not pulling with your back.
- Keep your head up and look straight ahead while making the lift.
- While lifting, keep the object as close to your body as possible.
- Keep abdominal muscles tight while making the lift.
- Use the same techniques when you put the object down.
- If the object is too big or too heavy to lift using these techniques, use mechanical assistance, or get someone else to help.

When reaching for objects:

- Do not reach for an object unless you're sure you're strong enough to lift it.
- Use a step ladder to reach objects above shoulder height.
- Avoid awkward stretches while reaching. These stress your back and could cause you to lose your balance.
- Don't depend on structures to support you (e.g., a shelf support, a storage rack, etc.). These could easily give way if you pull or tug on them.

Exercise also plays an important role in keeping your back strong, healthy, and flexible. A properly exercised back is less likely to be injured. Your physician, company medical personnel, or other health care provider can recommend the best exercises for you, taking into account your physical condition and the type of work you do.

Finally, a word about back belts. There's a lot of controversy about using back belts to control low back injuries in workers who don't have an existing injury. According to a report published by the National Safety Council, available scientific data does not completely support nor condemn the use of back belts to control low back injuries. One thing that is agreed upon is that back belts should never be a substitute for a comprehensive back injury prevention program. Taking this into consideration, many companies have developed a back belt policy. If you do use a back belt, be aware that you may experience a false sense of security by wearing the belt. You may be tempted to lift loads you wouldn't otherwise lift. Remember, it's your back doing the work--not the belt!

Always be alert for situations that could cause a back injury. Be kind to your back. Don't take unnecessary chances. By following proper lifting and reaching techniques and exercising properly, you'll help keep back problems behind you!

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## Construction Equipment Dangers

Construction equipment used on construction jobs often creates dangerous conditions. There are several situations in particular that should be watched for at all times.

Any moving equipment, such as skip loaders, back hoes, trenchers, cranes, hi-lifts, or trucks, should be respected and avoided. Don't assume that the operator sees you. You could wind up injured, or worse. Also, don't depend on a horn or alarm to warn you that moving equipment is near. You may not be able to hear the equipment's alarm over other construction noise.

When you see that equipment is traveling backward, keep out of the way and stand clear until the operator has completed his maneuver. Never cut across the path behind any unit while it is backing up. You could easily trip and fall under the equipment. For this same reason, you should never ride on the running boards, steps, or drawbar on any equipment, even for a short distance.

While backing up, the operator should have the project foreman clear the area behind the unit and provide direction. No operator should back a piece of equipment into an area without someone clearing that area and giving signals.

Watch out for swinging counterweights on equipment such as cranes. There is often a pinch-point between the counterweights and some obstruction when the unit swings. Make sure there is enough room for workers to pass, and if there is not, shut off the area to any access.

Never ride on or near material that is being transported by equipment. The load could shift and you could be thrown to the ground. Also, clearance may not allow for your position, and you could be crushed between overhead or side obstructions.

If you must ride on equipment, make sure that all parts of your body are inside the unit, including your arms and legs. In addition, if at all possible, get off any portable scaffold or work platform while the unit is being moved. The time it takes to get off will be much less than the time lost if you fall or the unit tips over.

Never walk alongside moving equipment. Keep in the clear in case it slides or turns, or the load shifts.

When you are working near equipment operating in the vicinity of power lines, don't touch or come in contact with the frame of the unit or the load cables. There is always the chance that the boom of the unit may hit the power lines. Warn the operator and the foreman any time you see this possibility and follow their instructions.

Don't walk under loads on cranes and hoists. Always take the path that avoids danger.

Never clean, adjust, lubricate, repair, or work on a machine that is in operation. Stop the machine before working on it, and replace the guards as soon as it is done and before operation is resumed.

The safest thing to do around construction equipment is keep away while the equipment is in operation. If you must be near the equipment, make sure the operator knows you are working nearby and stay alert. Keeping your mind on where you are in relation to the equipment will not only prevent injuries, but it could save your life.

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## Working with Electrical Equipment

Electricity is an essential part of modern life, both at home and on the job. It is often used without much thought given to its potential hazards. Perhaps because it has become such a familiar part of our surroundings, it often is not treated with the respect it deserves. Working around electricity exposes employees to such dangers as electric shock, electrocution, fires, and explosions. That's why the Occupational Safety and Health Administration has developed these guidelines, which protect employees who work with electrical equipment.

**Section 5(a)(1)** of the OSH Act, often referred to as the **General Duty Clause**, requires employers to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

**Section 5(a)(2)** requires employers to "comply with occupational safety and health standards promulgated under this Act." All electrical work, installation and wire capacities shall be in accordance with the provisions of the National Electrical Code.

To help prevent potential hazards, job sites must have a Ground Fault Circuit Interrupter system, or an Assured Equipment Grounding Conductor Program. This is required for all 120 volt, single phase 15 and 20 ampere receptacle outlets, which are not a part of the permanent wiring of the building or structure in use by employees.

Companies must not allow employees to work in close enough proximity to any part of an electric power circuit that the employee might come in contact with it in the course of a workday, unless the employee is protected against electric shock by de-energizing the circuit and grounding it, or by guarding it by effective insulation or other means. In work areas where the exact location of underground electric power lines is unknown, workmen using jackhammers, bars, or other hand tools that might come in contact with a line must be provided with insulated protective gloves.

Before work begins, the responsible supervisor must determine where any part of an electric power circuit, exposed or concealed, is located, so that no person, tool, or machine comes into contact with it. The company is also required to post and maintain proper warning signs where such a circuit exists. Employees must be advised of the location of such lines, the hazards involved, and the protective measures to be taken.

Suitable barriers or other means must also be provided to ensure that any workspace for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed.

Electrical equipment must also be given sufficient space to permit ready and safe operation and maintenance of that equipment. When parts are exposed, the minimum clearance for the workspace may not be less than 6 ¼ feet high, and not less than a radius of 3 feet wide. Clearance must sufficiently permit at least a 90 degree opening for all doors or hinged panels. All working clearances must be maintained in accordance with the National Electrical Code.

Equipment or circuits that are de-energized are to be rendered inoperative, and tags should be attached at all points where such equipment or circuits can be energized. Tag any controls that are to be deactivated during the course of work, or energized or de-energized equipment or circuits. Tags should be placed in a clear and obvious location on any equipment or circuits being worked on. Unexpected energizing of any electrical line can cause death, shock, or serious injury. In addition to the tag, the circuit at the switch box should be padlocked in the "OFF" position. A lockout hoop should be provided and used.

Electricity is a necessary part of the job, and in many ways it makes our lives easier. But it can also seriously hurt or kill you unless everyone on site takes the proper precautions.

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## Working Safely with Ladders

A ladder is a simple, essential tool for completing many jobs, and with so few moving parts, it seems impossible that a ladder could be dangerous. Yet every day, hundreds of people are injured, or even killed, in accidents involving ladders. Virtually every ladder accident can be prevented. It only takes a little bit of common sense, and observing the following simple rules to ensure that you or your fellow workers are never injured while using a ladder.

**Choose the right ladder.** Always select a ladder that is the correct length to safely reach the working height. Check that the ladder is of the correct duty, or weight rating. The combined weight of the user, tools, and materials should NEVER exceed the rating of the ladder. Most ladders are available with weight ratings of 200, 225, 250, and 300 lbs. Only use the right one.

**Check the condition of the ladder.** Read all the labels on the ladder, to make sure you're using it properly. Then check for split or cracked side rails, missing or broken rungs, loose rungs, or other weaknesses. Also check for splinters and sharp edges.

**Place the ladder safely.** Use your head and think SAFETY before setting up the ladder. Make sure the ladder has firm footing and that its feet are one-quarter the length of the ladder away from the upright surface to be climbed. Don't use a step ladder as a single ladder. If you are using a step ladder, make sure it is fully open with the spreaders properly locked.

**Climb the ladder carefully.** Keep your mind on what you're doing at all times. Wear the proper shoes, with good soles, and make sure they're free of grease or mud. Always face the ladder and use both hands when climbing up or down. Don't carry your tools or materials -- raise and lower them with a hand line. NEVER have someone toss them up to you, and never drop them when you are finished. If you don't feel well, DON'T climb the ladder. Always climb and work from the center of the ladder. Don't climb up the "back" side of a step ladder and never stand on the top of it.

**NEVER over-reach. Move the ladder instead.** Breaking this one simple rule causes more accidents than you can possibly imagine.

**Tie off the ladder.** Once you have climbed to your working height, tie off the ladder and use a safety belt.

**Take care of ladders.** When you are finished with your ladder, put it back where it belongs. Always keep ladders clean and free of excess material. Store them in a safe and dry place, out of direct exposure to the sun and the elements. Make sure your ladders are tied down during transit. Never paint a wooden ladder. You can, however, use clear wood preservatives.

Your ladder is one of your most important tools. It is also is one or your most unforgiving if misused or mistreated, so use it safely and wisely.



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## Personal Protective Equipment

Personal Protective Equipment (PPE) is not optional. It was developed to protect your body from the potentially dangerous situations that workers in our industry face. Your sight and your hearing are two of the most valuable tools you'll ever own -- protect them by wearing your PPE.

### Safety Glasses

If you're engaged in any activity that causes small pieces of wood, metal, glass, plastic or other hard dust or objects to become airborne, the only safeguard you have are wrap-around safety glasses, which your company will issue its employees. This doesn't just go for welders, either. There are potential eye hazards involved in sanding, grinding, sawing, drilling, hoe-ramming, powder-actuated tools, chipping, drywall sanding, clearing and grubbing, and demolition. The following things can also damage your eyes:

- Dusts, powders, fumes, and mists
- Glare from welding or other similar activities
- Splashing metals and fluids
- Radiation from lasers
- Mechanical irritants
- Careless co-workers

It only takes a split-second for these things to permanently damage your eyes. **Wear your wrap-around safety glasses** any time you walk on the job site.

### Hearing Protection

According to OSHA, any noise that is 90 decibels or more requires hearing protection (ear plugs). Did you know that an idling truck produces about 110 decibels? A generator, from a distance of 10-15 feet, produces as much as 120 decibels. And a jack-hammer produces nearly 136 decibels.

Unfortunately, many construction workers have hearing impairments from years of working around generators, heavy construction equipment, air compressors, and moving vehicles, and never wearing their ear plugs or ear muffs. They didn't realize that hearing loss develops gradually, until one day, it's gone.

Any time you are using this equipment, or if you will be in an environment surrounded by noise for prolonged periods of time, and especially when the noise level exceeds 90 decibels, wear your ear plugs. Ear plugs won't keep you from hearing necessary sounds, such as a back-up alarm, but they will keep excessive noise to a minimum, which protects your hearing.

**If your employer isn't furnishing the required Personal Protective Equipment, such as wrap-around safety goggles or ear plugs, ask for them immediately.**

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Four environmental factors affect the amount of stress a worker faces in a hot work area: temperature, humidity, radiant heat (such as from the sun or a furnace), and air velocity. Perhaps most important to the level of stress an individual faces are personal characteristics such as age, weight, fitness, medical condition, and acclimatization to the heat.

The body reacts to high external temperature by circulating blood to the skin, which increases skin temperature and allows the body to give off its excess heat through the skin. However, if the muscles are being used for physical labor, less blood is available to flow to the skin and release the heat.

Sweating is another means by which the body maintains a stable internal temperature in the face of heat. However, sweating is effective only if the humidity level is low enough to permit evaporation, and if the fluids and salts lost are adequately replaced.

Of course, there are many steps a person might take to reduce the risk of heat stress, such as moving to a cooler place, reducing the work pace or load, or removing or loosening some clothing.

But if the body cannot dispose of excess heat, it will store it. When this happens, the body's core temperature rises and the heart rate increases. As the body continues to store heat, the individual begins to lose concentration and has difficulty focusing on a task, may become irritable or sick, and often loses the desire to drink. The next stage is most often fainting; death is possible if the person is not removed from the heat stress.

### Heat Disorders

**Heat stroke**, the most serious health problem for workers in hot environments, is caused by the failure of the body's internal mechanism to regulate its core temperature. Sweating stops and the body can no longer rid itself of excess heat. Signs include (1) mental confusion, delirium, loss of consciousness, convulsions, or coma; (2) a body temperature of 106 degrees F or higher; and (3) hot dry skin, which may be red, mottled, or bluish. Victims of heat stroke will die unless treated promptly. While awaiting medical help, the victim must be removed to a cool area and his or her clothing soaked with cool water. He or she should be fanned vigorously to increase cooling. Prompt first aid can prevent permanent injury to the brain and other vital organs.

**Heat exhaustion** results from loss of fluid through sweating when a worker has failed to drink enough fluids, take in enough salt, or both. The worker with heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. The skin is clammy and moist, the complexion pale or flushed, and the body temperature normal or slightly higher. Treatment is usually simple: the victim should rest in a cool place and drink an electrolyte solution (a beverage used by athletes to quickly restore potassium, calcium, and magnesium salts). Severe cases involving victims who vomit or lose consciousness may require longer treatment under medical supervision.

**Heat cramps**, painful spasms of the muscles, are caused when workers drink large quantities of water but fail to replace their bodies' salt loss. Tired muscles -- those used for performing the work -- are usually the ones most susceptible to cramps. Cramps may occur during or after working hours and may be relieved by taking liquids by mouth.

**Fainting** (heat syncope) may be a problem for the worker who is not acclimatized to a hot environment, who simply stands still in the heat. Victims usually recover quickly after a brief period of lying down. Moving around, rather than standing still, will usually reduce the possibility of fainting.

**Heat rash**, also known as prickly heat, may occur in hot and humid environments where sweat is not easily removed from the surface of the skin by evaporation. When extensive or complicated by infection, heat rash can be so uncomfortable that it inhibits sleep and impedes a worker's performance, or even results in temporary total disability. It can be prevented by resting in a cool place and allowing the skin to dry.

### Preventing Heat Stress

Most heat-related health problems can be prevented or the risk of developing them reduced. Following are a few basic precautions to lessen heat stress:

1. A variety of **engineering controls**, including general ventilation and spot cooling by local exhaust ventilation at points of high heat production, may be helpful. Shielding is required as protection from radiant heat sources. Evaporative cooling, mechanical refrigeration, or cooling fans are other ways to reduce heat. Eliminating steam leaks will also help. Equipment modifications, the use of power tools to reduce manual labor, personal cooling devices, or protective clothing are other ways to reduce the hazards of heat exposure for workers.
2. **Work practices** such as providing plenty of drinking water -- as much as a quart per worker per hour -- at the workplace can help reduce the risk of heat disorders. Training first aid workers to recognize and treat heat stress disorders, and making the names of trained staff known to all workers is essential. Employers should also consider an individual worker's physical condition when determining his or her fitness for working in hot environments. Older workers, obese workers, and personnel on some types of medication are at greater risk.
3. Alternating **work and longer rest periods** in a cool area can help workers avoid heat stress. If possible, heavy work should be scheduled during the cooler parts of the day, and appropriate protective clothing provided. Supervisors should be trained to detect early signs of heat stress, and should permit workers to interrupt their work if they are extremely uncomfortable.
4. **Acclimatization** to the heat through short exposures followed by longer periods of work in the hot environment can reduce heat stress. New employees and workers returning from an absence of two weeks or more should have 5-day period of acclimatization. This period should begin with 50 percent of the normal workload and time exposure the first day and gradually building up to 100 percent on the fifth day.
5. **Employee education** is vital so that workers are aware of the need to replace fluids and salt lost through sweat, and so that they can recognize dehydration, exhaustion, fainting, heat cramps, salt deficiency, heat exhaustion, and heat stroke as heat disorders. Workers should also be informed of the importance of daily weighing before and after work to avoid dehydration.

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## Learning From a "Near Miss"

How many times have you shrugged off a near miss, chalking it up to "good luck"? Remember that the difference between a near miss and an accident often is a fraction of a second or an inch. Your near miss might be a warning to you, and next time, you might not be so lucky.

In fact, one study shows that for every 330 incidents of the same type, 300 produce no injuries, 29 produce minor injuries and one produces a major injury. (Of course, these statistics vary with the job being done.) The problem is we never know which time the major injury will occur -- until it's too late. If we heed these warnings and look for their causes, we may be able to prevent future injury or damage.

**An example:** You're going up a walkway into a building. Your foot slips. Being agile and empty-handed, you regain your balance with no harm done.

Another person comes along. He slips, but his reactions are a little slower than yours. To keep from falling, he jumps off the board. Again, no harm done.

Then comes a third person carrying a load. He has the same experience, but falls off the board with the load on top of him. He breaks his ankle. Two warnings were ignored. Finally, someone was hurt. Now the loose cleat, sand, or mud on the board is discovered and the condition corrected. But it took someone being hurt for us to act.

### Always ask "Why?"

Suppose you're walking toward a suspended mason's scaffold. You see a brick fall, but hear no warning shout. Ask yourself: "Why did it fall? Was it kicked loose? Is a toe board missing?" Correct the faulty condition, if possible. If not, report it to someone who can.

Examine every near miss for potential accidents -- your co-workers will thank you for it.



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## Saving Lives with Lockout/Tagout

The federal lockout/tagout standard, published by OSHA in 1989, was designed to prevent injuries and deaths caused by accidental start-up of equipment during maintenance or servicing. OSHA estimates that the lockout/tagout standard saves 122 lives and prevents 28,000 lost workday injuries each year. It's likely that well over 800 lives have been saved since the standard went into effect. That's more than 800 people who still go home to their families, friends, and loved ones. The lockout/tagout standard works. It saves lives. Unfortunate tragedies do still occur, but many of them could be prevented if the lockout/tagout standard is applied correctly. Here's a review of the lockout/tagout standard. Remember, the standard can only work if it's used correctly every time.

The lockout/tagout standard requires that hazardous energy sources be "isolated and rendered inoperative" before maintenance or servicing work can begin. These energy sources include electrical, pneumatic, hydraulic, mechanical, thermal, chemical, and gravitational. Overlooking an energy source has proved fatal on several occasions.

In order to "isolate and render inoperative" an energy source, an energy isolating device must be locked in place, or in certain cases, labeled with a tag warning against start-up of the equipment until servicing is finished. Stored energy sources, such as pressure, springs, and electricity contained in capacitors, must be released or "otherwise rendered safe" before servicing the equipment. Every person who will be working on the equipment applies a lock or tag to each energy isolating device. For complex equipment with many energy sources, a group lockout is permitted.

After locks are applied, an attempt to re-start the equipment must be made to verify the equipment cannot be restarted before servicing begins. After servicing, each person who placed a lock or tag must remove it before the equipment is started.

OSHA requires three basic elements in a lockout/tagout program. These are training, written procedures, and inspections. **Training** is required for two types of people -- "authorized employees" and "affected employees." Authorized employees are people who do the maintenance or servicing work. They are the people who actually perform the lockout/tagout. Affected employees are people who may be affected by, or work near, equipment that is locked or tagged out. Affected employees are not permitted to perform servicing or maintenance work that requires a lockout or tagout.

**Written Procedures** detailing lockout/tagout are required for equipment having two or more energy sources. Many companies require written lockout/tagout procedures for every piece of equipment -- even those with only one energy source. Written procedures communicate important information to persons performing lockout/tagout. They identify energy sources, provide step-by-step instruction for locking or tagging out energy, releasing stored energy, and verifying the equipment cannot be re-started after lockout is applied. Group lockout/tagout procedures must also be clearly documented. Procedures must be kept up to date and changes must be communicated to everyone who may possibly be affected by them. They are only useful if all the information they contain is correct.

Procedures for performing lockout/tagout must be followed consistently. Don't be tempted to take shortcuts for small jobs, even if the lockout/tagout procedure takes longer than the job itself!

**Inspections** of the lockout/tagout program must be performed annually. The lockout/tagout standard specifies who may perform the inspection. Typically it is an authorized employee who is not directly involved with the procedure being inspected. Periodic inspections provide an opportunity to verify that procedures are being followed, and to correct deficiencies in the lockout/tagout program. Of course, if you are aware of any problems with the lockout/tagout program, don't wait for a routine inspection; report them immediately.

These three elements of the lockout/tagout standard work together to keep you safe. Lockout/tagout saves lives and prevents injuries -- if procedures are followed consistently and correctly. Never take a shortcut when it comes to your safety, especially when you're working with hazardous energy sources.

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