

According to the Centers for Disease Control and Prevention (CDC), each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment. About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work.

Workers can get particles of dust, metal, wood, glass, concrete, plastic or other hard substances in their eyes. In addition, chemicals, acids, sparks, hot oil, fire and steam are also eye hazards.

OSHA Standard 1926.102(a)(1) *Employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.*

Impact hazards are those that result from flying or falling objects, or sparks striking the eye. Eye protection for these hazards are safety spectacles with side shields or goggles.

Heat injuries may occur to the eye and face when workers are exposed to high temperatures, splashes of molten metal, or hot sparks. Eye protection for these hazards are safety spectacles with special-purpose lenses and side shields or goggles.

Chemical injuries often result from an inappropriate choice of PPE, that allows a chemical substance to enter from around or under protective eye equipment. Eye protection for these hazards are goggles, face shields and eyewash stations.

- Always use safety glasses or goggles designed for the task.
- Protect your eyes from debris and particles getting into your eyes by using goggles.
- Safety glasses must be rated ANSI Z87.1.
- Prescription lenses must also be rated ANSI Z87.1 or safety glasses will be required over your prescription glasses.
- In addition to safety glasses or goggles wear a face shield if there is any potential for chemicals or particles causing injury to your face.

Powered industrial trucks, commonly called **forklifts** or lift trucks, are used in many industries, primarily to move materials. They can also be used to raise, lower, or remove large objects or smaller objects on pallets, in crates, or other containers. Note, according to OSHA, over-the-road haulage trucks and earth-moving equipment that has been modified to accept forks are not considered powered industrial trucks.

OSHA Standard 1910.178 covers the requirements for forklifts of all types including rough terrain forklifts, telescoping or boom forklifts, and industrial forklifts. For other mechanized equipment such as loaders, graders, and excavators look to OSHA Standard 1926.600.

Only trained and certified operators allowed!

- The first and most important rule to follow with forklifts – get trained!
- Many injuries to both the operator and their co-workers occur because the user of the forklift was not trained in the specific model and type of forklift they tried to use.

OSHA Standard 1910.178(l)(1)(i) states the employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this [standard].

- Safe operating procedures depend on the specific type of lift. Not all forklifts work the same.
- Always remain a safe distance from forklifts in use and keep away from the swing area of the forklift.
- Never stand on or under the forks of the lift.
- Never use a forklift to raise or lower people unless it is designed and equipped for that use.
- Always pay attention to horns and back-up alarms from all heavy equipment, including forklifts.
- If operating any heavy equipment, always use seatbelts.

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Forklift Warehouse Incident

Volume 2 Fast 100 Issue 2G-2

LESSONS LEARNED



A warehouse laborer (the victim) was fatally injured when the sit-down-type forklift he was operating tipped over and crushed him. The victim apparently lost control of the forklift, which had a load on its forks and the mast fully extended, as he was making a right turn, causing the forklift to tip over 90 degrees onto its left side. The unrestrained victim was crushed under the extended boom/mast of the forklift. NIOSH In-house FACE Report 2002-02



➤ Only trained and certified operators allowed!

- The first and most important rule to follow with forklifts – get trained!
- Many injuries to both the operator and their co-workers occur because the user of the forklift was not trained in the specific model and type of forklift they tried to use.

OSHA Standard 1910.178(l)(1)(i) states *the employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this [standard].*

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Narrow Aisle Forklift Incident

Volume 2 Fast 100 Issue 2G-3



Photo of a Narrow Aisle Forklift similar to the one in this incident. An 18-year-old warehouse receiving clerk was killed after a loaded forklift struck him in a warehouse aisle. The clerk and the forklift operator were working together to prepare newly received merchandise for storage and shipment. After a morning break, the forklift operator drove into the storage area, loaded the last pallet, and began backing down the aisle at a slight angle. Looking over his shoulder, the operator saw the warehouse clerk walking up the aisle toward him. The operator yelled at the clerk, made eye contact, and hit the brakes and tried to steer away. The forklift struck the warehouse clerk and pinned him against a metal shelf. First aid was provided while waiting for emergency responders. The victim died on the way to the hospital. OR-FACE Report OR 2006-44-1

OSHA Standard 1910.178(l)(1)(i) states the employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this [standard].

- Remember these important tips to avoid forklift incidents:
- Only trained and certified operators allowed!
 - Not all forklifts work the same.
 - Always remain a safe distance from forklifts in use.
 - Keep away from the swing area of the forklift.
 - Always pay attention to horns and back-up alarms from all heavy equipment, including forklifts.
 - If operating any heavy equipment, always use seatbelts.

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Back Injury Prevention

Volume 2 Fast 100 Issue 3G-1

Despite all of the equipment, tools, and machinery that is used in manufacturing, manual labor is still needed to get most work done. What this means is that every worker is exposed to potential injuries to their back by simply doing the normal every day tasks they often don't think about.

- Housekeeping is an important part of preventing back injuries – always make sure work areas are free of clutter and possible trip hazards.

OSHA Standard 1910.22(a)(1) *All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.*

Tasks that can cause or aggravate an existing back injury include:

- Bending, stooping, or squatting
- Pushing heavy materials
- Placing materials overhead
- Shoveling, twisting, or awkward body positions
- Lifting materials from the floor
- Kneeling for long periods of time

OSHA Standard 1910.22(a)(2) *The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places should be provided where practicable.*

- Cut down on carrying materials whenever possible by having them delivered close to where they will be used.
- Use material handling tools like carts, dollies, pallet jacks, and forklifts, if possible, to limit manual lifting.
- Consider new tools and devices to eliminate the need for bending and stooping, like tools with modified or extended handles.
- When you must lift or carry materials keep the load as close to your body as you can. Try not to twist, turn your whole body instead. Lift with your legs, not your back. Lift the load using a solid two-handed grip. Lift and lower materials in a smooth steady way, try not to jerk the lift.

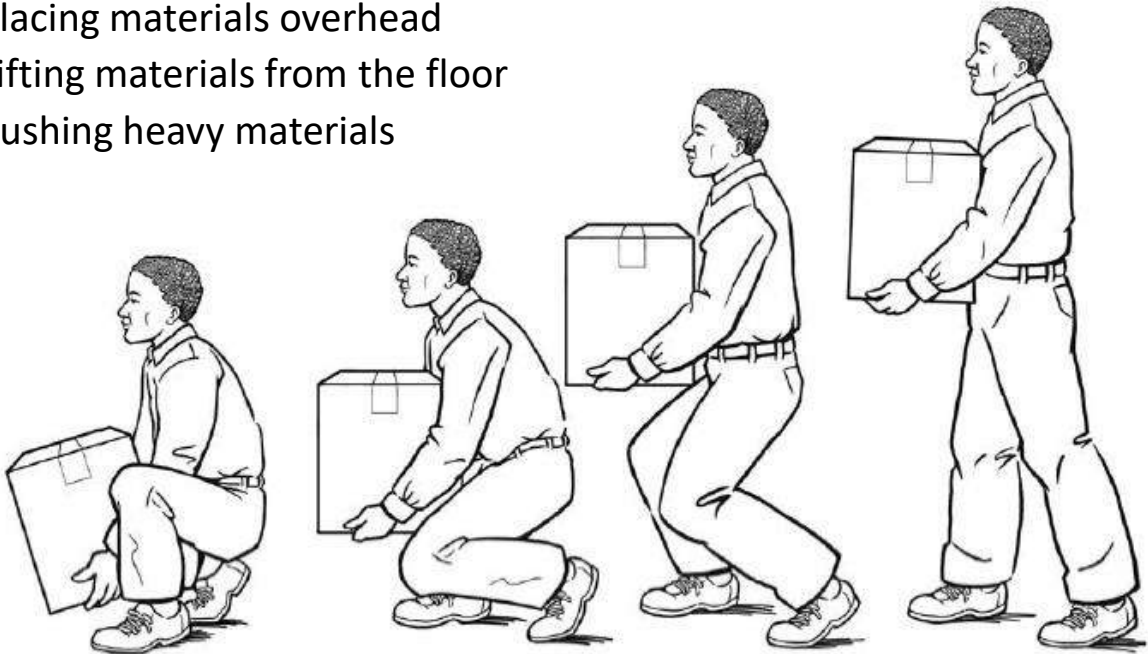
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Proper Lifting

Volume 2 Fast 100 Issue 3G-2

Despite all of the equipment, tools, and machinery that is used in manufacturing, manual labor is still needed to get most work done. What this means is that every worker is exposed to potential injuries to their back by simply doing the normal every day tasks they often don't think about. Tasks that can cause or aggravate an existing back injury include:

- Shoveling, twisting, or awkward body positions
- Bending, stooping, or squatting
- Kneeling for long periods of time
- Placing materials overhead
- Lifting materials from the floor
- Pushing heavy materials



Example of proper lifting/setting technique according to CDCs "Simple Solutions Ergonomics for Construction Workers."

- Cut down on carrying materials whenever possible by having them delivered close to where they will be used.
- When you must lift or carry materials: 1) Keep the load as close to your body as you can. 2) Try not to twist, turn your whole body instead. 3) Lift with your legs, not your back. 4) Lift the load using a solid two-handed grip. 5) Lift and lower materials in a smooth steady way, try not to jerk the lift.

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Eye and face protection is extremely important but often taken for granted. Remember to always wear protection for your eyes and when needed also for your face to avoid a potentially permanent injury. Hazards where face protection may be required are found when doing tasks like:

- Welding
- Grinding with hand-held or heavy duty table grinder
- Pouring, washing with, or spraying chemicals or materials
- Operating a chainsaw

OSHA Standard 1910.133(a)(1) *The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.*

Never risk danger to your face and eyes even for just a few minutes of welding, cutting, or grinding. The damage can happen quickly and be permanent! Always wear face and eye protection that is designed for safety protection and rated as required by OSHA regulations.

OSHA Standard 1910.133(b)(1) *Protective eye and face protection devices must comply with... American National Standards Institute ANSI/ISEA Z87.1-2010.*



- Safety glasses aren't always enough – sometimes you need both the safety **glasses to protect your eyes** AND a **face shield to protect your face**.
- Always follow the manufacturer's recommendations for the specific face shield.
- Use the type of face shield suited for the specific task.
- Mesh face shields are great for cutting tasks where large particles could strike your face.
- Clear plastic/acrylic shields are better for tasks where small particles, splattering, or sparks could strike the face.

According to the U.S. Bureau of Labor Statistics, in recent years, more than 200 workers die annually as a result of fires and explosions. Workers need to recognize potential fire hazards and take every safety precaution to avoid potentially deadly situations on their job sites.

OSHA Standard 1910.106(b)(6) *"Sources of ignition." In locations where flammable vapors may be present, precautions shall be taken to **prevent ignition** by eliminating or controlling sources of ignition. Sources of ignition may include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical-chemical reactions, and radiant heat.*

- Fire prevention is each worker's responsibility!
- Be alert to your activities and avoid creating fire hazards.
- Only smoke in designated areas.

OSHA Standard 1910.157(d)(1) *Portable fire extinguishers shall be provided for employee use and selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use.*

- Know where fire extinguishers are located at your work site.
- Report any missing, damaged, or spent fire extinguishers immediately.
- Be familiar with the parts of a fire extinguisher and how to tell if it has been discharged.
- Never attempt to use a fire extinguisher unless you have been trained to do so!
- Always use the correct containers for using, storing, or transporting fuel.
- Report any fires or possible fires immediately!

When workers think of personal protective equipment (PPE) it often is focused on hard hats, safety glasses, or gloves. However, leg and foot protection is equally important and should not be missed. Workers can be exposed to leg or foot injuries from tasks, activities, or areas such as:

- Falling or rolling objects
- Exposure to hot substances or electrical hazards
- Walking on slippery or wet surfaces or surfaces with sharp objects like nails
- Pouring, washing with, or spraying chemicals
- Lifting or working with heavy objects such as barrels

OSHA Standard 1910.136(a) *The employer shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.*



- Basic steel toe or hard toe work boots should be considered when performing common workplace activities such as lifting heavy objects. Steel or hard toe shoes must meet specific standards for protection.
- In addition to toe protection, using some tools such as jack hammers, or performing work with extremely heavy materials, using gantry cranes, or other devices may require the addition of metatarsal protection. Metatarsal guards protect the bones on the top of the feet.
- Consider using foot protection designed for muddy, water soaked, or wet environments such as water proof rubber boots or boot covers and chest waders.
- Boot covers or chemical resistant rubber boots should be worn when working with wet concrete or cement and similar chemicals.
- Be sure to check that your boots are labeled “slip and oil resistant” when walking on slippery or wet surfaces.

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More than 500,000 employees are sent to the emergency room annually for hand injuries. Although many hand injuries are preventable, workers should be alert to common dangers and the ways that gloves can prevent hand injuries. Workers can be exposed to hand injuries from tasks, activities, or areas involving the following:

- Exposure to hot substances, sparks, flames, or electrical hazards
- Handling asbestos-containing materials, lead-based paints, or human or animal wastes
- Work with sharp tools, knives or duct work
- Handling sharp materials such as sheet metal or glass
- Pouring, washing, or spraying chemicals or materials
- Handling materials with protruding nails

OSHA Standard 1910.138(a) *Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.*

- Workers need to recognize hazards to their hands when working with sharp tools or knives.
- Proper handling of sharp materials such as sheet metal or glass is important but may not be enough to prevent cuts, abrasions, or even amputations.
- New glove technology is available and workers may be able to use metal mesh, Kevlar, or other forms of specially coated gloves to handle glass, sheet metal, or even when performing fine work such as using knives.
- Workers handling asbestos-containing materials, lead-based paints, or other contaminated materials may need to use gloves specific to the type of chemical. Not all chemical resistant gloves are safe to use with all materials!
- Pouring concrete, washing brickwork or masonry, or spray coating and staining cement may require chemical resistant gloves.
- Work with hot substances, sparks or flames requires the use of heavy duty leather or fire retardant material.
- Work with potentially energized or live electrical equipment will require gloves that are rated for a specific voltage range.

Scissor lifts are an excellent alternative to ladders and manually propelled scaffolds. They provide a safe and stable work platform when used in accordance with manufacturer's recommendations.

- **Only trained and authorized operators can use scissor lifts!** Employees must receive training in the safe operation of the lifts so they will understand and avoid unsafe conditions that could lead to injuries.
- Common hazards found with scissor lifts include:
 - Electrocution from accidental contact with energized wires
 - Tip-over hazards from driving on steep or unstable surfaces
 - Collisions or struck-against hazards
 - Fall hazards from improper use of the lifts
- **Avoid tip-over hazards!**
 - **Never alter or disable warning devices** or limit switches – they are there to help avoid tip-over hazards.
 - **Survey the area** where the lift will be used before moving or driving the lift to identify and avoid potential hazards such as curbs, floor holes, drains, grates, dips or elevations changes.
 - Never use a scissor lift on uneven surfaces.
- Look for overhead power lines, conduit, pipes, cables and electricity lines before and during lift operation.
- Never sit or climb on the edge of the basket or use planks, ladders, or other devices on an scissor lift.
- Ensure guard rails, safety chains, and gates are closed and locked for proper fall protection when operating a lift.
- Many scissor lifts are equipped with controls that can be used from the ground so you can maneuver the lift through tight areas safely.



Scissor Lift Incidents

Volume 2 Fast 100 Issue 8G-2

Scissor lifts are an excellent alternative to ladders and manually propelled scaffolds.

They provide a safe and stable work platform when used in accordance with manufacturer's recommendations.



- **Only trained and authorized operators can use scissor lifts!** Employees must receive training in the safe operation of the lifts so they will understand and avoid unsafe conditions that could lead to injuries.
- **Avoid tip-over hazards! Survey the area** where the lift will be used before moving or driving the lift to identify and avoid potential hazards such as curbs, floor holes, drains, grates, dips or elevations changes. Never use a scissor lift on uneven surfaces.

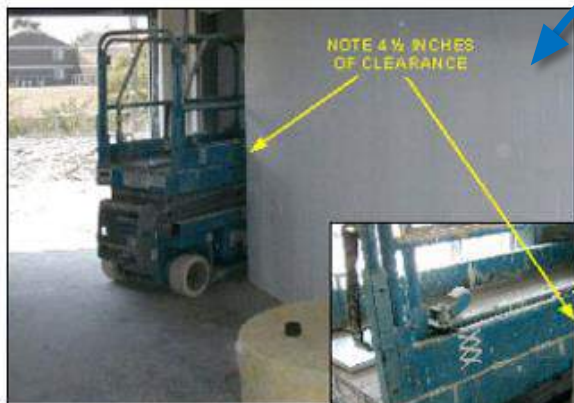


Image from a fatality investigation where a 42-year-old part-time laborer was killed when the scissor lift he was operating elevated and pinned him against the header of an interior doorway. NIOSH In-house FACE Report 2003-01

Images from a fatality investigation where 62-year-old maintenance mechanic was fatally injured while servicing an overhead garage door. Investigation Report: #04NY135



Image from a fatality investigation where a painter died when his elevated scissor lift tipped and fell over after he moved it into a storm drain. MIFACE Investigation Report: #13MI091

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Job Hazard Analysis Intro

Volume 2 Fast 100 Issue 9G-1

Job Hazard Analysis (JHA) is a way to help workers focus on accident prevention by writing down the steps, possible hazards, and controls for any specific job. A job hazard analysis can help workers and their supervisors find hazards before they turn into accidents.

JHA is sometimes called by different names including:

- ✓ Pre-Task Hazard Analysis
- ✓ Job Task Analysis
- ✓ Pre-Job Plans
- ✓ Job Safety Analysis (JSA)
- ✓ Pre-Task Planning
- ✓ Safety Task Analysis

➤ A job hazard analysis is an exercise in detective work. The goal is to discover the following:

- What can go wrong?
- How can injuries happen?
- What would cause an accident to happen?
- How likely is it that the hazard will occur?

OSHA Standard Section 5(a)(1) *Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.*

- A specific work task can be separated into a series of simple steps. For each step hazards should be identified.
- As steps required to complete a job or task are identified it is important to think about the types of hazards. Consider these common types of hazards and be sure they are included in the JHA:

- Struck Against
- Struck By
- Contact With
- Contact By
- Caught In
- Caught On
- Caught Between
- Fall - Same Level
- Fall to Below
- Overexertion
- Exposure

More examples of tasks or hazards that lead to accidents include:

- Working at heights, slippery surfaces, exposed moving machinery parts, fires, explosion, noise, electricity, toxic emissions, corrosive chemicals, low oxygen, repetitive tasks, heavy lifting, overhead work, rigging activities, use of heavy equipment, or working with powder actuated tools.

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Job Hazard Analysis

Volume 2 Fast 100 Issue 9G-2

Job Hazard Analysis (JHA) is a way to help workers focus on accident prevention by writing down the steps, possible hazards, and controls for any specific job. A job hazard analysis can help workers and their supervisors find hazards before they turn into accidents.

- Job Hazard Analysis is sometimes called by different names and many companies have their own forms and processes - the basic idea is to find hazards and prevent injuries.
- Workers and supervisors are the best sources for identifying hazards in the work they perform.
- For each step in a task the hazards should be identified, written down or checked off.
- Every hazard discovered has to have a safety control or accident prevention method written down.
- JHAs are often done at the start of a new job, and may be required daily.
- A few minutes used to write a good JHA can save hours or days lost to an injury.
- A specific work task can be separated into a series of simple steps. For each step hazards should be identified.
- A job hazard analysis is an exercise in detective work.

For each hazard written it is important to take the next step and write down a way to reduce, eliminate, or control the hazard. Consider these ideas as a few examples safety controls:

- Safety handles and guards for tools and equipment available?
- Can you move the work to ground level or prepare on the ground and lift it to a safe area?
- Are the right tools, materials and equipment being used?
- Is there a lift, or scaffold available instead of ladders?
- Are electrical or other power sources able to be switched off?

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The flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. According to the CDC, most experts believe that the flu is spread when people who already have the virus cough, sneeze or talk near others. The flu can also sometimes be spread by touching a surface that has the flu virus on it, and then touching one's face. Someone can be contagious 1 day before they develop flu symptoms and up to 5 to 7 days after becoming sick.

Flu season starts around October and lasts until May, but most flu activity occurs in the months of **December, January and February** every year.

The flu usually comes on suddenly, with these symptoms:

- Fever (but not everyone with the flu will have a fever)
- Chills
- Runny nose
- Stuff nose
- Headache
- Fatigue
- Nausea
- Cough
- Muscle aches
- Sore throat

The flu can make anyone sick, even those people that usually seem strong and healthy. Employees should get their flu shot annually to help protect themselves against this illness and also to prevent unexpected lost time from work.

Most people who get the flu will recover in a few days and almost always within two weeks, but some people may develop complications, like pneumonia, that can end up being life-threatening, which is why it is important to **take the flu seriously** and not continue to 'work through it'.

Most people with the flu do not need medical care or antiviral drugs. If you get sick with flu symptoms, in most cases, you should **stay home** and **avoid contact with other people** except to get medical care.

If you have the flu, stay home and recover. **Do not go to work** and risk infecting your co-workers.

If flu symptoms do not subside, seek medical attention if any of these symptoms occur: difficulty breathing, severe vomiting, confusion, chest pain.

The flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. According to the CDC, most experts believe that the flu is spread when people who already have the virus cough, sneeze or talk near others. The flu can also sometimes be spread by touching a surface that has the flu virus on it, and then touching one's face. Someone can be contagious 1 day before they develop flu symptoms and up to 5 to 7 days after becoming sick.

Flu season starts around October and lasts until May, but most flu activity occurs in the months of **December, January and February** every year.

According to the CDC, **prevention is better than cure** when it comes to any illness, including the flu. Every year, on average, 5% - 20% of the population gets the flu and this costs billions of dollars annually.

The flu can make anyone sick, even those people that usually seem strong and healthy. Employees should get their flu shot annually to help protect themselves against this illness and also to prevent unexpected lost time from work.

TIPS TO REMEMBER DURING THE FLU SEASON:

- Get the flu vaccine annually.
- The CDC recommends everyone 6 months and older receive a yearly flu vaccine as the first and most important step in protecting against the flu.
- Encourage those around you to get the flu vaccine.
- Practice good health habits, wash hands often.
- Avoid touching your eyes, nose or mouth.
- Avoid close contact with others that are sick.

Remember to "Take 3" actions to fight flu this season

- 1** Get your Flu Vaccine
Also available in mist
- 2** Take preventative actions
- 3** Take antivirals
Rx
if you get the flu, as prescribed by your doctor.

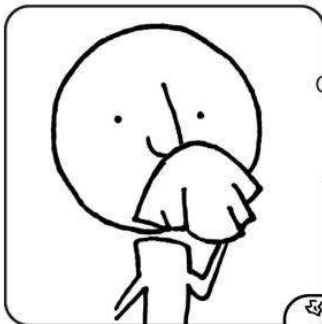
Cover Your Cough

Volume 2 Fast 100 Issue 10G-3

Stop the spread of germs that make you and others sick!

Cover your Cough

If you have the flu, stay home and recover. **Do not go to work** and risk infecting your co-workers.

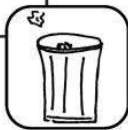


Cover your mouth and nose with a tissue when you cough or sneeze

or
cough or sneeze into your upper sleeve, not your hands.



Put your used tissue in the waste basket.

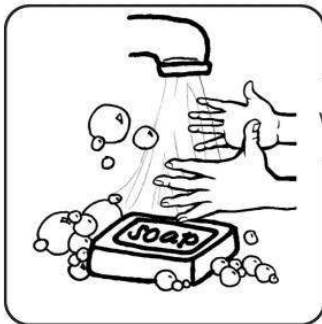


Clean your Hands

after coughing or sneezing.

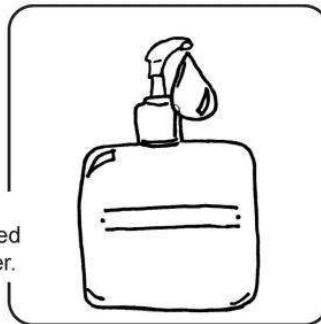
STOP THE SPREAD OF GERMS AT WORK

Avoid close contact with sick people
Stay home and away from others when you're sick
Avoid touching your eyes, nose, or mouth



Wash hands with soap and warm water

or
clean with alcohol-based hand cleaner.



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OSHA may make inspections to any work site and rarely will advance notice be provided. These inspections may cover the entire workplace or construction area, or just a few operations.

During the Inspection:

- Be cooperative.
- Do not evade questions or try to hide anything.
- Answer questions truthfully, but do not speculate.
- Do not be sarcastic or argumentative.
- Take notes, measurements and photos.
- If possible, fix any violation immediately.
- Do not volunteer information, answer only the questions asked.

Why OSHA may select a company for inspection:

1. Imminent Danger
2. Fatal or Catastrophic Accidents
3. Employee Complaints
4. Program Inspections
5. Special Emphasis Programs
6. Follow-up Inspections

:: BEST PRACTICE ::

Because OSHA visits are unannounced, ensure the work site is compliant at all times.

WHEN AN OSHA COMPLIANCE OFFICER ARRIVES ON SITE:

- Notify the person responsible for the site such as the supervisor, manager, superintendent or owner.
- Request identification, write down the Compliance Officer's name and ID number, and ask which area office they represent. The purpose of the inspection should be stated by the Compliance Officer before or during an opening conference at the beginning of the visit.
- During the walk-around inspection, the Compliance Officer is permitted to take notes and photographs and shall comply with the safety and health rules required on the job site. A manager should escort the Compliance Officer at all times. A company representative should take notes and photos of all inspection activities.
- Employees may be interviewed or written statements may be requested.
- A closing conference will be arranged to allow the Compliance Officer to review any violations observed and refer to applicable OSHA standards. Instructions on follow-up procedures will be provided at the end of the inspection.

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All workers could be exposed to the dangers of hazardous energy. Workers need to be familiar with how lockout tagout could affect them, how to recognize when lockout tagout is needed or is in place, and what is required before doing any job that requires lockout tagout.

Lockout refers to the act of placing a physical barrier, such as a lock, cover or chain, that prevents a machine or equipment component from being turned on or activated. **Tagout** is the application of a label or tag placed near the lockout that alerts others to the lockout status of the equipment. **Lockout and Tagout should always be used together to maximize safety.**

- Part of understanding lockout tagout is to recognize the types of hazardous energy that a worker may be exposed to on the job. Types of hazardous energy include:
 1. Chemical – such as chemicals stored in pipes, tanks, and/or held under pressure.
 2. Pneumatic – trash compactors, compressors, lifting equipment.
 3. Thermal – extreme heat from heating elements or furnaces or cold energy from refrigeration units or compressed gases.
 4. Electric – electrical equipment which is either wired or operated by cord and plug.
 5. Mechanical – stored energy in rotating or moving parts or conveyor belts.
 6. Other – such as x-ray, radiation, laser, microwave, radio frequency, or others.

OSHA Standard 1910.147(a)(1)(i) [Lockout/Tagout] *This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy, could harm employees.*

- Recognize when equipment is locked out, tagged out, or both – look for tags, signs or locks at startup points, switches, valves, or control panels.
- Never tamper with or remove a lockout or tagout device!
- Only personnel that have received specific training and follow the correct procedures are authorized to perform lockout tagout.

Lockout/Tagout Awareness

Volume 2 Fast 100 Issue 12G-2

Lockout refers to the act of placing a physical barrier, such as a lock, cover or chain, that prevents a machine or equipment component from being turned on or activated. **Tagout** is the application of a label or tag placed near the lockout that alerts others to the lockout status of the equipment. **Lockout and Tagout should always be used together to maximize safety.**

OSHA Standard 1910.147 *This [lockout/tagout] standard applies to the control of energy during servicing and/or maintenance of machines and equipment. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.*



Types of hazardous energy include:

1. Chemical – chemicals stored in pipes, tanks, and/or under pressure.
2. Pneumatic – trash compactors, compressors, lifting equipment.
3. Thermal – extreme heat from heating elements or furnaces or cold energy from refrigeration units or compressed gases.
4. Electric – electrical equipment wired or operated by cord and plug.
5. Mechanical – stored energy in rotating or moving parts or conveyor belts.
6. Other – such as x-ray, radiation, laser, microwave, or radio frequency.

- Failure to properly lockout and tagout equipment can result in injuries to the workers who are servicing, repairing, or adjusting the equipment.
- Recognize when equipment is locked out, tagged out, or both – look for tags, signs or locks at startup points, switches, valves, or control panels.
- Never tamper with or remove a lockout or tagout device!
- Only personnel that have received specific training and follow the correct procedures are authorized to perform lockout tagout.
- Identify and label all sources of hazardous energy at the work site.
- When there is the potential for more than one worker to be servicing the same equipment that requires lockout tagout procedures to be in place, it is best for each worker to have their own lock and tag on the equipment to ensure the safety of each individual is maintained.

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Hazard Communication is a specific OSHA phrase that deals with the hazards of chemicals in the workplace.

HCS is the Hazard Communication Standard which is an OSHA standard with a goal to ensure employers and workers know about chemical hazards and how to protect themselves.

OSHA's Hazard Communication standard is important to workers because it enforces the idea that **workers have a right to know about:**

- What chemicals are in the areas you will be working in?
- What are the hazards of those chemicals?
- How to protect yourself from those hazards.

OSHA Standard 1910.1200(g)(8) *The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).*



- Workers need to know what chemicals are in their workplace, especially if they have to use them as part of their job.
- An important part of the OSHA Standard on HCS is that chemical manufacturers and importers must develop a Safety Data Sheet or SDS for each hazardous chemical they produce or import.
- SDS's contain valuable information about the hazards of chemicals and how to protect yourself. An SDS must be kept for each chemical at the job site.
- Never use chemicals in containers that are not properly labeled.
- All labels are required to have the following components: 1) product identifier, 2) signal words, 3) pictograms, 4) hazard and precautionary statements, and 5) supplier/manufacturer statements.
- Report to the manager or supervisor any containers that are found without proper labels.
- If the labels become damaged or removed notify the manager or supervisor immediately.

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- SDS's contain valuable information about the hazards of chemicals and how to protect yourself. An SDS must be kept for each chemical at the job site.
- The type of information that can be found on an SDS includes:
 - First-aid measures
 - Handling and storage
 - Personal protection
 - Fire-fighting measures


The Kraemer Company, LLC Page 1 of 3

SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY INFORMATION

Manufacturer	The Kraemer Company LLC – 820 Wachter Ave. – Plain, WI 53577 608.546.2255 - www.tkcllc.com – info@tkcllc.com	Emergency Phone Numbers: 608.546.2255 After Business Hours: 608.588.4939
Trade Name	Limestone/Dolomite	
Chemical Family:	Minerals	
Recommended Uses	Road Materials	

SECTION 2: HAZARD IDENTIFICATION

Signal Word:	DANGER
Physical Hazards:	Not Classified
Health Hazards:	Carcinogenicity – Category 1 – May Cause Cancer. Specific Target Organ Toxicity (Repeated Exposure) – Category 1 – Causes damage to organs (lungs) through prolonged or repeated exposure. Health Hazard
Pictogram:	
Precautionary Statements:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
Prevention:	If exposed or concerned: Get medical advice/attention.
Response:	Store locked up.
Storage:	Dispose of contents/ container to an approved waste disposal plant.
Disposal:	Not Classified
Environmental Hazards:	None known
HVOCs:	None
Supplemental info:	None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	Percentage
Limestone (Calcium carbonate)	1317-65-3	55-100
Crystalline silica, quartz	14808-80-7	0-20

SECTION 4: FIRST AID MEASURES

General advice: Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

Inhalation: Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loose remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

Skin Contact: If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

Eye Contact: If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion: If swallowed (rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek medical advice.

Indication of immediate medical attention and special treatment needed: Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media: Not combustible, however, if material is involved in a fire use: Extinguishing media appropriate to surrounding fire conditions.

Specific hazards arising from the substance or mixture: Non-combustible material.

Special protective equipment and precautions for fire-fighters: Non-combustible material.

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture: silicon oxides

Advice for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Further information: No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

Refer to Section 8: Exposure Control and Personal Protection

Emergency Action: Isolate release area and keep unnecessary people away. Exercise caution regarding personnel safety and exposure. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate persons to safe areas. Avoid breathing dust. For personal protection see section 8.

Spill/Leak Procedure: Recovery and reuse rather than disposal, should be the ultimate goal of handling efforts. Use appropriate methods, shovels, brooms, and vacuums to clean up the spill. If mixed with water, or likely to be mixed with any liquid, dike area to contain spill. Reclaim if possible. After all visible traces have been removed, flush area with large amounts of water. If spilled on the ground, contaminated soil should be removed and placed in proper containers for reclamation or disposal. Do not flush material to public sewer or waterway. Decontaminate all tools and equipment following cleanup.

Disposal: Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus an non-recyclable solutions to a licensed disposal company.

Notification: Any spill or release to navigable water must be reported immediately to the National Response Center (800) 424-9300.

Sample Safety Data Sheet (SDS)

Electrical hazards can be found on every construction project. Examples:

- Overhead powerlines
 - Damaged tools or extension cords
 - Improperly insulated equipment
 - Faulty wiring or missing ground pins
 - Unsafe work practices
 - Exposed energized wires in electrical panels or outlets
- Never use metal ladders when working with or near energized electrical equipment.

OSHA Standard 1926.1053(b)(12) says that *ladders shall have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized electrical equipment...*

OSHA Standard 1926.416(a)(1) states that *no employer shall permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.*

- Workers must be protected from energized electrical parts!
- Covers should be in place and locked, if necessary, to avoid accidental contact by persons not qualified to work on electrical equipment.
- Openings in electrical panels should be covered, guarded, or protected to prevent accidental shocks or electrocution.

OSHA Standard 1926.300(a) Condition of tools. *All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.*

- Never use damaged or defective electrical tools!
- Always inspect your electrical tools before use.
- Never attempt to repair electrical tools or equipment unless you are qualified for the work.

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Industrial workplaces such as garage workshops, metal fabrication and welding shops, and mechanical or heavy manufacturing facilities will have a variety of machines and tools. Some of the tools may be as simple as a table saw or box fan and sometimes they can be complex and partially robotic and involve hazardous chemicals. Workers responsible to operate, repair, clean, or just work near these machines and tools must be protected from potential hazards.

OSHA Standard 1910.212(a)(1) *Types of guarding. One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks...*

1. Fixed Guards – made of acrylic, metal, or even plastic that are bolted, welded, or locked in place provide stable protection from moving parts.
2. Adjustable Guards – self-adjusting or manually adjustable guards that allow the material to be of multiple sizes or shapes but still protect the worker.
3. Interlocked or Sensors – sometimes combined with adjustable or removable guards, interlocks or sensors can be set to instantly shut off power to a machine. Sensors may be designed to shut off a machine or tool as soon as a visible or invisible barrier is broken.
4. Safety Trip Controls – similar to interlocks or sensors these devices can be in the form of metal bars, steel cables or wires, and floor mats or gates that are designed to trip and shut off power to a machine if a worker touches, steps, or enters a danger area.
5. Restraints and Pullbacks – devices such as wrist straps and safety ropes attached to specific points to keep the worker from getting too close to a point of operation hazard.



- Workers responsible to operate, repair, clean, or just work near to machines and tools must be protected from potential hazards.
- Never tamper with or remove a machine guard, sensor, or safety device!

Machine Guarding Hazards

Volume 2 Fast 100 Issue 14G-2

Machine guards are critical to the safety of workers. Many times, workers do not realize the dangers that they are protected from because of a simple steel or acrylic guard. For this reason, workers should be familiar with the potential hazards introduced when machines with rotating parts, gears, or pulleys are used.

- Recognizing the potential hazards of machines starts with understanding the first place where the potential for injury exists – this is the “point of operation.”
- According to OSHA the point of operation is *the area on a machine where work is actually performed upon the material being processed.*
- **Workers have to be protected from point of operation hazards.**



**POINT OF
OPERATION**

OSHA Standard 1910.212(a)(3) *Point of operation is the area on a machine where work is actually performed upon the material being processed. The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding... shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.*

In addition to point of operation dangers, workers need to be aware of these machine guarding hazards:

- Power-transmission apparatus — flywheels, pulleys, belts, chains, couplings, spindles, cams, and gears in addition to connecting rods and other machine components that transmit energy.
- Other moving parts — machine components that move during machine operation such as reciprocating, rotating, and transverse moving parts as well as auxiliary machine parts.

IMPORTANT

- Workers responsible to operate, repair, clean, or just work near to machines and tools must be protected from potential hazards.
- Never tamper with or remove a machine guard, sensor, or safety device!
- Only personnel that have received specific training and follow the correct procedures are authorized to remove, repair, or modify a machine guard.

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In addition to the physical hazards that can be found in construction and general industry work, there are many health hazards that workers should be aware of for their own protection. Most workers have heard of asbestos but may not understand why it should be a concern.

OSHA Standard 1910.1101(a)(1) *applies to all occupational exposures to asbestos in all industries... except construction work, ship repairing, shipbuilding and shipbreaking employments and related employments.*

Why is asbestos so dangerous?

According to OSHA, asbestos is known to cause cancer in humans and can cause chronic lung disease and other health hazards.

Workers may not know they are contaminated because symptoms of these health hazards and even cancer may take many years to develop following exposure to the asbestos containing material.

Where can asbestos be found?

Asbestos can be found in many area including pipe insulation, floor tiles, roofing tiles, boiler insulation and siding.

If you aren't sure if it contains asbestos **do not disturb it!**

- Never enter into a restricted asbestos area. Read and **follow warning signs** or barricades.

OSHA Standard 1910.1101(e)(2) *Regulated areas shall be demarcated from the rest of the workplace... [barricaded or marked].*

- When asbestos is disturbed it breaks down into tiny fibers that can easily be inhaled into the lungs.
- Only workers who are specially trained and equipped can install, remove, or disturb asbestos containing materials.
- Proper protective equipment must be worn at all times, depending on the type of activity performed.

According to the U.S. Bureau of Labor Statistics, in recent years there are more than 800 injuries annually involving floors, walkways, and ground surfaces. OSHA issues hundreds of citations to companies for violations of poor housekeeping and OSHA lists housekeeping on their top 100 most frequently cited list. Workers should do their part to help avoid and prevent injuries and incidents by practicing good housekeeping on every job and at every worksite.

OSHA Standard 1910.22(a)(1) *All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly, and sanitary condition.*

- All work areas such as warehouse floors, production areas, break-rooms, and restrooms should be maintained and kept clean.
- Separate waste or scrap materials from the immediate work area to avoid creating trip and slip hazards.

OSHA Standard 1910.22(a)(3) *Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.*

- Keep areas clear as the work progresses.
- Store pipe, conduit, rebar, and other rolling materials away from aisles and walk ways to avoid creating trip hazards.

OSHA Standard 1910.22(a)(2) *The floor of each workroom is maintained in a clean and, to the extent feasible, in a dry condition. When wet processes are used, drainage must be maintained and, to the extent feasible, dry standing places, such as false floors, platforms, and mats must be provided.*

- Use designated waste bins, recycle bins, and metal scrap containers.
- Entry ways, walk ways, and sidewalks should be kept free of water, ice, snow, and other potential trip, slip, or fall hazards.

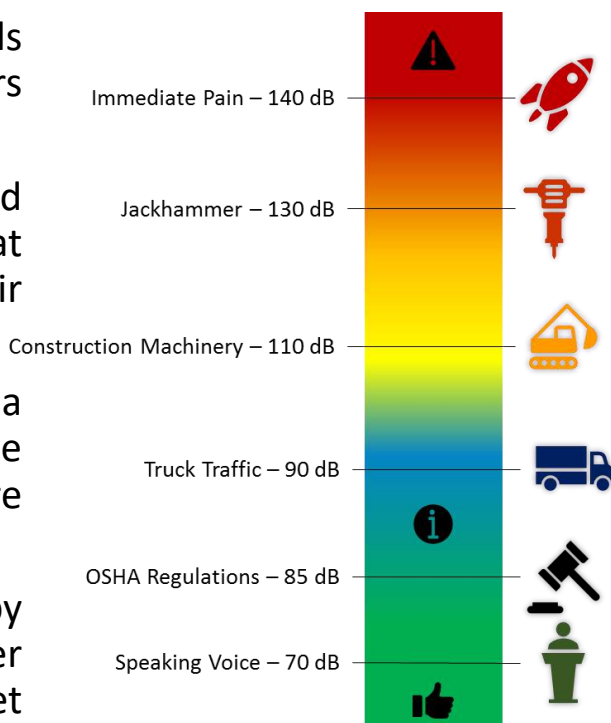
Hearing Protection

Volume 2 Fast 100 Issue 17G-1

Workers who are exposed to high levels of noise can suffer permanent hearing loss and then sometimes not even surgery or a hearing aid can help. In addition, even repeated exposures to loud noise for just short periods of time can add up to permanent damage to hearing.

OSHA Standard 1910.95(i)(1) *Employers shall make hearing protectors available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors shall be replaced as necessary.*

- OSHA regulations state that 85 decibels (dB) is the action level where workers may need to use hearing protection.
- Hearing protection must be provided for the level and/or range of noise that workers will be exposed to during their work hours.
- The best hearing protection is a solution that is worn properly by the worker every single time they are exposed to loud noise on the job.
- Never improvise hearing protection by stuffing cotton, tissue, wax or other items into your ears. Items can get stuck in the ear canal and in severe cases puncture the ear drum.
- When choosing hearing protection, consider the employee's hearing needs on the job, their current hearing ability, convenience, ease of use, the work environment and the compatibility with any other PPE the worker may need to wear.
- Where noise levels are extremely dangerous or potential impact noise levels are present workers may have to wear two layers of hearing protection such as a combination of ear plugs and ear muffs.



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The use of respirators, even simple ones like dust masks, is serious and requires workers to understand the types of hazards they could be exposed to, the specific type of respirator needed, how to use the respirator, and its limits. Failure to follow all the requirements to properly wear a respirator can prove to be dangerous and potentially deadly.

OSHA Standard 1910.134(d)(1)(i) *The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.*



- Respirators protect the user by either filtering contamination from the air or supplying clean air from another source.
- Some respirators use specialized cartridges and filters. Workers should know how to identify the type of filters and how to install or replace these filters or cartridges.
- Respirators must be kept in a clean and sanitary condition.
- Respirators must be stored properly to avoid damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.
- Pack and store respirators safely to prevent deforming the facepiece and exhalation valve.
- Always use the proper respirator for the specific task and situation.
- Never use a respirator unless you have been properly authorized, fit-tested, and trained.
- Workers must know how to properly put on and wear their respirator.

Hard hats, if worn properly and consistently, can protect employees from falling or flying objects, electrical shock hazards and unintentional hard hits against fixed objects.

OSHA Standard 1910.135(a)(1) *The employer shall ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling objects.*

- Always be aware of any possible hazards to your head.
- Not every hard hat is the same! The type of protection provided can be very different depending on the type of hard hat.
- OSHA requires hard hats to meet special requirements and be marked with ANSI Z89.1.
- Workers exposed to electrical hazards must wear the appropriate head protection for the type of electrical hazard.
- Inspect your hard hat daily for signs of damage.
- Some hazards to the head may require workers to use hard hats designed for impacts to the sides as well as the top of the head.
- Workers need training to recognize the types of hazards requiring head protection, how to properly wear and maintain their head protection, and when to replace it.
- Make sure your hard hat fits properly! If your hard hat is too large or too small, even if it meets all the requirements, it will not protect you properly.
- Hardhat accessories must not compromise the safety elements of the protective helmet.
- Always replace a hard hat if it has sustained any kind of impact, even if damage is not noticeable. Replace hard hats if they have cracks or show signs of damage.



Office buildings, warehouses, and manufacturing plants are some of the different types of work environments where electrical hazards are an area of major safety concern and account for a large number of injuries and fatalities. Extension cords and GFCIs (Ground Fault Circuit Interrupters) can be found on most electrical equipment and electrical outlets at your workplace. Remembering a few safety tips can help prevent serious injuries from happening.

OSHA Standard 1910.333(a) states that *safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.*

Never take electricity for granted! No matter how small the job, always use safe work practices, especially when using electrical tools and equipment.

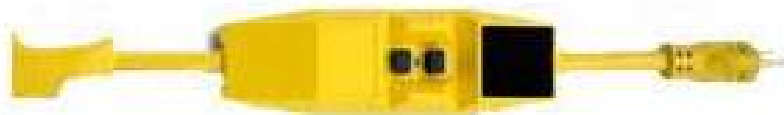
- Visually inspect extension cords and remove frayed, damaged, or severely kinked cords from use immediately.
- Never use extension cords that have broken or are missing the ground pins – these are there for your safety!
- Don't use an extension cord that is wet.
- Never plug an extension cord into an electrical device with wet hands. Water and electricity do not mix, ensure hands are dry before plugging an extension cord into an outlet.
- Never unplug an extension cord by pulling on the cord; pull on the plug.
- Ensure extension cords are kept out of walkways to avoid potential trip and fall hazards.
- Extension cords should be used on a temporary basis; they are not meant to be permanent.
- Never run cords through windows or doors where they could be pinched or damaged.

According to OSHA, a GFCI (Ground Fault Circuit Interrupter) *“is a fast-acting circuit breaker designed to shut off electric power in the event of a ground-fault within as little as 1/40 of a second.”* The ground fault occurs as a result of *“leaking electricity.”*

OSHA Standard 1910.333(a) states that *safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.*

- From a small kitchen lobby in an office building to an industrial food plant, when using electrical equipment or extension cords near a water source they should be plugged into an outlet that is GFCI protected.
- When operating machine pumps, welding equipment, or other high energy producing equipment or tools, an industrial GFCI should be used.
- Always test GFCIs before use by using the test and reset buttons. If found defective do not use that GFCI.
- Inspect all tools and equipment before use, if ground pin is missing do not use.

OSHA Standard 1910.304(b)(3)(i) *Cord sets and receptacles in wet environments can potentially expose employees to severe ground-fault hazards. Therefore, in a built environment (non-construction) OSHA requires ground-fault circuit protection for all 125-volt, single-phase, 15- and 20-ampere receptacles installed in bathrooms and on rooftops.*



Never take electricity for granted! No matter how small the job, always use safe work practices, especially when using electrical tools and equipment.

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Silos, storage tanks, vessels, pumps and pipelines are a few examples of confined spaces in industry.

Confined Space – an area that:

- 1. Is large enough for a worker to enter it,***
- 2. Has limited means of entry or exit, and***
- 3. Not designed for continuous occupancy.***

- Confined spaces may appear to be safe but can contain invisible hazards such as dangerous fumes, vapors, or insufficient oxygen.
 - **Never enter a confined space unless you have the proper training, equipment, and procedures!**
 - **Determine if confined spaces have a potentially hazardous atmosphere** before entering by using special air testing equipment.
- Never assume that an open top pit is safe to enter, even if it is not labeled as a confined space. Pits, sewer tunnels, and tanks could still pose dangers that are not visible.
- **Permit-required confined spaces** are confined spaces that have any hazard such as:
 - hazardous atmosphere – such as low oxygen or a toxic gas
 - potential for engulfment or suffocation – a risk of drowning or being buried
 - a layout that might trap a worker through converging walls or a sloped floor
 - or any other serious safety or health hazard

Permit-required confined spaces require workers to take safety measures such as rescue equipment to safely remove someone out of the space without entering.



According to OSHA, approximately 85 percent of the general population will develop an allergy if exposed to poison ivy, oak or sumac. Workers need to recognize the hazards of and avoid contact with potentially harmful plants.

OSHA Standard 1926.21(b)(4) says that in job site areas where ***harmful plants*** or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Preventing contact with harmful plants is the greatest safety precaution that workers can take.
- Harmful plants such as poison ivy, poison oak, and poison sumac release a harmful oil called urushiol which is highly allergic to most humans.
- Avoid direct contact with the plant as well as indirect contact by touching tools or clothing that has been contaminated by the oil or sap of the plant.
- Wear the proper personal protective equipment (PPE) when working outdoors and in areas where contact with harmful plants is possible. Long pants, shirts with sleeves, gloves and work boots can prevent accidental contact with poisonous plants.
- Wash tools and clothes with warm soapy water to reduce contact and spreading of the harmful oil.
- Never burn plants or brush piles that may contain poison ivy, poison oak, or poison sumac.
- Inhaling the smoke from burning harmful plants or small particles from cutting/chopping can cause severe lung reactions!
- Wash your skin with soap and water if you come in contact with a poisonous plant.
- If you do have a reaction to the harmful plant avoid scratching and bursting the blisters which can lead to infection.

According to NIOSH, each year in the U.S., more than 500,000 people are treated and about 300 people die from ladder-related injuries.

The inspection of an extension ladder is a very important step to avoid serious or even deadly injuries. OSHA requires that employers ensure ladders are inspected on a periodic basis. However, even with periodic inspections it is still part of every worker's job to be sure that the ladder they are about to use is in safe working order.

OSHA Standard 1910.27(f) *All ladders shall be maintained in a safe condition. All ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure.*

Remember these important safety tips when inspecting extension ladders to help prevent injuries!

- Always visually inspect ladder feet to ensure that foot pads and feet assembly are present and in safe condition. Damaged or missing feet pads can cause you to slip or lose balance and suffer a deadly fall.
- Never attempt to repair a ladder! Do not use wire, screws, bolts, duct tape or electrical tape as a way to fix the ladder; instead tag it and remove it from service.
- Inspect the rungs, rails, lock (dawgs), rope, and pulley assembly of an extension ladder and be sure that all parts work properly.
- It is very important to make certain that the rope and pulley are working and that the ladder locks (dawgs) do not slip!
- Ladder inspections should include making sure that labels are readable and haven't been painted over or damaged.
- Check the rungs and steps for mud, grease, or dirt to avoid potential slip/fall hazards.
- Follow the manufacturer's recommendations for proper inspection and use of the specific ladder.
- Remove any ladder from service that is found to be defective!

According to NIOSH, each year in the U.S., more than 500,000 people are treated and about 300 people die from ladder-related injuries.

The inspection of a step ladder is a very important step to avoid serious or even deadly injuries. OSHA requires that employers ensure ladders are inspected on a periodic basis. However, even with periodic inspections it is still part of every worker's job to be sure that the ladder they are about to use is in safe working order.

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Remember these important safety tips when inspecting step ladders to help prevent injuries!

- Always visually inspect ladder feet to ensure that foot pads and feet assembly are present and in safe condition. Damaged or missing foot pads can cause you to slip or lose balance and suffer a deadly fall.
- Never attempt to repair a ladder! Do not use wire, screws, bolts, duct tape or electrical tape as a way to fix the ladder; instead tag it and remove it from service.
- Inspect the top cap, all steps, side rails, and locking braces on a step ladder before using.
- Loose locking braces or spreaders can cause the ladder to wobble and become unstable.
- Ladder inspections should include making sure that labels are readable and haven't been painted over or damaged.
- Check the rungs and steps for mud, grease, or dirt to avoid potential slip/fall hazards.
- Follow the manufacturer's recommendations for proper inspection and use of the specific ladder.
- Remove any ladder from service that is found to be defective!

Walking Working Surfaces

Volume 2 Fast 100 Issue 23G-1

According to OSHA, slips, trips, and falls are among the most common causes of workplace injuries. Good housekeeping practices are essential in the workplace and reduce the potential for slip, trip and fall incidents.

OSHA Standard 1910.22(a)(1) states that *the employer must ensure: All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly, and sanitary condition.*

OSHA defines a walking/working surface as any horizontal or vertical surface on or through which an employee walks, works, or gains access to a work area or workplace location. Some examples of walking/working surfaces include:

- Sidewalks
- Rooftops
- Ladders
- Stairways
- Catwalks
- Parking Lots
- Scaffolding
- Bathrooms
- Shop Floors
- Ramps
- Aisles/Passageways
- Platforms
- Jobsite/Project Area
- Break Rooms
- Loading Docks
- Hallways
- Warehouse Floors
- Office Building Floors



OSHA Standard 1910.22(a)(3) *Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.*

To prevent slips and trips ensure all walking and working surfaces are free from hazards such as:

- Loose boards
- Uneven floors
- Leaks and spills
- Holes
- Loose mats or rugs
- Slippery surfaces
- Poor lighting
- Extension cords or other cables
- Protruding objects such as nails
- Trash, boxes or containers
- Miscellaneous equipment
- Slippery surfaces
- Unmarked level changes
- Open lower drawers & cabinets



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According to OSHA, slips, trips, and falls are among the most common causes of workplace injuries. Good housekeeping practices are essential in the workplace and reduce the potential for slip, trip and fall incidents. **Slips** occur when there is too little friction or traction between your feet (footwear) and the walking or working surface, and you lose your balance. **Trips** occur when your foot (or lower leg) hits an object and your upper body continues moving, throwing you off balance.

OSHA Standard 1910.22(a)(1) states that *the employer must ensure: All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly, and sanitary condition.*

- Always clean up spills immediately and post wet floor warning signs when appropriate.
- Keep cords, cables, material and equipment out of the walkway and keep doorways unobstructed.
- Use non-skid or anti-slip coatings on work surfaces and use non-slip floor mats.
- Ensure good housekeeping is maintained.
- Wear proper slip-resistant footwear when working on or around potentially slippery surfaces.
- Walk cautiously, pay attention to the path ahead and avoid running.
- When taking the stairs, only take one step at a time and always use the handrail.
- Do not carry items which obstruct your view when you are walking.
- Never stand on a chair to reach up high, always use a ladder.
- Always close all drawers and cabinets immediately after use.
- Ensure all walking/working areas have adequate lighting including stairwells, closets & passageways.
- Use heavy-duty, highly visible warning tape and floor tape to mark any uneven floor surfaces.
- Inspect ladders and scaffolding regularly and before every use.
- Use signs where there could be a need for instructions or suggestions like “Watch Your Step”.
- Exits must be visible and clearly marked with an EXIT sign.
- Stairs and landing areas should be marked with anti-skid floor tape.

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Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders, with the majority of these deaths from bee stings.

- Inspect your work area before starting for signs of bees or wasps.
- Wear light-colored, smooth-finished clothing to cover as much of the body as possible.
- Keep work areas clean. Insects may be attracted to discarded food.

OSHA Standard 1926.21(b)(4) *says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.*

- When a bee stings, its stinger, the venom sac and other parts of the bee's body are pulled out and left behind, killing the bee.
- Bee stingers should be removed as soon as possible since the venom sac remains attached when the bee flies off and can continue injecting venom.
- A wasp retains its stinger and it can sting many times. Wasp stings also carry a small amount of venom that may cause irritation and infection.
- Seek immediate medical attention if an insect bite or sting causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.
- If workers are aware that they have a severe allergy to biting or stinging insects they should consider wearing a medical warning bracelet or necklace or carry a wallet card.
- Workers with a history of severe allergic reactions to insect bites or stings should carry an epinephrine auto-injector and consider warning their immediate co-workers before starting work.

OSHA estimates that more than 1.5 million workers are potentially exposed to lead as a result of their jobs. Workers are exposed to lead during the production, use, maintenance, recycling, and disposal of lead material and products. Lead exposure occurs in most industry sectors including manufacturing, wholesale trade, transportation, remediation and even recreation.

OSHA Standard 1910.1025(c)(1) *The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m³) averaged over an 8-hour period.*

Why is lead so dangerous? According to OSHA, **lead harms the brain, nervous system, blood, and kidneys.** Some harmful effects of lead are permanent.

Workers may not know they are contaminated because symptoms of these health hazards may take time to develop following exposure to the lead containing material. In addition, workers that come in contact with lead during demolition, paint removal, or even welding or grinding operations could accidentally take lead home on their clothes and expose their families.

Lead can be found in many occupational settings such as:

- Lead acid battery manufacturing
- Non-Ferrous foundry work
- Smelting
- Fabricated plate work - Boiler shops
- Copper foundries
- Die-casting shops
- Brass and bronze ingot manufacturing



Lead-formed alloys are typically found in ammunition, pipes, cable covering, building material, solder, radiation shielding, collapsible tubes, and fishing weights. Lead is also used in ceramic glazes and as a stabilizer in plastics.



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Workers are exposed to lead during the production, use, maintenance, recycling, and disposal of lead material and products. Lead exposure occurs in most industry sectors including manufacturing, wholesale trade, transportation, remediation and even recreation. **Why is lead so dangerous?** According to OSHA, **lead harms the brain, nervous system, blood, and kidneys.** Some harmful effects of lead are permanent.

OSHA Standard 1910.1025(l)(1)(ii) *The employer shall train each employee who is subject to exposure to lead at or above the action level, or for whom the possibility of skin or eye irritation exists, in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.*

Only workers who are specially trained and equipped can work with lead.

- Ensure the workplace is frequently vacuumed to reduce lead exposure.
- Recognize and follow posted warning signs in affected areas where the PEL (permissible exposure limit) is exceeded.
- Never enter a contaminated area without the proper training and equipment.
- Never leave a contaminated area without following the correct safety procedures including clothing removal, washing, and tool clean-up.
- Good housekeeping and hygiene practices prevent surface contamination and protect workers from ingesting and taking home lead that would lead to further exposure.
- Clean and dry protective work clothing must be provided daily or weekly depending on exposure levels. Cleaning, laundering, or disposal of protective clothing and equipment must also be provided.
- Contaminated protective clothing, which is to be cleaned, laundered, or disposed of must be placed in a closed, labeled container in the changing area.
- After removing protective clothing, employees should shower and also vacuum their personal clothes.

Black Widow Spiders

Volume 1 Fast 100 Issue 24C-1

Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

OSHA Standard 1926.21(b)(4) says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Black widow spiders are identified by the pattern of red coloration on the underside of their body.
- They can often be found on sites containing undisturbed areas such as woodpiles, under eaves, fences, and other areas where debris has accumulated.
- Bites usually occur when humans come into direct contact with their webs.
- A bite from a black widow can be recognized by the two bite marks it makes in the skin.
- The venom produces pain at the bite area and then can spread to the chest, abdomen, or entire body.
- If you are bitten by a black widow spider:
 - Clean the bite area with soap and water.
 - Apply ice to the bite area to slow absorption of the venom.
 - Seek medical attention immediately!
- Seek immediate medical attention if any insect bite causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.



Photo credit – Michael McDonald. Black Widow Spider. <https://www.flickr.com/photos/62047567@N00/2593164670/>
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Brown Recluse Spiders

Volume 1 Fast 100 Issue 24C-2

Often overlooked, injuries and deaths due to bees, spiders and other insects are a concern that companies should manage as seriously as any other hazard in the workplace.

Fatal on-the-job injuries do occur as a result of bites and stings from insects and spiders.

OSHA Standard 1926.21(b)(4) says that in job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

- Brown recluse spiders have a dark brown, violin-shaped mark on their upper body and are also known as violin spiders or fiddle backs. They also have 3 pairs of eyes, instead of the usual 4 pairs other spiders have.
- The brown recluse spider prefers dark, sheltered areas.
- The bite of a brown recluse spider is poisonous. Tissue at the area of the bite dies and eventually sheds and can become severely infected.
- If you are bitten by a brown recluse spider:
 - Clean the bite area with soap and water.
 - Apply ice to the bite area to slow absorption of the venom.
 - Seek medical attention immediately.

Seek immediate medical attention if any insect bite causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling, or slurred speech.



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Preventing Eye Injuries

Volume 2 Fast 100 Issue 25G-1

- Each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment. About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work.
- The majority of these injuries result from small particles or objects striking or abrading the eye. Examples include wood chips, embers from burning materials, particles ejected by tools or equipment, or loose material blown by compressed air. Some of these objects, such as nails, staples, or splinters of wood or metal penetrate the eyeball and result in a permanent loss of vision.
- Large objects may strike the eye/face, or a worker may run into an object causing blunt force trauma to the eyeball or eye socket.
- Chemical burns can occur to one or both eyes from splashes of corrosive chemicals or cleaning products are common.
- UV radiation burns (welder's flash) can harm the eyes of the welding technicians, their assistants, and nearby workers.

OSHA Standard 1910.133(a)(1) *The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.*

- Never risk your safety or that of your co-workers; when hammering, using chisels, or similar activities wear proper safety glasses or goggles designed for impact hazards!
- Always wear safety goggles or other safety eyewear when using sprayers or handling any chemicals or materials.
- Using cutting or grinding tools such as chop saws, concrete saws, bench saws, and hand held grinders can be extremely dangerous to your eyes.
- If you get dust or particles in your eyes NEVER RUB them, it will make the injury worse and can cause permanent damage.
- If you get anything in your eyes, especially chemicals, use clean water to flush your eyes clear of the material and immediately seek medical attention.

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Carbon monoxide (CO) is a poisonous, colorless, odorless, and tasteless gas. CO can be found in areas where workers may be burning common materials such as wood, coal, or oil and using fuels such as gasoline or kerosene.

OSHA Permissible Exposure Limits for Carbon Monoxide *The OSHA PEL is 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period.*

- Carbon monoxide (CO) is a toxic gas because it damages the blood's ability to carry oxygen throughout the body. CO is non-irritating and can overcome a worker without warning.
- Workers may not realize they are being exposed to a high level of CO in the air they are breathing.

According to OSHA, “Many people die from CO poisoning, usually while using **gasoline powered tools and generators in buildings or semi-enclosed spaces without adequate ventilation.**”

- Follow all instructions and warnings for gasoline, diesel, and kerosene powered equipment and tools.
- Maintain equipment and tools that can produce CO in good working condition to reduce CO formation.
- Use tools powered by electricity or compressed air in enclosed areas whenever possible.
- Report any situation where there may be a chance of accumulation of carbon monoxide.
- Workers using tools such as concrete cutting saws, compressors, power trowels, or floor buffers should always pay close attention to possible smoke accumulation.
- Equipment such as gasoline powered forklifts or even propane radiant heaters used indoors can also be a source of carbon monoxide.
- Open windows and doors in enclosed spaces to avoid CO buildup.
- Leave the area and tell your supervisor immediately if you feel dizzy, drowsy, or are experiencing nausea!

Workers with physically, emotionally or mentally demanding jobs may be frequently stressed about work-related injuries, chronic pain, physical demands the job requires, co-worker and supervisor relationships or personal issues that affect their ability to fully focus on the job putting themselves and their co-workers at risk. Demands of the job, the pressure to provide for one's family, and concern about losing employment prevent many from seeking help which increases their risk for injury, mental distress, depression and anxiety.



STRESS PREVENTION AND MANAGEMENT

- Manage the workload and set priority levels for tasks with a realistic work plan.
- Eat nutritiously, avoid excessive junk food and caffeine.
- Avoid alcohol and recreational drugs, and don't smoke.
- Get enough sleep and rest.
- Outside of work, do activities that are pleasurable.
- Exercise regularly, the body can fight stress better when it is fit and exercising is often an immediate form of stress relief.
- Identify the specific source of job stress and come up with targeted ideas to eliminate or reduce the exact stressor. Management should be open to hearing ideas from workers that will make the work environment less stressful for employees.
- Speak up at work if something is causing stress – often, management will be unaware of the situation and that is the reason nothing has been done to fix it.
- Learn to recognize the early warning signs for stress reactions and seek help if needed.

Workers with physically, emotionally or mentally demanding jobs may be frequently stressed about work-related injuries, chronic pain, physical demands the job requires, co-worker and supervisor relationships or personal issues that affect their ability to fully focus on the job putting themselves and their co-workers at risk. Demands of the job, the pressure to provide for one's family, and concern about losing employment prevent many from seeking help which increases their risk for injury, mental distress, depression and anxiety.

Common symptoms of stress may include anger, irritability, physical or emotional tension, fear and anxiety about the future, difficulty making decisions or communicating thoughts, trouble concentrating, difficulty remembering instructions, being numb to one's feelings, headaches, back pains or stomach problems, loss of interest in normal activities, increased use of alcohol and drugs, loss of appetite, sadness and/or crying, sleep problems, inability to relax when off duty, colds or flu-like symptoms, and/or unnecessary risk taking.

CAUSES OF JOB STRESS THAT WORKERS AND EMPLOYERS SHOULD RECOGNIZE

- **The Design of Tasks.** Heavy workload, infrequent rest breaks, long work hours and shiftwork; hectic and routine tasks that do not utilize workers' full potential.
- **Management Style.** Poor communication, dictatorship-style management, no worker involvement in decision-making on the job.
- **Interpersonal Relationships.** Social environment at work that lacks support or the inability to get support from co-workers and supervisors when needed.
- **Work Roles.** Conflicting job expectations, uncertainty about what is expected, too much responsibility.
- **Career Concerns.** Job insecurity, lack of opportunity for promotion, too many changes at work without proper preparation given to workers to adapt.
- **Environmental Conditions.** Unsafe or unpleasant work conditions such as crowding, noise, air pollution, ergonomic problems or a hostile work environment.

Signs are an important part of work area safety that protect workers, visitors and the general public. If there is a potential hazard, signs must be visible at all times.

OSHA Standard 1910.145(a)(1) Accident Prevention Signs & Tags states *specifications apply to the design, application, and use of signs or symbols (...) that indicate and, insofar as possible, define specific hazards that could harm workers or the public, or both, or to property damage.*

Sign refers to a permanent or temporary notice or placard that provides a warning or safety instructions for industrial workers or members of the public who may be exposed to hazards. All safety signs should be visible and legible. If an active sign is vandalized, becomes rusted, or is coming off the affixed location, it must be replaced immediately. Any sign that is no longer relevant should be covered or removed immediately.

RED >> DANGER >> where immediate hazard exists
YELLOW >> CAUTION >> to warn of potential hazards
ORANGE >> WARNING >> barricades or notices

- Danger signs indicate that there is an immediate threat and special precautions are necessary. Red should be the main color on the top of a black and white Danger sign.
- Don't assume everyone is aware of clear and present danger, signs are important! Use Danger signs to mark hazardous areas to prevent potential serious injuries to employees and others that could be in the area at any time.
- Caution signs warn against potential hazards or caution against unsafe practices, that if not avoided, could result in minor or moderate injury. Caution signs are yellow and black to ensure they are easily visible.
- Warning signs indicate a potentially hazardous situation.
- Safety Instruction signs are used to provide information, procedures or instructions.
- Notice signs are often blue and provide information that is considered important but not directly hazardous (example: security or hygiene).

Signs and tags are an important part of work area safety that protect workers, visitors and the general public. OSHA has specific regulations pertaining to signs, symbols and tags.

OSHA Standard 1910.145(a)(1) Accident Prevention Signs & Tags states *specifications apply to the design, application, and use of signs or symbols (....) that indicate and, insofar as possible, define specific hazards that could harm workers or the public, or both, or to property damage.*

Tag is a kind of sign usually made of card, paper, pasteboard, plastic or other material used to identify a hazardous condition. Tags are usually used temporarily.

- Accident prevention tags are used to prevent accidental injury or illness to employees who are exposed to hazardous conditions that may be unexpected or not readily apparent.
- Tags shall be used only until the identified hazard is eliminated or the hazardous operation is completed.
- Tags don't need to be used where signs, barricades or other means of protection are being used.
- A biological hazard warning sign or tag shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, or experimental animals which contain, or are contaminated with, viable hazardous agents.



According to OSHA, falls from portable ladders are one of the leading causes of occupational fatalities and injuries.

OSHA Standard 1910.23(b)(9) states that the employer must ensure that *ladders are inspected before initial use in each work shift, and more frequently as necessary, to identify any visible defects that could cause employee injury.*



Remember these important safety precautions when working with step ladders:

- Always visually inspect all step ladders before use for any defects such as: missing/broken rungs, bolts, cleats, screws and loose components. Remove defective ladders from service immediately.
- Use the right ladder for the job!
- Always read the ladders warning labels and follow the manufacturer's recommendations for use.
- Only use a ladder that is rated to support the weight of your body and your tools/equipment.
- Make certain that the ladder is not loaded beyond the maximum intended load.
- Never use one side of a disassembled step ladder as an extension ladder.
- Never attempt to repair a ladder! Do not use wire, screws, bolts, duct tape or electrical tape as a way to fix the ladder; instead tag it and remove it from service.
- Never stand on the top rung or step of the step ladder. This makes the ladder very unstable and prone to tip over!
- Never face away from the step ladder! This can easily cause you to fall!
- Never overreach on a step ladder!
- Do not move or shift a ladder while a person or equipment is on the ladder. This could cause the materials or person to fall and cause serious injury.

Step Ladder Hazards

Volume 2 Fast 100 Issue 29G-2

Can you spot the potential step ladder hazards in these photos?



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According to OSHA *“Workers who use extension ladders risk permanent injury or death from falls and electrocutions. These hazards can be eliminated or substantially reduced by following good safety practices.”*

OSHA Standard 1910.23(b)(9) states that the employer must ensure *Ladders are inspected before initial use in each work shift, and more frequently as necessary, to identify any visible defects that could cause employee injury.*

- Remember these important safety precautions when working with extension ladders:
- **Always visually inspect** all extension ladders before use for any defects such as: missing rungs, bolts, cleats, screws and loose components.
 - **Remove defective ladders from service** immediately.
 - **Never take extension ladders apart** to make two smaller ladders!
 - Extension ladders used to reach another surface must **extend at least 3 feet above the edge** or point of support.
 - Extension ladders must be **placed at a safe angle** to avoid sliding or tipping.
 - **Maintain three points of contact** when climbing an extension ladder. Two hands one foot or two feet and one hand.
 - **Do not overextend** yourself to either side of the extension ladder, this can cause you to lose balance and shift the ladder away from yourself.
 - **Do not carry any load** when climbing an extension ladder that could cause you to lose balance.
 - Always **face the extension ladder when climbing** up or down.
 - **Always use the ladder as intended** and follow all manufacturer's warnings for the specific type of ladder you are trained to use.
 - Place ladders at a **safe angle** and **block the area** with cones or warning signs to avoid displacement in busy areas.

Extension Ladder Hazards

Volume 2 Fast 100 Issue 30G-2

Can you spot the potential extension ladder hazards in these photos?



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Fixed ladders can be found on the outside of buildings and structures or indoors in a warehouse or industrial environment. Fixed ladders may also be found on major equipment for easier access and maintenance. While fixed ladders may seem safer in a work environment than portable ladders, there are still many safety issues that must be considered.

OSHA Standard 1910.23(b) states that the employer must ensure *Each employee faces the ladder when climbing up or down it; and each employee uses at least one hand to grasp the ladder when climbing up and down it.*

- Visually inspect all fixed ladders before use for any defects. Defective ladders must be tagged and removed from service immediately.
- During the ladder inspection, ensure that there is nothing on the rungs that could cause a slipping hazard.



OSHA Standard 1910.23(b)(9) states that the employer must ensure *Ladders are inspected before initial use in each work shift, and more frequently as necessary, to identify any visible defects that could cause employee injury.*

- Maintain three points of contact when climbing a fixed ladder. Always face the ladder when climbing up or down.
- Do not over-extend yourself to either side of the fixed ladder and do not carry any load when climbing an fixed ladder that could cause you to lose balance.
- Do not use a fixed ladder that has a pitch greater than 90 degrees from the horizontal.
- When required, use fall protection when climbing fixed ladders.
- Keep the area around the top and bottom of the ladder clear.
- Fixed wooden ladders may not be coated with any material that could obscure structural defects.

Emergency Action Plans

Volume 2 Fast 100 Issue 32G-1

Workplace emergencies can happen at any company and may have the potential for severe injury to workers and even extreme property damages. Emergency Action Plans provide procedures in a workplace so workers know what is expected and what to do in the event of an emergency.

OSHA Standard 1910.38(b) *Written and oral emergency action plans. An emergency action plan must be in writing, kept in the workplace, and available to employees for review. However, an employer with 10 or fewer employees may communicate the plan orally to employees.*

- Everyone in the workplace should be aware of the Emergency Action Plan and familiarize themselves with the posted evacuation diagrams.
- All employees should know how to report an emergency situation.
- During any emergency drill, all employees should follow the evacuation procedure. No one stays behind!
- All employees must be aware of their role during any emergency situation. Most employees will follow evacuation or shelter-in-place safety procedures but some will have safety facilitator, medical rescue or critical operations roles.
- Emergency exits should be clearly labeled, lighted and visible at all times. Emergency exits should NEVER be blocked, even temporarily.
- Assembly points at the exit discharge should be identified ahead of time and known by the employees.
- Workers should report immediately to the designated assembly area upon evacuation.
- No one should go home or to an offsite location other than assembly area during an emergency evacuation.



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Floor holes can be found inside of buildings, in shops or warehouses, on working platforms, on roofs and in outdoor working environments. OSHA defines a floor hole as ***a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.***

OSHA Standard 1910.28(b)(3)(ii) states *each employee is protected from tripping into or stepping into or through any hole that is less than 4 feet (1.2 m) above a lower level by covers or guardrail systems.*

Never risk your safety or that of a fellow worker by ignoring potential dangers of floor holes.

Floor holes must be guarded or protected by guardrails, covers, and other conventional fall protection methods. Remember these important points when it comes to floor hole protection.

- Inspect walking/working areas and rooftops for potentially unguarded and unprotected floor holes, including skylights.
- Ensure floor drains are covered or protected to avoid trip and fall hazards.
- Ensure hatchways are covered with a hinged door or a guardrail system is in place.
- Ensure ladderways or chute floors are protected with guardrails and toeboards.
- Wear the appropriate fall protection when working at heights of 4 feet or more above ground.
- Missing steps that create a hole in a stairway should be protected like any other floor hole.
- Even shallow floor holes need to have protection.

OSHA Standard 1910.28(b)(3)(i) states *Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following: Covers; guardrail systems; travel restraint systems; or personal fall arrest systems.*

Floor Hole Hazards

Volume 2 Fast 100 Issue 33G-2

According to OSHA, **falls** are among the most common causes of serious work-related injuries and deaths. Floor holes are one area where many workers forget to take the necessary safety measures to protect themselves and their co-workers.

Floor holes can be found inside of buildings, in shops or warehouses, on working platforms, on roofs and in outdoor working environments.

OSHA defines a floor hole as ***a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.***

A few examples of floor holes that might be found in the workplace:

- Chute floors
- Drains
- Skylights
- Mechanics pits
- Unfinished stairways or missing steps
- Working platforms for ladderways, silos, tanks, augers
- Holes created during construction, remodeling or demolition
- Rotting wood floors or any floor that has the potential to give way if a person is standing on it

Never risk your safety or that of a fellow worker by ignoring potential dangers of floor holes.



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Fifteen-Year-Old Laborer Dies After Falling Through a Skylight - Florida

NIOSH In-house FACE Report 2001-04

Summary

On January 17, 2001, a 15-year-old male laborer (the victim) died from injuries he sustained when he fell through a skylight to the lower ground level approximately 23 feet, 9 inches below. The company's president allowed the company's handyman to find someone to help him repair leaks in a flat roof over the company's three-sided warehouse. The handyman enlisted the help of his 15-year-old neighbor and brought him to the worksite. Neither the handyman nor laborer had received training in fall protection methods and no means of fall protection had been provided by the employer.



LESSONS LEARNED

A few examples of floor holes include:

- Chute floors
- Drains
- Skylights
- Mechanics pits
- Missing steps
- Rotting wood floors

OSHA Standard 1910.28(b)(3)(i) states *Each employee is protected from falling through any hole (including skylights) that is **4 feet (1.2 m) or more** above a lower level by one or more of the following: Covers; guardrail systems; travel restraint systems; or personal fall arrest systems.*

Floor holes must be guarded or protected by guardrails, covers, and other conventional fall protection methods.

- Inspect walking/working areas and rooftops for potential floor holes, including skylights.
- Ensure roof drains and other penetrations are covered or protected to avoid trip hazards.
- Guardrails used around floor holes must meet specific guidelines so as to prevent falls to lower levels.
- Ensure hatchways are covered with a hinged door or a guardrail system is in place.

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Employers must take measures in their workplaces to prevent employees from falling off overhead platforms, elevated work stations or into holes in floors and on roofs.

- Workers must have fall protection, such as guardrails, whenever they are exposed to hazards at 4' or more above a lower level.
- Guardrails must be constructed properly.
- Guardrails must be able to stand up to use and prevent someone from falling!
- Guardrails must be maintained throughout all phases of work on the site where the fall hazard is present.
- Damaged or broken guardrails must be repaired or replaced immediately upon discovery.

OSHA Standard 1910.29(b)(1) *Guardrail systems. The employer must ensure guardrail systems meet the following requirements: The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D-11 of this section).*

- Top rails must be constructed at a height of 42" (plus or minus 3") and must be able to withstand 200 lbs of force downward and outward in the direction of the hazard or fall area.
- Mid rails must be installed at a height of 21" or mid-way between the surface and the top rail and must be able to withstand 150 lbs of force.
- Toeboards must be at least 3.5" high and designed to withstand 50 lbs of force. Toeboards are an important part of falling object protection for workers on the lower levels of the worksite.



Tools are a necessary requirement on most job sites, indoors and outdoors. However, hand tools, when used improperly or not kept in good condition, can also result in very serious injuries. Workers should be sure that they take good care of their hand tools and avoid common injuries such as:

- Severe cuts or punctures that could require stitches
- Scrapes and abrasions that can end up as skin infections
- Eye injuries or blindness from chipping or chiseling
- Electrical shocks from using improperly insulated tools for electrical work
- Carpal tunnel syndrome if the wrong tool is used repeatedly or the right tool is used incorrectly
- Bruises or broken bones when tools slip, fall or are carelessly thrown

OSHA Standard 1910.242(a) *Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees.*

- Hand tools have to be inspected before use. Look for any damage such cracks in handles, sharp edges, or splintering. Make sure that tools are not covered in paint, grease, or dirt that can create a hazard or hide a serious defect.
- Never use rusted, cracked, or warped tools!
- Wrenches that are warped, rusted, or sprung can result in breaking or slippage that lead to serious hand injuries.
- Saws, knives, scissors, or other similar hand tools should be sharp. Dull tools can actually be more hazardous than sharp tools.
- Spades, shovels, and other long handled tools should not be used unless in good working condition.
- Always use the proper attachments, handles, and grips provided by the manufacturer!
- Never use impact tools that have mushroomed heads. They can chip and send pieces flying off as projectiles.
- Take precaution when working with hand tools at heights to ensure they can't fall to the level below.

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Tools are common in many workplace settings and power tools are especially important to get the job done, however it is important to remember that electrical tools can pose significant hazards. Workers should be sure that they are familiar with the specific hazards of the tools they use including hazards such as:

- Electrical Shock
- Lacerations
- Eye Injuries
- Amputations
- Trip & Fall Accidents
- Puncture Wounds

Injuries with tools often happen when workers fail to use them as intended, remove guards designed for their own safety, or forget to inspect them before using. Workers should be trained on the safe handling and care of the power tools they will be using on the job and be reminded regularly to follow safe work practices every time they use their tools.

OSHA Standard 1910.242(a) *Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees.*

- Always inspect electrical tools, extension cords, guards and safety devices before use.
- Inspect tools for any damage such as cut or frayed cords, cracks, or signs of electrical damage.
- Ensure that tools are not covered in paint, grease, or dirt that can create a hazard or hide a serious defect.
- Only use electrical tools that have a proper grounding pin or are designed with double insulated protection.
- Never remove or pin back guards on circular saws or other tools.
- Always use the proper attachments, handles, and grips provided by the manufacturer.
- Keep cords away from heat and sharp edges.
- If any power tool, cord, guard, safety device or accessory is damaged, remove it from service immediately.
- Be sure to keep stable footing and maintain good balance while using electrical tools.
- Do not use electrical tools in wet conditions unless they are approved for that use.

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Aerial Lifts are useful pieces of equipment with specialized features, uses, and unique potential hazards. Extensible **boom lifts** are very helpful when you need to access heights without the expense of a crane or set-up required to use a scaffold. **Articulating boom lifts** are especially useful when needing to access difficult to reach areas and interior locations with high ceilings and odd angles.

OSHA Standard 1910.67(c)(2)(ii) *Only trained persons shall operate an aerial lift.*

In addition, **OSHA Standard 1910.67(c)(2)(iv)** *Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.*

- Common hazards found with aerial lifts include:
 - Electrocution from accidental contact with energized wires
 - Tip-over hazards from driving on step or unstable surfaces
 - Collisions or struck-against hazards
 - Fall hazards from improper use of the lifts & failure to use proper fall protection
- Always inspect the aerial lift prior to use.
- Do not use an aerial lift in any area with poor ventilation.
- Only use lifts that you are trained and authorized to use.
- Survey the area to identify and avoid floor drains, uneven surfaces, pipes, pits, holes, debris or other potential hazards.
- Use proper PPE and fall protection when operating an aerial lift. Ensure you are not wearing loose clothing that could get caught in any part of the lift and tie back long hair.
- Never sit or climb on the edge of the basket or use planks, ladders, scaffolding or other devices on an aerial lift.
- Avoid distractions while operating any aerial lift and do not use any heavy equipment while fatigued or under the influence of drugs or alcohol.
- Follow manufacturer's capacity limits and never overload an aerial lift.
- Never override any safety devices on the aerial lift.

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Aerial Lifts Tip-Over Hazards

Volume 2 Fast 100 Issue 37G-2

Aerial Lifts are useful pieces of equipment with specialized features, uses, and unique potential hazards. Extensible **boom lifts** are very helpful when you need to access heights without the expense of a crane or set-up required to use a scaffold. **Articulating boom lifts** are especially useful when needing to access difficult to reach areas and interior locations with high ceilings and odd angles.

OSHA Standard 1910.67(c)(2)(v) *A personal fall arrest or travel restraint system that meets the requirements in subpart I of this part shall be worn and attached to the boom or basket when working from an aerial lift.*

➤ Avoid tip-over hazards!

- Always use proper fall protection when operating an aerial lift.
- Never alter or disable warning devices or limit switches – they are there to help avoid tip-over hazards.
- Survey the area to identify and avoid floor drains, uneven surfaces, pipes, pits, holes, debris or other potential hazards.
- Never climb or sit on the edge of the platform.
- Avoid windy weather when operating an aerial lift outdoors. Consult the user's manual for the maximum wind speed use limit.
- Ensure there is not other equipment in the area that may bump into the aerial lift risking a tip-over. Consider alternating activities with the other equipment operators if needed.
- Follow manufacturer's capacity limits and never overload an aerial lift.
- Follow all manufacturer's instructions for moving any aerial lift around the job area or work site. All aerial lifts are different and may have different recommendations.
- Do not use the aerial lift as a crane and do not carry objects larger than the platform.
- Do not exceed vertical or horizontal reach limits.
- Set up work zone warnings, like cones, barricades or signs, when necessary to warn others.

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Stairways are a very common walking surface in most workplaces. Employers must take measures in their workplaces to protect employees from slip, trip and fall hazards on any walking/working surface and employees have a responsibility to use stairways correctly, as intended.

OSHA Standard 1910.28(b)(11)(i) states that the employer must ensure *each employee exposed to an unprotected side or edge of a stairway landing that is 4 feet (1.2 m) or more above a lower level is protected by a guardrail or stair rail system.*

- Each flight of stairs having at least 3 treads and at least 4 risers must be equipped with stair rail systems and handrails.
- Except for the entrance, stairway floor openings must be guarded by a standard railing on all exposed sides.

Employers are responsible for ensuring all stairways that are in use on the job site are safe. Workers should alert management to any unsafe issues or potential hazards noticed on or near stairways.

The majority of stairway incidents occur when a worker is not paying attention, they are rushing and they are not watching their footing.



- Never carry a load with both hands while going up or down the stairs.
- Make sure your shoes are tied before using any stairway.
- When walking with others, set a good example by walking up and down the stairs carefully while using the handrail.
- Report or clean up spills or trash found on the stairs.
- Report any situation in which there is insufficient lighting provided on any workplace stairway, indoors or outdoors.
- Never run up or down the stairs and avoid distractions like reading a newspaper or looking at your cell phone.

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Preventing Cold Stress

Volume 2 Fast 100 Issue 39G-1

Anyone working in a cold environment may be at risk for cold stress. This could include an indoor workplace like cold storage and garage workshops or an outdoor job in agriculture. Prolonged exposure to cold and/or freezing temperatures while on the job may cause serious health problems such as trench foot, frostbite and hypothermia. In extreme cases, exposure to cold temperatures can lead to death.

*Although OSHA does not have a specific standard that covers working in cold environments, under the **Occupational Safety and Health Act (OSH Act) of 1970**, employers have a duty to protect workers from recognized hazards, including cold stress hazards, that are causing or likely to cause death or serious physical harm in the workplace.*

Risk factors for cold stress include:

- Overexposure to cold temperatures
- Increase wind speed, and the wind chill effect
- Wet clothing and/or wet skin
- Dressing improperly for the weather
- Exhaustion
- Health conditions such as high blood pressure, hypothyroidism, diabetes or asthma
- Poor physical conditioning
- Inadequate training on how to work safely in cold temperatures

IMPORTANT TIPS TO PREVENT COLD STRESS:

- Wear proper clothing for cold, wet and windy conditions.
- Take frequent short breaks in warm dry shelters.
- Schedule work for the warmest part of the day.
- Avoid exhaustion or fatigue.
- Keep extra clothing handy in case clothes get wet.
- Drink warm, sweet beverages and avoid drinks with caffeine or alcohol.
- Eat warm, high-calorie foods.
- Use the buddy system – work in pairs so that one worker can recognize danger signs.
- Stay dry in the cold because moisture or dampness, even from sweating, can increase the rate of heat loss from the body.

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Recognizing Cold Stress

Volume 2 Fast 100 Issue 39G-2

Anyone working in a cold environment may be at risk for cold stress. This could include an indoor workplace like cold storage and garage workshops or an outdoor job in agriculture. Prolonged exposure to cold and/or freezing temperatures while on the job may cause serious health problems such as trench foot, frostbite and hypothermia. In extreme cases, exposure to cold temperatures can lead to death.

*Although OSHA does not have a specific standard that covers working in cold environments, under the **Occupational Safety and Health Act (OSH Act) of 1970**, employers have a duty to protect workers from recognized hazards, including cold stress hazards, that are causing or likely to cause death or serious physical harm in the workplace.*

COMMON TYPES OF COLD STRESS:

Hypothermia is when the normal body temperature (98.6°F) drops to less than 95°F. Exposure to the cold causes the body to lose heat faster than it can be produced. Hypothermia can occur at temperatures above 40°F if one is chilled from rain, sweat or cold water.

Symptoms: uncontrollable shivering, loss of coordination, confusion, and slurred speech. First Aid: Move the worker to a warm, dry area, remove wet clothing and replace with dry clothing, wrap the entire body in layers of blankets and seek medical attention immediately.

Frostbite occurs when body tissues freeze and can occur at temperatures above freezing due to wind chill and may result in permanent damage or amputation. Frostbite typically occurs on fingers, toes, nose and ears.

Symptoms: numbness, red skin that may develop gray/white patches, skin feels hard, sometimes blisters. First Aid: Protect area by wrapping loosely in dry cloth. Do not rub the affected area, do not apply snow or water, do not break blisters and do not attempt to re-warm the area. Seek medical attention immediately.

Trench Foot is injury to the feet caused by exposure to wet and cold conditions. Wet feet lose heat 25x faster than dry feet and workers can get trench foot in temperatures as high as 60°F if feet are constantly wet.

Symptoms: Tingling, pain, swelling, cramps, numbness and blisters. First Aid: Remove wet shoes/boots and socks, dry the feet, avoid walking, keep feet elevated and seek medical attention.

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Scaffolding is a temporary structure used in many workplaces as a walking or working surface for work crews to assist in maintenance, construction, and repair. When constructed and used properly, scaffolds provide a safe platform to complete work at heights and areas that would be otherwise difficult to reach.



OSHA Standard 1926.451(g)(1) states *each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level.*

While working at heights of 10 feet or more on scaffolding, employees must wear personal fall protection, such as a body harness, and/or ensure a guardrail is in place.

- All employees who erect, handle use, inspect, clean or dismantle scaffolding must be trained by a competent person. All users must be trained to spot and report hazards.
- Scaffolds and all components shall be inspected by a competent person before each work shift, after changing weather conditions, or after prolonged work interruptions.
- Use only the safe means of access on any scaffolding.
- Immediately repair replace any portion of the scaffolding that is found to be damaged.
- Scaffold planks should extend over end supports not less than 6-inches or more than 18-inches.
- Do not let loose materials, tools or debris accumulate on any scaffold.
- Areas below scaffold work should be barricaded unless a protective canopy is installed.
- Be aware of overhead power lines in your work area. Most overhead power lines are not insulated and a safe distance will need to be maintained between the power line and the scaffolding.

Scaffolding is a temporary structure used in many workplaces as a walking or working surface for work crews to assist in maintenance, construction, and repair. When constructed and used properly, scaffolds provide a safe platform to complete work at heights and areas that would be otherwise difficult to reach.

Common hazards associated with scaffolds are:

- **Falls from elevation**, due to lack of fall protection
 - **Collapse of the scaffold**, caused by instability or overloading
 - **Being struck by falling tool or debris**, due to lack of proper guardrails
 - **Electrocution**, due to the proximity of the scaffold to overhead power lines
 - **Unsecured planking**, that may cause slips or falls
 - **Untrained personnel**, or lack of a competent person on site when scaffolding is in use
-
- While working at heights of 10 feet or more on scaffolding, employees must wear personal fall protection, such as a body harness, and/or ensure a guardrail is in place.
 - Employees shall not climb cross braces or end frames, unless end frames are designed to be climbed.
 - An access ladder, stair tower or equivalent safe access shall be provided for all scaffolding.
 - Do not use ladders or makeshift devices on top of scaffolds to increase height.
 - Employees are prohibited from working on scaffolds covered with snow, ice, or other slippery materials, except to remove these substances.
 - Do not jump on planks or platforms.
 - Do not work on scaffolds during high winds.
 - Do not load a scaffold in excess of its rated working load.
 - Do not move any scaffold while employees are on them.
 - Do not mix scaffold components or force pieces to fit together when building the scaffold. This can severely compromise the strength of the scaffolding system.
 - Lock casters and wheels when scaffold is in place.

Struck-by hazards can come from a variety of activities, work environments, and tasks such as:

- Working on or near roads, bridges, or highways
- Working below elevated structures such as scaffolds or where cranes are lifting materials overhead
- Using compressed air, pneumatic tools, or powder actuated tools
- Working near heavy equipment such as excavators, backhoes, or cranes
- Working inside of trenches or excavations
- Working as a rigger, or near rigging, lifting, or materials handling operations
- Using hand tools such as chisels, hammers, or wire clippers

OSHA Standard 1926.102(a)(2) *The employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects.*

Remember these tips to recognize and avoid possible struck-by hazards:

- Workers must be trained and familiar with the use of power tools including pneumatic, electrical, and powder actuated tools.
- All safety devices, guards, and switches should be kept in place and used to prevent accidental discharge of the tool.
- Workers in trenches and excavations should be in visible line-of-sight of equipment operators to avoid being struck by the equipment.
- Workers should wear high visibility clothing such as safety vests to make them visible to equipment operators, site, or road traffic.
- Equipment with obstructed views to the rear should be equipped with audible alarms and working horns.

OSHA Standard 1926.451(h)(1) *In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects... When the falling objects are too large, heavy or massive to be contained or deflected... the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.*

Struck-by hazards can come from a variety of activities, work environments, and tasks such as using compressed air, pneumatic tools, or power actuated tools.

OSHA Standard 1926.302(b)(3) *All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.*

- Workers must be trained and familiar with the use of power tools including pneumatic, electrical, and powder actuated tools.
- All safety devices, guards, and switches should be kept in place and used to prevent accidental discharge of the tool.

OSHA Standard 1926.102(a)(2) *The employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects.*



Struck-By



Photo Credit – Don Hankins. OUCH!!! Bad nail gun. <https://www.flickr.com/photos/23905174@N00/498906682/>

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Bucket trucks (sometimes called cherry pickers) are an excellent tool used in many industries. Bucket trucks provide a safe and stable work platform in a variety of situations and when used in accordance with specific recommendations from the manufacturers.

It is important to note that all bucket trucks come with specific manufacturer operator manuals for the particular model and type of bucket truck. **If the operator manual is not available the device should not be used!**

OSHA Standard 1910.67(c)(2)(vii) The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline. 1910.67(c)(2)(vi) Boom and basket load limits specified by the manufacturer shall not be exceeded.

Common hazards found with bucket trucks:

- Electrocution from accidental contact with energized wires.
- Tip-over hazards from setting up on steep or unstable surfaces and not using supports.
- Collisions or struck-against hazards from traffic on roads.
- Fall hazards from improper use of the lifts.

Safety precautions when working with bucket trucks:

- Only trained and authorized operators can use bucket trucks!
- Stand firmly inside the lift and never sit or climb on the edge of the bucket or use boxes or other items to get additional height.
- Look for overhead power lines and electricity lines before and during operation.
- Survey the area, set outriggers or supports if available, and traffic control.
- **Use fall protection every time when working in the bucket!**
- Use the right fall protection for the specific type of bucket truck and follow the manufacturer's recommendations!

Bucket Truck Incident

Volume 2 Fast 100 Issue 41G-2

LESSONS LEARNED

Bucket trucks (sometimes called cherry pickers) are an excellent tool used in many industries. Bucket trucks provide a safe and stable work platform in a variety of situations and when used in accordance with specific recommendations from the manufacturers.



Photograph depicts the attachment of the boom to the bucket and the eye hook for harness attachment.

NIOSH Kentucky Case Report: 03KY028

Image from a fatality investigation where a 39-year-old highway traffic technician, working alone, received fatal head injuries after falling out of the bucket of an aerial boom truck. He was changing a traffic bulb in a traffic signal suspended over 2 lanes of traffic. As he worked from the aerial lift suspended over traffic to change the burned out bulb, a cargo truck drove underneath the bucket, striking it, and causing him to fall to the asphalt below. According to the investigation to prevent future occurrences of similar incidents, employees should use personal fall protection equipment in an aerial lift bucket at all times.

Avoid tip-over hazards and struck-by hazards!

- **Survey the area** where the bucket truck will be used before setting up the truck to identify and avoid potential hazards such as unstable ground, traffic hazards, or other dangers.
- **Set outriggers** or supports when equipped on the bucket truck.
- **Set up traffic control** cones, signs, and other required devices.
- **Use fall protection every time when working in the bucket!**
- Only trained and authorized operators can use bucket trucks!
- Use the right fall protection for the specific type of bucket truck and follow the manufacturer's recommendations.

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Electricity has long been recognized as a serious workplace hazard. OSHA's electrical standards are designed to protect employees exposed to dangers such as electric shock, electrocution, fires, and explosions.

Never take electricity for granted! No matter how small the job, always use safe work practices such as:

- ✓ Pay attention to Electrical Danger and Warning signs around the job site.
- ✓ Use properly insulated tools if working with electricity.
- ✓ Wear the right type of gloves or other personal protective equipment when working with electricity.
- ✓ Notify managers of electrical hazards when found.
- ✓ Don't work on electrical equipment unless you have been trained, are qualified, and equipped!

OSHA Standard 1910.333(a) *Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.*

- Always determine where possible energized or “hot” electrical lines and parts are before work.
- Never work around energized lines, dig where buried lines are located, or touch “hot” electrical parts without proper protection and training.
- Use insulated gloves that are designed, tested, inspected and rated for electrical work and for the correct voltage.

OSHA Standard 1910.333(a)(1) *Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards...*

- Avoid contact with exposed electrical parts and report electrical hazards immediately.

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Electricity has long been recognized as a serious workplace hazard. OSHA's electrical standards are designed to protect employees exposed to dangers such as electric shock, electrocution, fires, and explosions. **Never take electricity for granted!**

OSHA Standard 1910.333(a) *Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.*

- Recognize electrical hazards such as exposed electrical parts in electrical panels or damaged or frayed electrical cords.
- Ensure exposed electrical equipment is guarded, covered, or locked to prevent accidental contact.
- Avoid contact with exposed electrical parts and report electrical hazards immediately.

OSHA Standard 1910.333(a)(1) *Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards...*

- Never attempt to work on energized electrical equipment.
- Only qualified, trained, and equipped persons should work on electrical equipment.
- If using tools on electrical parts they must be properly insulated and should be rated for the specific electrical voltage expected.
- Use only the proper tools for the job! Fuse pullers are not channel locks!

OSHA Standard 1910.335(a)(2)(i)(A) *Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized.*

Industrial workplaces such as garage workshops, metal fabrication and welding shops, and mechanical or heavy manufacturing facilities will have a variety of machines and tools. Workers responsible to operate, repair, clean, or just work near these machines and tools must be protected from potential hazards.

OSH Act of 1970 General Duty Clause Section 5(a)(1) *Each employer shall 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... (b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.*

- Remember these important safety precautions to avoid some of the dangers of caught-in hazards:
 - Avoid placing yourself in areas where materials could fall or tip over.
 - Never crawl or enter potentially unstable areas.
 - Always inspect all machinery and equipment prior to operation.
 - Equipment operators must ensure that warning alarms and horns are working properly every day.
 - Never attempt to operate equipment you have not been trained and authorized to use.
 - Be visible to equipment, trucks, and traffic by wearing all required safety vests and PPE.
 - Maintain safe distances from potential hazards.
 - Ensure that safety devices such as jacks, lifting devices, and similar equipment is rated for the required loads.
 - Never disconnect safety switches or devices.
 - Training in proper lockout and tagout procedures is needed before performing repair, service or maintenance activities on machines or equipment.

Machine Caught-in Incident

Volume 2 Fast 100 Issue 43G-2



Industrial workplaces such as garage workshops, metal fabrication and welding shops, and mechanical or heavy manufacturing facilities will have a variety of machines and tools. Workers responsible to operate, repair, clean, or just work near these machines and tools must be protected from potential hazards.

A 28-year-old laborer was crushed and killed by a horizontal drum industrial washing machine. The machine was accidentally turned on by another worker while he was reaching into the machine to retrieve clothing. The cause of death according to the death certificate was traumatic asphyxia and blunt trauma of torso. California FACE Report #11CA007



Exhibit 2. The industrial washing machine involved in the incident.



Exhibit 4. The industrial washing machine opening.

- Never use equipment or machinery unless you have been properly trained on all safety features.
- Never crawl or enter areas that could contain rotating or moving parts unless the equipment has been safely locked and tagged.
- Never disconnect safety switches or devices.

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Wood Chipper Caught-in Incident

Volume 2 Fast 100 Issue 43G-3



Industrial workplaces such as garage workshops, metal fabrication and welding shops, and mechanical or heavy manufacturing facilities will have a variety of machines and tools. Workers responsible to operate, repair, clean, or just work near these machines and tools must be protected from potential hazards.

*A 54-year-old mechanic at a tree trimming and removal company died after being crushed underneath an 8,000-pound wood chipping machine at a maintenance yard. On the day of the incident, the individual and another worker were attempting to change the brakes on the wood chipper. They were using a telescopic hydraulic jack to lift the chipper in order to remove the wheels. After one side of the wood chipper was lifted, a single jack stand (rated for three-tons) was placed under that side. The worker went underneath the machine attempting to properly position the hydraulic jack on the axle to lift the other side. The jack slipped, the jack stand broke, and the wood chipper fell on top of the decedent, killing him. **NJ FACE 12-NJ-024***



- Always inspect all machinery and equipment prior to operation.
- Never attempt to operate equipment you have not been trained and authorized to use.
- Maintain safe distances from potential hazards.
- Ensure that safety devices such as jacks, lifting devices, and similar equipment is rated for the required loads.

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Debarker Caught-in Incident

Volume 2 Fast 100 Issue 43G-4



Industrial workplaces such as garage workshops, metal fabrication and welding shops, and mechanical or heavy manufacturing facilities will have a variety of machines and tools. Workers responsible to operate, repair, clean, or just work near these machines and tools must be protected from potential hazards.

A 52-year-old millwright (the victim) was fatally injured when he was pinned between the feed rolls of a debarker as he was welding additional metal to the teeth on the feed rolls. The victim had locked out two electrical disconnects in the debarking room before beginning his work, but he had not locked out all electrical disconnects and had not shut off and locked out the air line to the machine. As the victim welded, he leaned forward and placed his head between the upper and lower feed rolls to reach areas that required more metal. The air pressure on the rolls automatically cycled and the feed rolls closed over the victim's head. NIOSH FACE Report 2006-02



Photo 2. This photo illustrates the south debarker room where locks had been placed on two electrical circuits by the victim



Photo 3. This photo illustrates the feed rolls of the south debarker where the victim had been welding metal onto the debarker teeth. [Photo courtesy of SCOSHA].



Photo 4. This photo illustrates the air line that supplied the debarker and is not properly locked out [courtesy of SCOSHA]. The insert illustrates an example of a ball valve lockout device that can be used to lock out the pneumatic airline. The manufacturers' directions for installing any lockout device must be followed.

- Training in proper lockout and tagout procedures is needed before performing repair, service or maintenance activities on machines or equipment.
- All potential hazardous energy must be identified before working on machines or equipment.
- Manufacturers requirements and recommendations should always be followed when working with machinery.

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Hazardous materials serve valuable functions in the workplace like the flammable liquids used for cutting and welding or the compressed gas used to fuel forklifts. It's critical that workers know about the hazardous materials in their work area.

- The vapors from flammable liquids can ignite at normal working temperatures.
 - Compressed gases and liquified petroleum gases (LPG) are under high pressure posing both fire and explosion risk.
- Inspect regulators, cylinders and cylinder valves of compressed gas containers regularly to ensure safe operation.
- When not in use, ensure bottles/cylinders are chained or locked in an upright position with caps securely in place. Gases that may react with each other must be stored separately.
- Flammable liquids must only be stored in proper, approved containers that are labeled correctly. Flammable liquids should be stored in approved cabinets (commonly referred to as a fire cabinet).
- Exits, stairways and doors shall not be blocked by flammable liquid containers.
- In areas where flammable liquids and/or vapors may be present, employees must not smoke, light matches, perform hot work, or have an open flame.

Every hazardous material that is or may be used in the workplace should have its own Safety Data Sheet (SDS) that is easily accessible by all employees in a common area, like a Right to Know Center.

- Each SDS includes information such as:
- the properties of the chemical
 - the physical, health and environmental health hazards
 - protective measures
 - safety precautions for handling, storing and transport



Refer to Section 8 of the SDS to find recommendations for personal protective equipment (PPE) that should be worn to prevent illness or injury from exposure to the chemical and any special requirements for the PPE, like a specific type of glove or respirator.

Hazardous materials serve valuable functions in the workplace like the flammable liquids used for cutting and welding or the compressed gas used to fuel forklifts. It's critical that workers know about the hazardous materials in their work area.

Compressed Gases are under high pressure and may contain dangerous gases that can affect your health in unsafe conditions. Some types of compressed gases commonly found in workplaces include:

- Acetylene – for fueling cutting torches
- Argon – welding
- Freon – refrigeration coolant
- Oxygen – welding, metal cutting



OSHA Standard 1910.253(b)(2)(ii) *Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1 m) feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.*

Compressed gases are under high pressure posing both fire and explosion risk. To prevent injury and accidents, compressed gas cylinders must be used, stored, and transported properly.

- Do not smoke, have open flames, or use spark-producing equipment around compressed gas containers.
- Inspect regulators, cylinders and cylinder valves of compressed gas containers regularly to ensure safe operation.
- Gases that may react with each other must be stored separately.
- Do not vent flammable gases indoors.
- When not in use, ensure bottles/cylinders are chained or locked in an upright position with caps securely in place.

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Flammable Liquids

Volume 2 Fast 100 Issue 44G-3

Hazardous materials serve valuable functions in the workplace like the flammable liquids used for cutting and welding or the compressed gas used to fuel forklifts. It's critical that workers know about the hazardous materials in their work area.

There are two primary hazards associated with flammable liquids: **Explosions and Fire**. The vapors from flammable liquids can ignite at normal working temperatures. Flammable liquids commonly found in the workplace include:

- Acetone – solvent
- Benzene – plastics manufacturing
- Carbon Disulfide – cellophane manufacturing
- Gasoline – fuel
- Hexane – textile manufacturing, glue production
- Isopropanol – solvent, cleaning fluid
- Methanol – antifreeze, solvent, fuel
- Toluene – solvent, explosives manufacturing



OSHA Standard 1910.106(b)(6) *"Sources of ignition." In locations where flammable vapors may be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition may include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical-chemical reactions, and radiant heat.*

- Flammable liquids must only be stored in proper, approved containers that are labeled correctly.
- Flammable liquids should be stored in approved cabinets (commonly referred to as a fire cabinet)
- Exits, stairways and doors shall not be blocked by flammable liquid containers.
- In areas where flammable liquids and/or vapors may be present, employees must not smoke, light matches, perform hot work, or have an open flame.

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Liquified Petroleum Gas (LPG)

Volume 2 Fast 100 Issue 44G-4

Hazardous materials serve valuable functions in the workplace like the flammable liquids used for cutting and welding or the compressed gas used to fuel forklifts. It's critical that workers know about the hazardous materials in their work area.

Liquified Petroleum Gas (LPG), also referred to as propane or butane, is a flammable mixture of hydrocarbon gases used as fuel for heating, cooking and to power heavy equipment like forklifts. LPG is an odorless liquid that evaporates into a gas and is extremely flammable.

Hazards of LPG:

- When LPG gas meets a source of ignition it can burn or explode.
 - If involved in a fire, LPG cylinders can explode.
 - LPG can cause cold burns to the skin if direct contact is made to the liquified gas.
- Always store LPG cylinders upright, in well-ventilated areas, and ensure they are not at risk of tipping over in their storage location.



OSHA Standard 1910.110(b)(6)(i) *Containers, and first stage regulating equipment if used, shall be located outside of buildings, except... [when used in designated locations and in] LP-Gas fueled industrial trucks...*

- Do not store LPG cylinders near flammable liquid containers or oxidizing gases (like Oxygen).
- Keep the LPG cylinder valves closed when not in use.
- Only use LPG if the container is in good condition, free from damage and rust. The hoses and appliance fittings should also be in good condition.

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Welding, cutting and brazing are hot work techniques used to bond, cut, solder, or form metals at high temperatures. Specific precautions must be taken during this high-hazard work to prevent personal injury and workplace damage.

Important points to remember to avoid electric shock:

- Operators should be insulated properly from the work and from the ground.
- Never touch the electrode or metal parts of the electrode holder with skin or wet clothing.
- Always wear dry gloves that are in good condition.
- Only qualified technicians should attempt to service or repair welding equipment.
- Inspect the electrode holder before work. Ensure the welding cable and electrode holder insulation remain in good condition. Repair or replace damaged insulation before use.
- Remember, even when not turned on, welding equipment can still have 20 to 100 volts at the welding circuit. Even a shock of 50 volts or less can be enough to cause injury.

OSHA Standard 1910.252(a)(2)(ii) *Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.*

- Leather and flame-resistant treated cotton clothing is recommended in welding environments.
- Welding leathers are recommended when vertical or overhead welding is required.
- Don't roll up sleeves or pant cuffs as sparks or hot metal can get into the folds and burn through the clothing.
- Even when wearing a helmet, always wear safety goggles with side shields or goggles to prevent sparks or debris from hitting the eyes.
- Heavy, flame-resistant gloves should always be worn when performing hot work.
- Wear ear protection if working in an area with high noise levels.
- Welding areas require adequate ventilation. In certain areas, mechanical ventilation such as a fan, exhaust system or exhaust hoods may be needed to remove potentially dangerous fumes and gases from the work area.

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Open top commercial trash compactors are essential for companies that generate larger volumes of waste to help maintain housekeeping and productivity. Workers who load or work near open top trash compactors need to be aware of the unique hazards of these large machines.

Caught-in/Between and Struck-by are the most common industrial trash compactor hazards. Only trained and authorized staff members should be allowed to operate the trash compactor. Employees who work in the vicinity of the trash compactor must be trained to ensure all safety precautions are taken during the course of the work day to keep all workers safe. Visitors should not be allowed near heavy equipment at any time.

OSHA Standard 1910.212(a)(4) *Revolving drums, barrels, and containers shall be guarded by an enclosure which is interlocked with the drive mechanism, so that the barrel, drum, or container cannot revolve unless the guard enclosure is in place.*

- All operators should be trained how to correctly load materials into the trash compactor.
- The area around the trash compactor must be kept tidy to minimize the risk of fire, pests and trip hazards.
- Inspect trash compactors regularly and report any potential hazards immediately.
- Ensure all guards are kept in place, especially during operation of any open top trash compactor.
- Wear required PPE during loading, operation or servicing.
- Use a specially designed hand tool when it is required to handle or move material in the danger zone of the trash compactor.
- Never place your hand, arm or body into the trash compactor in an attempt to dislodge jammed material.
- If servicing or repairs is required on the trash compactor, lockout/tagout procedures must be followed.
- If the machine has been tagged or marked for repair, do not operate it.

Overhead cranes, including gantry cranes, are essential in many manufacturing, maintenance and industrial work environments when efficiency is required for lifting and moving heavy loads. Crane operators, riggers and employees that work near overhead cranes need to be aware of the unique hazards of these large machines.

Caught-in/Between, Struck-by/Against, Crane Overloading and Falling Materials are the most common industrial overhead crane hazards.

- All crane operators, riggers and employees who work in the area where overhead cranes are in operation must wear the appropriate PPE, such as hard hats, safety glasses, work gloves and hard-toe boots.
- The hoist operator and rigger should be trained in common crane operation hand signals, especially if there could ever be a situation when voice communications cannot be heard.
- It is important that crane operators and riggers know the load rate. Load markings should be posted on the crane and hoist block. Before the lift, verify that the load is not heavier than the maximum load capacity.

OSHA Standard 1910.179(n)(1) *Size of load. The crane shall not be loaded beyond its rated load...*

- Hoist operators and riggers should not engage in any other behavior while operating the crane that will divert their attention from the lift.
- Controls should not be left unattended while any load is suspended. If it is necessary to leave the controls, for any reason, lower the load first.
- Do not allow any personnel to ride on any load being lifted by a crane or on the crane hook itself.
- Never carry loads over people. Use audible and/or visual warning devices to alert workers in the area so they have the opportunity to move out from under the load.
- There should never be any sudden acceleration or deceleration of the load during the lift. Move crane controls slowly and avoid any abrupt or jerky movements of the load.
- Before lifting, be sure that all loose materials and parts have been removed from the load.

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Motorized pallet jacks or manual pallet jacks are found in nearly every warehouse and are essential in many manufacturing and distribution work environments. These jacks can easily lift 2,500 pounds or more, making swift work of heavy loads that need to be moved.

- Wear required PPE when operating any pallet jack.
 - Always wear gloves when handling pallets.
 - Hard-toe boots are recommended when working with heavy loads or heavy equipment like pallet jacks.
 - Be aware of pinch points to avoid hand injuries
- Know the maximum load limit of the pallet jack you are operating. Never overload a pallet jack!
- Ensure loads are stacked evenly on the forks before moving the pallet jack.
- Inspect the floors where the pallet jack will be driven to ensure the path is clear.
- Keep loads as close to the ground as possible for transport.



OSHA Standard 1910.178(o)(1) *Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.*

- Do not ride on the forks of a pallet jack or allow others to be carried. Don't stand on a pallet jack.
- Operate the pallet jack at a safe speed. Start moving slowly and come to a stop slowly.
- Do not steer pallet jacks onto uneven surfaces and avoid steep inclines.
- When possible, push pallet jacks during transport. Pulling may allow better maneuverability but puts considerable strain on the back. Pushing uses stronger leg muscles and keeps the back straight.
- Never try to stop a pallet jack with hands or feet, this could cause serious injury, especially with a very heavy load.
- When transporting a load, keep the jack control in the 'neutral' position.
- Watch for clearance on both sides of the load.
- Move slowly enough that you can keep the load under control.

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According to recent fatal injury statistics (BLS.gov), there are more than 800 deadly falls per year. OSHA states that falls from heights and on the same level (a working surface) are among the leading causes of serious work-related injuries, as well as deaths.

OSHA Standard 1910.30(a)(1) states that *Before any employee is exposed to a fall hazard, the employer must provide training for each employee...*

- Worksites should be regularly assessed for structural integrity.
- Employers should evaluate and make changes to procedures to prevent exposing employees to hazards.
- Railing systems or fall protection always be used when working on roofs.
- New employees should be trained on the proper use of fall protection with annual refresher training.

OSHA Standard 1910.28(a)(1) states that *[OSHA] requires employers to provide protection for each employee exposed to fall and falling object hazards.*

- Never work near unprotected skylights, sides, or edges. Supervisors and workers should perform a walk-around inspection of their site before starting work to find any possible fall hazards.
- Never stand on the top step of a step ladder. Always face the ladder when climbing up or down the ladder and working.

OSHA Standard 1910.23(b)(11) states that the employer must ensure that *each employee faces the ladder when climbing up or down it.*

- When operating an elevating platform forklift, a personal fall arrest system should be worn at all times, which consists of an anchorage, connectors, body harness and retractable lanyard connected to appropriate anchor point.

Manufacturing Plant Fall Incident

Volume 2 Fast 100 Issue 49G-2



According to recent fatal injury statistics (BLS.gov), there are more than 800 deadly falls per year. OSHA states that falls from heights and on the same level (a working surface) are among the leading causes of serious work-related injuries, as well as deaths.

A 52-year-old supervisor at a graphite manufacturing plant stepped through a rotten area of the roof and fell approximately 19 feet 6 inches to a hard, dirt surface below. Emergency medical services transported him to a local hospital and then to an out-of-state trauma center where he remained until his death 17 days after the fall. Kentucky Fatality Report: 14KY048

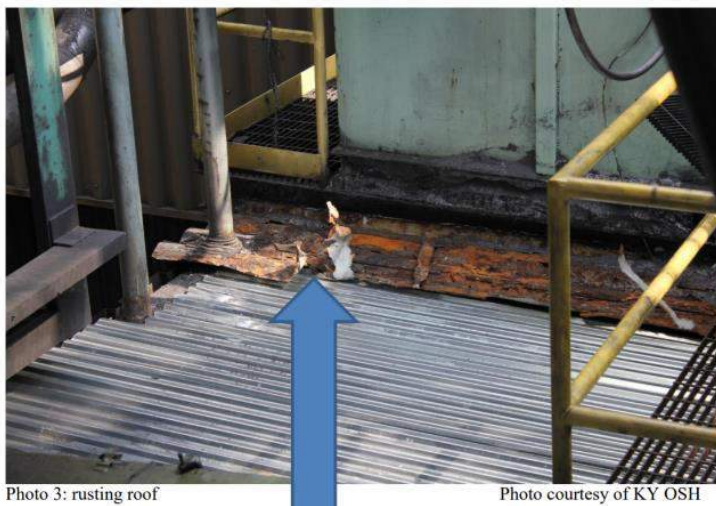


Photo 3: rusting roof

Photo courtesy of KY OSH



To prevent similar incidents, these recommendations were made as part of the investigation:

- Worksites should be regularly assessed for structural integrity.
- Employers should evaluate and make changes to procedures to prevent exposing employees to hazards.
- Railing systems or fall protection always be used when working on roofs.
- New employees should be trained on the proper use of fall protection with annual refresher training.

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Elevated Forklift Platform Fall Incident

Volume 2 Fast 100 Issue 49G-3



A 35-year-old warehouse worker died after falling 10 feet from an elevated forklift platform. The incident, which occurred inside a parts warehouse, happened while the worker and a coworker were adjusting metal warehouse shelving. He parked the forklift at the end of a warehouse aisle, elevated the platform to approximately 10 feet to help reposition metal racks, walked out onto the platform, and fell off the open end and landed on the cement floor.



The worker was wearing a body harness but his lanyard was not connected to the anchor point on the forklift. He sustained severe trauma to the head and died eight days later from these injuries.

NJ Fatality Report 13-NJ-049

- When operating an elevating platform forklift, a personal fall arrest system should be worn at all times, which consists of an anchorage, connectors, body harness and retractable lanyard connected to appropriate anchor point.
- A safety and health plan based on a job hazard analysis should be developed by the employer and followed where workers are assigned tasks.

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Pneumatic tools, powered by compressed air, can be a useful and portable addition to electrical tools in industrial workshops. The air compressors that power pneumatic tools must be used correctly to ensure the safety of all employees in the work area. All employees who are authorized to use pneumatic tools should be trained on safe tool operation as well as inspection, compressed air hazards, proper PPE requirements and tool storage.

- Getting hit by an attachment or fastener that flies off can cause serious injury. → Always use a safety clip or retainer to prevent attachments from being ejected during tool operation.
- A hose that becomes disconnected while still under high pressure can whip around wildly and strike workers in the area. → Ensure all hose connections are secured by positive locking devices to prevent accidental disconnection during use.
- Electrical contacts within the air compressor motor or pressure switch can spark, creating a risk for fire or explosion. → Operate air compressors in a well-ventilated area away from combustible materials.
- Overheating can occur when ventilation openings on the air compressor are blocked. → Don't place objects on or against the air compressor that could restrict airflow.

OSHA 1910.242(b) *Compressed air used for cleaning. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i and then only with effective chip guarding and personal protective equipment.*

- Pneumatic tools can be noisy so it is important to wear **hearing protection** when using air powered tools or when working in the area where they are used regularly.
- **Eye protection** is required, and **head and face protection** is recommended for employees working with pneumatic tools.
- **Gloves** should be worn when using pneumatic tools to protect your hands.
- **Dust masks** should be used when using tools that create dust and fumes in the work area that may be hazardous.
- If pneumatic tools are used in areas where others are working consider adding **screens or shields** to protect other employees from flying fragments, chips, dust and excessive noise.

Bloodborne pathogens are infectious, disease-causing microorganisms in blood and bodily fluids. Workers in many occupations, including first responders, housekeeping personnel, nurses, and healthcare workers, are at risk for exposure to bloodborne pathogens. In fact, any person that is administering first aid has the opportunity to be exposed to bloodborne pathogens.

The three most common bloodborne pathogens are:

- Hepatitis B Virus (HBV)
- Hepatitis C Virus (HCV)
- Human Immunodeficiency Virus (HIV)

Bloodborne pathogens can be transmitted by ingestion, through blood and certain bodily fluids. In the workplace, bloodborne pathogens may be transmitted from an infected person via needle-sticks, human bites, cuts, abrasions, or through mucous membranes (eyes and nose).



- Treat all blood and certain body fluids as if they were known to be infectious with bloodborne pathogens.
- Avoid direct or indirect contact with anyone else's blood and body fluids.
- Always wear disposable gloves when providing first aid care.
- Avoid touching your eyes, nose and mouth during or after providing first aid care.
- Dispose of sharps in designated sharps containers immediately after use. Sharps are usually used needles but could include any contaminated broken glass, razors, or utility knives.
- Remove disposable gloves without contacting the soiled part of the gloves and dispose of them immediately in a proper container.
- Thoroughly wash your hands (and any other areas) immediately after providing care.
- All equipment, tools, PPE, working surfaces and floors must be thoroughly cleaned and decontaminated after exposure to blood or bodily fluids.
- If you think you may have been exposed to bloodborne pathogens, seek immediate follow-up care.

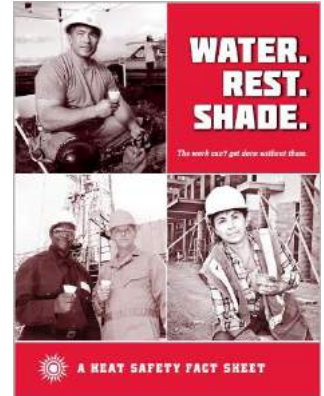
Preventing Heat Stress

Volume 2 Fast 100 Issue 52G-1

Heat is a serious hazard to workers in many industries. Not only when workers are outdoors but also during indoor activity the body builds up heat and can struggle to get rid of extra heat.

Workers need to be aware of their specific limitations and remember that sometimes their body may not cool off fast enough. Factors that can increase the chance of heat stress include:

- High temperature and humidity
- Not drinking enough water
- Direct sun exposure (with no shade) or extreme heat
- No air circulation or ventilation
- Physical activity without breaks
- Use of bulky protective clothing and equipment



OSHA Standard 1926.21(b)(2) *The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.*

Water. Rest. Shade. California's State OSHA program has created a great way to remember three important ways to **prevent heat stress**.

- Water – workers need to start drinking water before arriving at the job site. This is a great way to get the body hydrated and ready for hard work.
- Keep drinking water! Start the day out hydrated and then continue to fuel your body with water.
- If the temperature is high and the humidity is high OSHA recommends about four cups of water per hour.
- Rest – during periods of high heat and high humidity short breaks in a cooler area, perhaps near a fan, are a great way to let the body release some of that extra heat.
- Wear loose, light clothing, and avoid direct sunlight when possible.

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Recognizing Heat Stress

Volume 2 Fast 100 Issue 52G-2

Heat is a serious hazard to workers in many industries. Not only when workers are outdoors but also during indoor activity the body builds up heat and can struggle to get rid of extra heat.

Factors that can increase the chance of heat stress include:

- High temperature and humidity
- Not drinking enough water
- Direct sun exposure (with no shade) or extreme heat
- No air circulation or ventilation
- Physical activity without breaks
- Use of bulky protective clothing and equipment



Recognize the signs of these heat stress illnesses:

Heat cramps are usually experienced as muscle spasms or cramping in the stomach, arms and the back of the legs or calves.

Heat exhaustion symptoms include headaches, dizziness, weakness, wet skin, confusion, nausea, or vomiting.

Heat stroke is deadly! Recognize heat stroke symptoms which can include red, hot and dry skin, confusion, fainting, and convulsions.

Workers should follow these emergency steps:

- **Heat cramps** – drink more water and take frequent breaks, if available drink a healthy sports beverage that contains electrolytes.
- **Heat exhaustion** – 1) immediately move the affected worker from the hot area and give liquids to drink. 2) Cool the worker with cold compresses to the head, neck, and face or have the worker wash his or her head, face and neck with cold water. 3) Take the worker to a clinic or emergency room for medical evaluation and treatment.
- **Heat stroke** – if a worker is showing signs of heat stroke, especially if they stop sweating and have hot dry skin, 1) immediately call 911 or emergency services 2) move the worker to a cooler area 3) cool the worker by removing outer clothing and fanning the worker and apply wet towels or rags on their body.

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Respirable crystalline silica dust is created during normal industry and manufacturing activities when cutting, sawing, grinding, drilling or crushing any material that has silica like granite, ceramics and stone. The super-fine silica particles are released into the air and workers are in danger of inhaling these silica dust and developing serious health conditions as a result.

OSHA Standard 1910.1053(c) *Permissible exposure limit (PEL). The employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 µg/m³, calculated as an 8-hour time-weighted average (TWA).*

Common materials found at work sites that may contain crystalline silica include sand, stone, rock, concrete, brick, mortar and block. Silica is also found in products like glass, pottery and ceramics.

A dust mask is not enough! Respiratory protection is only permitted when other dust control measures are not sufficient.



To limit exposure to harmful silica dust, these control methods can provide a safer work environment:

- Apply water to a saw blade when cutting materials or use tools equipped with an integrated water delivery system.
- Use tools equipped with shrouds and commercially available dust collection system.
- Install local ventilation or use vacuums to collect dust.
- Use enclosures that isolate the work process.
- Avoid working in dusty work environments whenever possible and wear a respirator when needed/required.
- Wet dust before sweeping it up or vacuum dust instead of sweeping it.
- Do not eat or drink near dusty work areas.
- Shower (if possible) and change into clean clothes before leaving the worksite to prevent carrying silica dust away from the work site.

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Silica Dust Hazards

Volume 2 Fast 100 Issue 53G-2

Nearly 300,000 industry workers in the United States are exposed to **Silica Dust** on the job. Workers that inhale crystalline silica are at increased risk of developing silica-related diseases that can be debilitating or even fatal. Protective steps must be taken to prevent, reduce and measure exposure levels to silica dust to ensure the safety of all workers.

Common materials found at work sites that may contain crystalline silica include sand, stone, rock, concrete, brick, mortar and block. Silica is also found in products like glass, pottery and ceramics.

Respirable crystalline silica dust is created during normal industry and manufacturing activities when cutting, sawing, grinding, drilling or crushing any material that has silica like granite, ceramics and stone. The super-fine silica particles are released into the air and workers are in danger of inhaling these silica dust and developing serious health conditions as a result.

Workers who inhale silica dust particles are at an increased risk of developing certain illnesses including:

- Kidney Disease
- Tuberculosis
- Silicosis – an incurable lung disease
- Lung Cancer
- Chronic Obstructive Pulmonary Disease (COPD)

Typical manufacturing and processing activities that release silica dust into the air:

- manufacturing glass, pottery, or ceramics
- manufacturing brick, concrete or structural clay products
- manufacturing artificial stone, jewelry or porcelain products
- using handheld powered chipping tools
- manufacturing stone countertops
- using industrial sand in foundry work and hydraulic fracturing
- using sand for abrasive blasting



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Thanksgiving Holiday Safety

Volume 3 Fast 100 Issue 1H-1

Thanksgiving is a wonderful time to gather with friends and family, eat delicious food, watch football, and travel to visit loved ones. While enjoying the holiday, it is important to always keep safety in mind.

Top safety hazards during the Thanksgiving holiday include:

- **FIRE** ... kitchen fires, candles and outdoor deep fryers
- **FOOD** ... choking and poisoning, cuts and burns during food preparation
- **TRAVEL** ... car accidents, driving while intoxicated or distracted

Remember these tips to have an enjoyable and safe Thanksgiving holiday:

- Do not leave food cooking unsupervised.
- Make sure smoke alarms are working.
- Ensure the kitchen floor is kept clear.
- Keep matches, lighters, candles and knives out of the reach of children; keep children away from the stove.
- Keep baking soda and a household fire extinguisher on hand to put out kitchen fires.
- Follow all instructions carefully when using a deep fryer and monitor closely!
- Always wash your hands after handling raw or undercooked poultry.
- Use separate cutting boards for raw meat and produce to prevent cross-contamination.
- Cook the turkey thoroughly.
- Buckle up, every trip.
- Make sure your vehicle is well maintained.
- Carry an emergency kit in the car.
- No texting while driving.
- Plan your route ahead of time; check the weather.



Photo Credit – Dan Lundberg; <https://www.flickr.com/photos/9508280@N07/6519140149>

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A FUN COOKOUT IS A SAFE COOKOUT

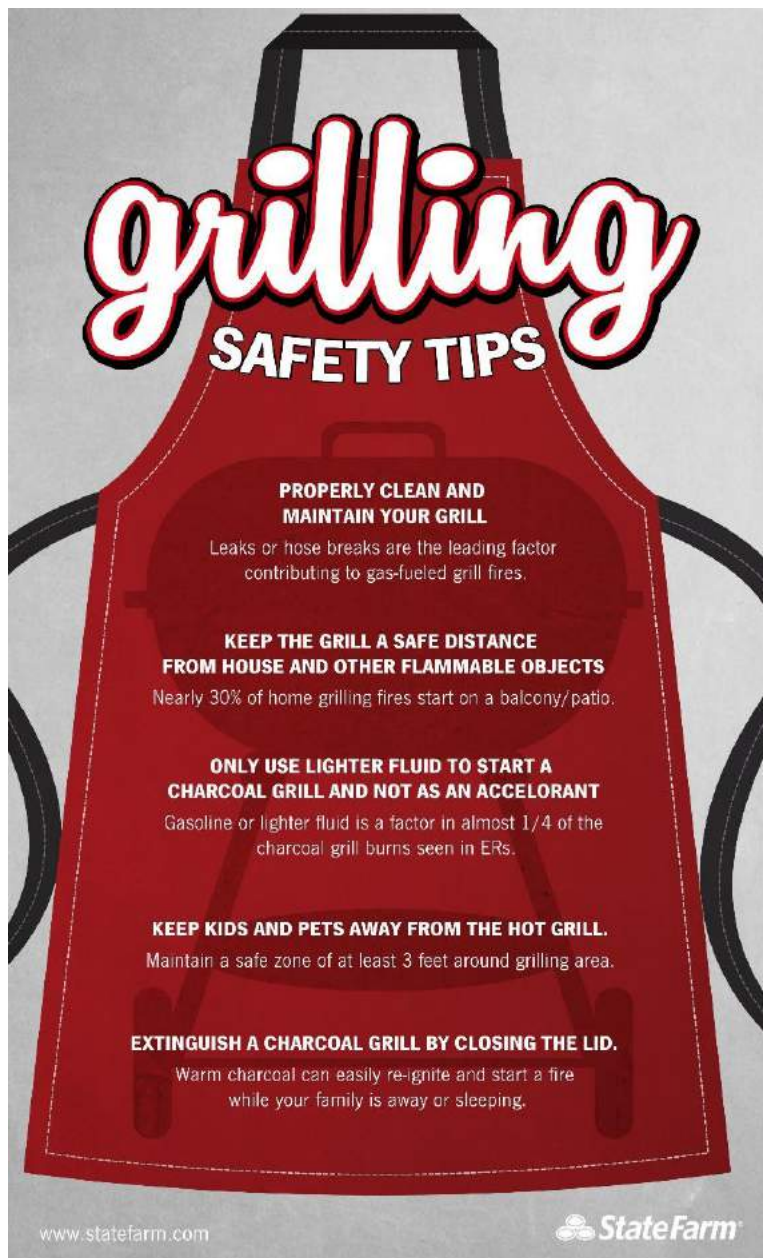
Liquid petroleum (LP) gas or propane, used in gas grills, is highly flammable and every year people are injured as a result of gas grill fires and explosions. Most of these injuries occur when a gas grill is used after having been left untouched for a period of time, or just after refilling and reattaching the grill's gas container.

Always do a safety check on a gas grill before using it for the next cookout. Make sure tubes aren't blocked, hoses aren't cracked and there are no gas leaks.

Charcoal produces carbon monoxide (CO) when it is burned and every year people die or are injured as a result of CO fumes, which is colorless and odorless.

NEVER burn charcoal inside of homes, vehicles, tents or campers and never store a charcoal grill indoors with freshly used coals.

- Keep kids and pets away from the hot grill.
- Never burn charcoal indoors.
- Keep the grill a safe distance from the house.



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Holiday Swimming Safety

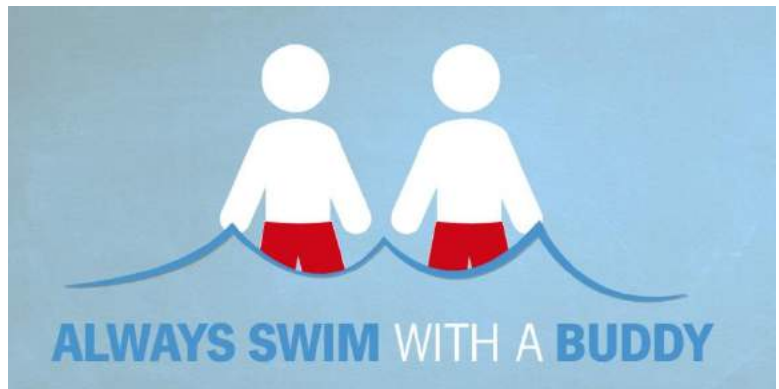
Volume 3 Fast 100 Issue 2H-2

Swimming to cool off in the hot weather is a favorite holiday activity. Keep these tips in mind to keep everyone safe at the beach, lake, pool or while boating.

- Wear sunscreen and reapply often.
- Keep a first aid kit nearby.
- Stay hydrated, drink plenty of water regularly.
- Maintain constant supervision, avoid distractions.
- Monitor local weather conditions.
- Young children and inexperienced swimmers should wear a life jacket when near or in the water.
- Never dive headfirst, especially at the beach or the lake.
- Never leave children unattended near water.



Graphics from State Farm



Any beach with breaking waves may have rip currents which cause deaths every year. Alert swimmers to these tips at the beach:

- Stay at least 100 feet away from piers and jetties.
- If caught in a rip current, swim parallel to the shore or float or tread water until out of the current, then swim toward shore.

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Winter Driving Safety

Volume 3 Fast 100 Issue 3H-1

Stay safe this winter holiday season by planning ahead and making good choices when traveling. When preparing to travel, be aware of current and forecasted weather conditions. Get your car ready for cold weather before winter arrives and ensure it is well-equipped for the road conditions.

Remember the three P's of Safe Winter Driving:

PREPARE for the trip >> **PROTECT** yourself >> **PREVENT** crashes on the road

Winter Driving Safety Tips

- Speed limits are based on normal road conditions, so reduce your speed when there is ice or snow.
- Stay at least 200 feet back if you are behind a snow plow.
- Bridges, ramps and overpasses freeze first, so use extreme caution.
- Know how to safely maneuver a vehicle if skidding on ice occurs.
- Maintain at least three times the normal following distance when driving on snow and ice.
- Be aware of 'black ice' which is a nearly invisible layer of ice that can develop on roads and cause a driver to rapidly lose control. Black ice is especially common at night.
- Avoid travel during winter weather advisories.
- Avoid fatigue, get plenty of rest before the trip and if driving, stop at least every three hours and rotate drivers if possible.
- Do not text or become otherwise distracted while driving.
- Consider joining AAA or another travel club for roadside and travel assistance if it becomes unexpectedly needed.
- Plan your route ahead of time; tell friends or family your travel route and expected arrival time.
- Carry a cell phone; ensure it is always charged. Carry a small first aid kit.
- Use a wintertime formula in your windshield washer. Keep gas tank full to avoid ice in the tank and fuel lines.

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Stay safe this holiday season by planning ahead and making good choices when traveling. When preparing to travel, be aware of current and forecasted weather conditions.

Don't forget that travel safety awareness applies to all aspects of your holiday travel including securing your home while you are away, airline travel, hotel safety and traveling with kids and pets.

- Suspend your newspaper delivery and mail service while you are on vacation, or have someone you trust pick it up for you.
- Consider having a few lights inside the house on timers to make it appear as if there is activity inside the house while you are away.
- Label your luggage with your name and phone number, and make a list or take photos of the items in your checked bags. If you must pack valuable items, try to take those in your carry-on luggage.
- Keeping track of your valuables while traveling, don't leave your baggage unattended.
- Don't accept packages from strangers and report suspicious activities.
- Avoid fatigue, get plenty of rest before the trip and if driving, stop at least every three hours and rotate drivers if possible.
- Consider joining AAA or another travel club for roadside and travel assistance if it becomes unexpectedly needed.
- Never broadcast your location on Facebook or Twitter.

