JOBSITE SAFETY & HEALTH MANUAL

Dowdy Corporation

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Note: Handouts & Forms are designated by diamonds (♦) for quick reference.

TAB 1: SAFETY & HEALTH RESPONSIBILITIES, POLICIES, AND PROCEDURES

1.1 POLICY STATEMENT

It is Dowdy's belief that our employees are our most important asset and the preservation of employee Safety and Health must remain a constant consideration in every phase of our business. We will provide the resources necessary to manage, control, or eliminate all safety and health hazards.

All employees are responsible for working safely and productively, as well as recognizing and being aware of hazards in their work areas. Employees are also responsible for following safe work practices, including the use of Personal Protective Equipment (PPE) where necessary.

It is our belief that any safety and health program must have total employee involvement.

Therefore, this program has management's highest priority, support, and participation.

PRODUCTION IS NOT SO URGENT THAT WE CANNOT TAKE TIME TO PERFORM OUR WORK SAFELY.

Dowdy Corporation CEO

1.2 EMPLOYEE RESPONSIBILITIES

Although OSHA does not cite employees for violations of their responsibilities, each employee "shall comply with all occupational safety and health standards and all rules, regulations, and orders issued under the OSH Act that are applicable. Employee responsibilities and rights in states with their own occupational safety and health programs are generally the same as for workers in states covered by Federal OSHA. An employee should do the following:

- Read the OSHA Poster at the jobsite.
- Comply with all applicable OSHA standards.
- Follow all lawful employer safety and health rules and regulations, and wear or use prescribed protective equipment while working.
- Report hazardous conditions to the project supervisor.
- Report any job-related injury or illness to the employer, and seek treatment promptly.
- Exercise rights under the Act in a responsible manner.

I have read and understand my responsibilities under the OSHA standards and Dowdy's policies and procedures and agree to abide by them. I have also had the duties of the position which I have accepted explained to me, and I understand the requirements of the position. I understand that any violation of the above policies is reason for disciplinary action up to and including termination.

Employee Name (Print)	Employee Signature	Date

1.3 GOAL

Safety begins at the top and progresses downward throughout the company. The primary goal of Dowdy is to continue operating a profitable business while protecting employees from workplace-related injuries, illness or harm. This can be achieved in part by delegating responsibility and accountability to all involved in this company's operation as follows:

- **Responsibility:** Having to answer for activities and results.
- **Accountability:** The actions taken by management to ensure the performance of responsibilities.

In other words, to reach our goal of a safe workplace everyone needs to take responsibility and be held accountable.

Benefits of achieving our goals are:

- Minimizing of injuries and accidents
- Minimizing the loss of property and equipment
- Elimination of potential fatalities
- Elimination of potential permanent disabilities
- Elimination of potential OSHA citations and fines
- Reductions in workers' compensation costs
- Reductions in operating costs
- Having the best Safety and Health conditions possible in the workplace.

1.4 MANAGEMENT COMMITMENT

The management of Dowdy is committed to the company's safety policy, and providing direction and motivation by:

- Appointing a Safety Coordinator.
- Establishing company safety goals and objectives.
- Developing and implementing written Safety and Health programs.
- Ensuring total commitment to our Safety and Health programs.
- Facilitating employees' safety training.
- Establishing responsibilities for management and employees to follow.
- Ensuring that management and employees are held accountable for performance of their safety responsibilities.
- Establishing and enforcing disciplinary procedures for employees violating safety rules.
- Reviewing the Safety and Health program annually, and revising or updating as needed.

1.5 ASSIGNMENT OF RESPONSIBILITY

SAFETY COORDINATOR

Dowdy has designated: _____ as Safety Coordinator. The Safety Coordinator's office and cell phone numbers are:

- **Office:** _____
- **Cell:** _____

It is the duty of the Safety Coordinator to assist the project supervisor and all other levels of Management in the initiation, education, and execution of an effective safety program including the following:

- Introducing the safety program to new employees.
- Following up on recommendations, suggestions, etc., made at toolbox talks (safety meetings). All topics of safety concerns must be documented accordingly.
- Assisting personnel in the execution of standard policies.
- Conducting safety inspections on a periodic basis.
- Addressing all hazards or potential hazards as needed.
- Performing accident investigations and preparing accident reports.
- Maintaining adequate stock of first aid supplies and other safety equipment to insure their immediate availability.
- Making sure there is an adequate number of qualified first aid certified people on the work site.
- Becoming thoroughly familiar with OSHA regulations and local and state safety codes.
- Defining the responsibilities for safety and health of all subordinates and holding each person accountable for their results through the formal appraisal system and where necessary, disciplinary procedures.
- Emphasizing to employees that accidents create unnecessary personal and financial losses.

PROJECT SUPERVISORS

The project supervisors are responsible for establishing an operating atmosphere that ensures that safety and health is managed in the same manner and with the same emphasis as production, cost, and quality control.

- Regularly emphasizing that accident and health hazard exposure prevention are not only moral responsibilities, but also a condition of employment.
- Identifying operational oversights that could contribute to accidents which often result in injuries and property damage.
- Participating in safety and health related activities, including routinely attending safety meetings, reviews of the facility, and correcting employee behavior that can result in accidents and injuries.
- Spending time with each person hired to explain the hazards and safety policies relating to his/her particular work.
- Ensuring that initial orientation of "new hires" is carried out by the Safety Coordinator.

- Making sure that, if a “Competent Person” is required, one is present to oversee operations and instruct employees when necessary.
- Never short-cut safety for expediency, nor allow workers to do so.
- Enforcing safety rules consistently, and following company's discipline and enforcement procedures.
- Conducting a daily, jobsite safety inspection and correcting noted safety violations.

EMPLOYEES

It is the duty of each and every employee to know the safety rules, and conduct his work in compliance with these rules. Disregard of the safety and health rules shall be grounds for disciplinary action up to and including termination. It is also the duty of each employee to make full use of the safeguards provided for their protection. Every employee must receive an orientation when hired and receive a copy of the Company Safety and Health Program. Employee responsibilities include the following:

- Reading, understanding and following safety and health rules and procedures.
- Signing the Policies and Procedures Acknowledgement (see form above).
- Wearing Personal Protective Equipment (PPE) at all times when working in areas where there is a possible danger of injury.
- Wearing suitable work clothes as determined by the project supervisor.
- Performing all tasks safely as directed by their project supervisor.
- Reporting ALL injuries, no matter how slight to their project supervisor immediately, and seeking treatment promptly.
- Knowing the location of first aid, firefighting equipment, SDS log, and other safety devices.
- Attending any and all required safety and health meetings.
- Not performing potentially hazardous tasks, or using any hazardous material until properly trained, and following all safety procedures when performing those tasks.
- Stopping and asking questions if ever in doubt about the safety of any operation

COMPETENT PERSON

All jobsites must have a designated Competent Person who is responsible for the implementation and monitoring of the Dowdy health and safety plan. The Competent Person must be capable of identifying existing and predictable hazards and have the authority to take prompt corrective measures.

1.6 PROJECT SAFETY & HEALTH COORDINATION

General/Prime Contractor Responsibilities – The prime or general contractor on a jobsite must ensure that procedures are in place to ensure that all subcontractors and/or other employers provide adequate protection from hazards for their employees. In addition, subcontractors must be monitored in order to determine conformance with the jobsite safety plan.

According to OSHA, factors that affect how frequently and closely a prime or general contractor must inspect the jobsite to meet its standard of reasonable care include the following:

- The scale of the project.
- The nature and pace of the work, including the frequency with which the number or types of hazards change as the work progresses.
- How much the prime or general contractor knows both about the safety history and safety practices of the employer it controls and about that employer's level of expertise.
- More frequent inspections are normally needed if the prime or general contractor knows that the subcontractor has a history of non-compliance. Greater inspection frequency may also be needed, especially at the beginning of the project, if the prime or general contractor had never before worked with this subcontractor and does not know its compliance history.
- Less frequent inspections may be appropriate where the prime or general contractor sees strong indications that the subcontractor has implemented effective safety and health efforts. The most important indicator of an effective safety and health effort by the subcontractor is a consistently high level of compliance.

Other indicators include the use of an effective, graduated system of enforcement for non-compliance with safety and health requirements coupled with regular jobsite safety meetings and safety training.

At a minimum, Dowdy may require that other employers under their control identify, provide, and/or implement the following:

- a health & safety program, including written procedures for controlling job-related hazardous operations such as cranes, scaffolding, trenches, confined space, hot work, explosives, hazardous materials, leading edges, etc.
- a Safety Coordinator and Competent Person
- a project safety analysis for the job
- list of work activities requiring planning, design, inspection, or supervision by an engineer, competent person, or other professional
- documentation for required health & safety training
- signed independent contractor agreement
- hazardous chemicals to which jobsite workers may be exposed to while in the workplace along with SDSs, measures to minimize the possibility of exposure, and procedures to follow if workers are exposed
- an emergency response plan
- other documentation such as permits, hazard reports, inspections, uncorrected hazards, accident/incident/near miss reports, etc.

Use the independent contractor agreement on the following page to document subcontractor responsibility for OSHA compliance.

♦ SUBCONTRACTOR PREQUALIFICATION FORM

Company Information	
Legal Company Name	
Address:	
City, State, Zip	
Federal ID #	
Contact Person	
Telephone	
Fax	
Email	

Safety Performance Statistics					
		Current _____	**Last Year** _____	**2 Years** _____	**2 Years** _____
Experience Modification Rating (EMR)					
Average Number Of Employees					
Hours Worked					
# Of Recordable Cases					
(G) # Of Deaths					
(H) # Of Cases With Days Away From Work					
(I) # Cases With Job Transfer Or Restriction					
(J) # Other Recordable Cases					
(K) # Of Days Away From Work					
(L) # Days On Job Transfer Or Restriction					
3-year Total Recordable Incidence Rate (TRIR)		(Total # of cases for all 3 years) x 200,000 / Total number of employee hours for all 3 years			

Safety Questionnaire	
Does your company have a written safety program? If yes, please attach as PDF or .doc file	☐ Yes ☐No
Does your company perform safety training for all employees? If yes, is documentation available?	☐ Yes ☐No ☐ Yes ☐No
Does your company have a new hire orientation process for all new hires?	☐ Yes ☐No
Do you hold safety meetings? If yes, how frequently?	☐ Yes ☐No _____

OSHA Inspections	
Have you had an OSHA inspection in the past 5 years? If yes, were you issued citations?	☐ Yes ☐No ☐ Yes ☐No
Please provide any additional details regarding citations issued:	

Safety Program Overview
Please provide any additional information that is pertinent to your safety program below or attach additional documentation.

Certification	
Name:	
Signature:	
Title	
Date	

♦ SUBCONTRACTOR AGREEMENT

_____(Company Name)_____ hereby acknowledges that they are a subcontractor of Dowdy, and therefore agrees to comply with all local, state, and federal laws and regulations, along with policies and procedures that have been established by Dowdy.

It is further understood that in the event of an OSHA site inspection, as related to the work that is being performed, it is the responsibility of _____(Company Name)_____ to immediately correct any safety violations and/or pay any fines that may be levied by OSHA for safety violations.

Agreed By (Print): _____

Signature: _____ Date: _____

1.7 EMERGENCY PLANNING

The purpose of an Emergency Action Plan (EAP) is to facilitate and organize employer and employee actions during workplace emergencies. Before starting a job, site-specific emergency procedures covering the items listed below need to be established and communicated to employees. Please also refer to Dowdy's master Emergency Action Plan & Fire Safety program for additional information.

- Evacuation procedures and emergency escape route assignments.
- Procedures to be followed by employees who remain to operate critical operations before they evacuate.
- Procedures to account for all employees after an emergency evacuation have been completed.
- Rescue and medical duties for those employees who are to perform them.
- Means of reporting fires and other emergencies.
- Names or job titles of persons who can be contacted for further information or explanation of duties under the plan.

Before implementing the site EAP, a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees will be designated and trained. The plan will be reviewed with each employee covered by the plan at the following times:

- Initially when the plan is developed or upon initial assignment.
- Whenever the employee's responsibilities or designated actions under the plan change.
- Whenever the plan is changed.
- The plan will be kept at the worksite and made available for employee review

For small jobsites, the following plan has been established. A more detailed plan will be established for larger jobsites. Contact the Safety Coordinator for further information or explanation of duties under the plan.

For those employers with 10 or fewer employees the emergency action plan may be communicated orally to employees and the employer need not maintain a written plan. For more information regarding the company's EAP, please refer to the written Fire Safety & Emergency Action Plan program binder, which includes a copy of the OSHA standards.

It is Dowdy's responsibility to review their jobsites to address all potential emergency situations.

Fire:

The person who discovers the fire should immediately:

- Shout "fire, fire, fire" to alert others of the situation.
- If possible, remain at the meeting area unless instructed otherwise. Project Supervisor

Tornado:

When a warning is issued by sirens or other means, seek shelter inside. Stay away from outside walls and windows, duck to protect head and neck. Consider the following locations:

- Small interior rooms on the lowest floor and without windows,

- Hallways on the lowest floor away from doors and windows, and
- Rooms constructed with reinforced concrete, brick, or block with no windows.
- Do not stay in a mobile job trailer or vehicle during a tornado.

If you are caught outside during a tornado and there is no adequate shelter immediately available--

- Avoid areas with many trees.
- Crouch for protection beside a strong structure or lie flat in a ditch or low-lying area
- Protect your head with an object or with your arms.

If you're in a vehicle, try to drive to the closest sturdy shelter.

- If the tornado is visible, far away, and the traffic is light, you may be able to drive out of its path by moving at right angles to the tornado. Seek shelter in a sturdy building, or underground if possible.
- If flying debris occurs while you are driving, pull over and park.
    - If you can safely get noticeably lower than the level of the roadway, leave your car and lie in that area, covering your head with your hands.
    - Stay in the car with the seat belt on. Put your head down below the windows; cover your head with your hands and a blanket, coat, or another cushion if possible.
- Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.

Remain sheltered until the tornado threat is announced to be over.

Hurricane:

Once a hurricane watch has been issued:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Moor any boats securely, or move to a safe place if time allows.
- Continue to monitor local TV and radio stations for instructions.
- Move early out of low-lying areas or from the coast, at the request of officials.
- If you are on high ground, away from the coast and plan to stay, secure the building, moving all loose items indoors and boarding up windows and openings.
- Collect drinking water in appropriate containers.

Once a hurricane warning has been issued:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Leave areas that might be affected by storm tide or stream flooding.

During a hurricane:

- Remain indoors and consider the following:
    - Small interior rooms on the lowest floor and without windows,
    - Hallways on the lowest floor away from doors and windows, and
    - Rooms constructed with reinforced concrete, brick, or block with no windows.

Earthquake:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Keep away from overhead fixtures, windows, filing cabinets, and electrical power.
- Assist people with disabilities in finding a safe place.
- Evacuate as instructed by the Emergency Coordinator and/or the designated official.

Flood:

- Be ready to evacuate as directed designated official.
- Follow the recommended primary or secondary evacuation routes.
- If outdoors:
    - Climb to high ground and stay there.
    - Avoid walking or driving through flood water.
    - If car stalls, abandon it immediately and climb to a higher ground.

Medical:

- Contact the appropriate medical emergency phone number (see Emergency Contact list). Provide the following information:
    - Nature of emergency
    - Location (address, jobsite, building, etc.)
    - Caller's name and phone number
- Do not move the victim unless absolutely necessary.
- Alert personnel who have been trained in Frist Aid (see First Aid section) on the jobsite to provide assistance prior to the arrival of the professional medics.

Spill Prevention & Response:

Chemicals whether liquid, solid, or gas can spill or leak and be harmful to both personnel and the environment. All chemical substances must be stored in proper containers (preferably closed) and not exposed to storm water. Areas where chemicals may be used or stored must be maintained using good housekeeping best management practices. This includes, but is not limited to, clean and organized storage, labeling, and secondary containment where necessary. A proper spill kit will be maintained in an easily accessible area and will contain the appropriate supplies for materials that may be spilled.

In the event of a spill or chemical release, the following procedures will be initiated:

- Once discovered, all employees must leave the area immediately and notify their project supervisor.
- Consult the SDS for the spilled or leaking material to identify potential hazards, protective equipment required, and correct procedures for clean-up.
- Shut off ignition sources, flames, spark producing or heat producing equipment, and provide adequate ventilation.
- If the spill or leak is too big to handle with available equipment, an emergency response team should be notified.

♦ EMERGENCY INFORMATION

This form is to be filled out before the start of each new job.

Jobsite Information	
Jobsite Name:	
Address:	
Subdivision: (if applicable)	
Directions to Jobsite:	
Job Phone Contact:	
Emergency Contact Numbers/Directions	
Fire Department:	
EMS:	
Ambulance Service:	
Nearest Hospital:	
Address:	
Directions to Hospital:	

1.8 FIRST AID

Before a job starts, Dowdy will ensure that arrangements are in place to render prompt first aid treatment for injured employees either by providing for the availability of a trained first aid provider at the worksite or by ensuring that emergency treatment services are within reasonable proximity of the worksite. First aid refers to medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment and requires little technology or training to administer. First aid can include the following:

- Cleaning minor cuts, scrapes, or scratches
- Treating a minor burn
- Applying bandages and dressings
- The use of non-prescription medicine
- Draining blisters
- Removing debris from the eyes
- Massage
- The use of hot/cold therapy
- Drinking fluids to relieve heat stress

If medical attention is not available within 4 minutes, then a person who holds a valid certificate in first aid training from the American Red Cross or equivalent must be available on the jobsite at all times. The following employees have been designated as having adequate training to render first aid in the event that medical attention is not immediately available:

Proper equipment for prompt transportation of the injured person to a physician or hospital shall be provided. In the event that the victim is not able to be moved safely, contact the local ambulance service. Please refer to the Emergency Information page of this manual for local ambulance services and emergency contact information.

First aid kits on the jobsite will be kept in a weatherproof container with individual sealed packages for each type of item that has been determined to be appropriate for the environment in which they are to be used. First aid kits will be checked weekly by the jobsite project supervisor to assure that they are properly stocked and are available at the following locations:

Jobsite Trailers	Project Supervisor's Company Vehicle

At minimum, each first aid kit will contain the following:

Item	Size	Minimum Quantity
Absorbent compress	32 in^2	1
Adhesive bandages	1x3 inches	16
Adhesive tape	5 yards	1 roll
Antiseptic	0.5 g (0.14 fl oz.)	10 packets
Burn treatment	0.5 g (0.14 fl oz)	6 applications
Medical exam gloves	N/A	2 pair
Sterile pads	3x3 inches	4
Triangular bandage	40x40x56 inches	1
Bloodborne pathogens kit		1

Whenever employees may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body will be provided for immediate emergency use.

1.9 STOP WORK AUTHORITY

As part of our health & safety policy, it is the responsibility of every employee performing work for Dowdy to exercise this Stop Work Authority Policy whenever any person in the work area is at risk of injury. Dowdy strives to provide a culture where this Stop Work Authority program is exercised freely.

Key elements of this program include:

- Employees will receive Stop Work Authority training before initial assignment. Training will be documented including the employee's name, the dates of training, and the subject.
- Employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of health & safety may exist.
- Employees are responsible to initiate a Stop Work intervention when warranted and management is responsible to create a culture where Stop Work Authority is exercised freely
- Employees will not face any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority.
- This Stop Work Authority program will be executed in a positive manner.

The following procedure must be initiated whenever an unsafe condition is identified:

- The Stop Work Intervention will be initiated and coordinated through the project supervisor
- All affected personnel and supervision will be notified of the Stop Work Issue
- Once work has been stopped, no work may resume until all stop work issues and concerns have been adequately addressed.
- Work may resume only when it has been deemed safe to continue
- After the Stop Work Intervention has been initiated and closed, a follow-up will be completed to assess the effectiveness of the program.

Stop Work Issuance Documentation

- A Stop Work Issuance document will be completed to document the circumstances leading to the Stop Work Intervention.
- Stop Work reports will be reviewed by supervision in order to measure participation, determine quality of interventions and follow-up, trend common issues, identify opportunities for improvement, and facilitate sharing of learning

♦ STOP WORK REPORT

Section 1: Stop Work Issuance			
Location Of Operation		Date / Time	
Supervisor		Phone	
Individual Initiating Stop Work			
Individual Performing Work			
Work Operation Or Condition (Include Names Of Individuals Performing Work)			
Hazard (As Stated By Individual Initiating Stop Work)			
Additional Observations			

Section 2: Date / Time Informed			
Supervisor		Directorate ESH Coordinator	
Building / Area Manager		Associate Laboratory Director	
Division / Department Head		Chief Safety Officer	
Facility Manager			

Section 3: Follow-Up Action

Section 4: Restart Concurrence			
Supervisor		Date	
Owner Client		Date	

Section 5: Restart Authorization			
General		Date	

Section 6: Restart Release			
Owner Client		Date	

1.10 OSHA Multi-Employer Worksite Policy

On multi-employer worksites, more than one employer may be citable for a hazardous condition that violates an OSHA standard. The following explains how OSHA views multi-employer worksites.

- **The Creating Employer:** The employer that caused the hazardous condition that violates an OSHA standard. Employers must not create conditions that violate OSHA standards. Any employer that does so is citable, even if the only employees exposed are those of other employers at the site.
- **The Exposing Employer:** The employer whose own employees are exposed to the hazard. Exposure could be observed by an inspector or unobserved (but determined through witness statements or other evidence). In addition, citations may be issued when the possibility exists that an employee could be exposed to a hazard because of work patterns, past circumstances, or anticipated work requirements.
- **The Correcting Employer:** An employer who is engaged in a common undertaking as the exposing employer, and is responsible for correcting the hazard. This usually occurs where an employer is given the responsibility of installing and/or maintaining particular safety/health equipment or devices. The correcting employer must exercise reasonable care in preventing and discovering violations and meet its obligations of correcting the hazard.
- **The Controlling Employer:** An employer who has general supervisory authority over the worksite, and has the power to correct safety and health violations or require others to correct them. Control can be established by contract or, in the absence of explicit contractual provisions, by the exercise of control in practice. A controlling employer must exercise reasonable care to prevent and detect violations on the site. The extent of the measures that a controlling employer must implement to satisfy this duty of reasonable care is less than what is required of an employer with respect to protecting its own employees. This means that the controlling employer is not normally required to inspect for hazards as frequently or to have the same level of knowledge of the applicable standards or of trade expertise as the employer it has hired.

If the employer falls into one of these categories, they have obligations with respect to OSHA requirements. OSHA inspectors must determine if employer actions are sufficient to meet those obligations. The extent of the actions required of employers varies based on which category applies. Note that the extent of the measures that a controlling employer must take to satisfy its duty to exercise reasonable care to prevent and detect violations is less than what is required of an employer with respect to protecting their own employees.

1.11 OSHA Inspection Guidelines

Project Supervisor

- Ask to see the OSHA inspector(s) official government identification
- Contact the appropriate Company official immediately
- Name of the authorized Company official: _____
    - Office phone: _____ Extension: _____
    - Cell phone: _____
- Ask the OSHA inspector(s) to wait until the representative above has been reached.

Note: "The inspection shall not be delayed unreasonably to await the arrival of the employer representative. This delay should not exceed one hour." (OSHA Field Inspection Reference Manual, Section 6, Chapter II, A 2.b. (2))

Company Representative:

- Contact Lancaster Safety Consulting Inc. at (888) 403-6026 if you desire. A Lancaster Safety consultant can speak with the OSHA official(s) by phone for the purpose of providing an overview of your occupational health and safety program.
- After meeting the OSHA official(s), an opening conference (sit-down meeting) shall be held. The OSHA official(s) should explain the basis of the inspection, (Accident investigation, complaint, referral, follow-up, or planned local/national emphasis program). You should be advised if the inspection is partial or complete. The opening conference is an important opportunity for the employer to demonstrate the company's "Good Faith" efforts to provide a safe workplace. Discuss safety policies and practices with the compliance officer(s). Present the safety manuals. Emphasize the worker training verification logs, and your new hire training procedures. You should also present OSHA 300 logs, safety committee paperwork, and any other written materials that demonstrate your company's "Good Faith" efforts to comply with the applicable OSHA standards.
- Upon completion of the opening conference, accompany the OSHA inspector(s) on a walk-through inspection of your facility. (Advise the inspector(s) on any areas of your facility that have been predetermined as "trade secret" areas, if applicable). During this walk-through, the inspector(s) will advise you of potential health and safety violations. If possible, take immediate, corrective action to correct hazards while the inspector(s) are present. NOTE: The inspector(s) have the right to interview workers.
- After the walk-through, a closing conference shall be held. The inspector(s) will provide an overview of their findings, and advise you if citations are likely to be issued. (No citations are issued on the same day of an OSHA inspection. OSHA has up to 6-months to issue citations.) The closing conference provides the employer with another opportunity to demonstrate "good faith". Take notes on the inspector(s) closing comments.
- Contact Lancaster Safety Consulting, Inc. at **(888) 403-6026** upon conclusion of the inspection.

TAB 2: JOBSITE HAZARD PREVENTION

2.1 HAZARD IDENTIFICATION

A critical element of any effective safety and health program is a comprehensive worksite analysis that identifies current and potential hazards. This includes a thorough baseline survey to identify unsafe acts and conditions; a job hazard analysis; a self-inspection program, including a system for reporting identified hazards; accident and incident investigation; and analysis of injuries and illnesses.

In addition, OSHA requires that all employers must instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to their work environment to control or eliminate any hazards or other exposure to illness or injury. It is important that Dowdy review each jobsite scope to identify all hazards associated with the work to be performed. This should be completed prior to starting each job.

It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the Safety Coordinator to exercise common sense and appropriate expertise to accomplish these tasks. In order to assess the need for PPE and other controls, a survey of the jobsite should be performed. The purpose of the survey is to identify sources of hazards to workers and co-workers. At a minimum, consideration should be given to the following basic hazard categories.

- Impact
- Penetration
- Compression (roll-over)
- Chemical
- Heat
- Harmful dust
- Light (optical) radiation

During the survey the Safety Coordinator should observe:

- sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
- sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;
- types of chemical exposures;
- sources of harmful dust;
- sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
- sources of falling objects or potential for dropping objects;
- sources of sharp objects which might pierce the feet or cut the hands;
- sources of rolling or pinching objects which could crush the feet;
- layout of workplace and location of co-workers; and (j) any electrical hazards.
- In addition, injury/accident data should be reviewed to help identify problem areas.

♦ JOBSITE INSPECTION CHECKLIST

Project Name:	**Inspected By:**
Project Location:	**Date of Inspection:**

Manual Material Handling	**Yes**	**No**
Are mechanical devices being used in place of manual handling of material?		
Are ropes, slings, chains, hook, cables, and chokers in good condition?		
Proper staging of materials to minimize lifting and carrying?		
Rigging equipment inspected regularly and in good condition?		
Is the handling of bagged material limited to 50 lbs?		
Are carrying handles being used when a single worker is carrying sheeted materials?		
Housekeeping: Slips, Trips and Falls	**Yes**	**No**
Are walking and working surfaces clear and free of debris?		
Are waste and trash containers provided, and used?		
Is there regular removal of waste and trash from the containers?		
Does each worker clean up after themselves?		
Is adequate temporary lighting provided?		
Fire Protection and Prevention	**Yes**	**No**
Are all flammable liquid containers clearly identified?		
Are all flammable liquid containers UL of FM listed?		
Have proper storage practices for flammables been observed?		
Are extinguishers readily accessible and serviced regularly?		
Are hydrants clear and accessible for fire department personnel?		
Have gas cylinders been chained upright with valve caps securely fastened?		
Has there been proper segregation between flammable gasses?		
Proper labeling of full and empty cylinders?		
Are temporary heaters located at a safe distance from combustibles?		
Is ventilation adequate for temporary heaters?		
Electrical	**Yes**	**No**
Are all switch gear, panels, and devices that are energized marked and/or guarded?		
Lockout devices available/used on circuits that could become energized while being worked?		
Are all temporary circuits properly guarded and grounded?		
Are extension cords in continuous lengths without splice?		
Are GFCI's and/or Assured Equipment Grounding Conductor Program being used?		
If temporary lighting is provided, are bulbs protected against accidental breakage?		
Are working surfaces clear of cords so as not to create a tripping hazard?		
Are there a sufficient number of temporary outlets on the job site?		
Any visual signs of outlet overloading?		
Hazard Communication	**Yes**	**No**
Are safety data sheets available on the jobsite?		
Are all containers appropriately labeled with their contents and hazard warnings?		
Have all employees been trained on the specific chemicals in the workplace?		

Barricading	**Yes**	**No**
Are floor openings planked and secured or barricaded?		
Are direction signs used to inform the public of upcoming construction work?		
Is the sidewalk protection effective?		
Is a flag person provided to direct traffic when needed?		
Has the person been trained on how to direct traffic and the public?		
Are open excavations, road drop offs, manholes, uneven surfaces barricaded?		
Ladders	**Yes**	**No**
Is the proper ladder for the job being used?		
Are ladders in good condition (no missing or broken rungs)?		
Are there safety shoes/cleats on the bottom of ladders? Are they needed?		
Are non-conductive ladders available for use around live wiring?		
Are ladders tied-off at top or otherwise secured?		
Do side rails extend 36 inches above top of landing?		
Rungs or cleats uniformly spaced 10 - 14 inches apart?		
Are step ladders fully open when in use?		
Personal Protective Equipment	**Yes**	**No**
Is hearing protection available for personnel that may be exposed to noisy conditions?		
Is respiratory protection available to personnel and being used when conditions require them?		
Are safety harnesses, lifelines and shock absorbing lanyards available and being used?		
Are personnel using gloves when handling sharp or rough material?		
Where required, rubber gloves with protectors-insulators being used.		
Is lifesaving equipment available for work over or near water?		
Medical	**Yes**	**No**
Are first-aid kits available and properly stocked?		
Are all emergency phone numbers posted?		
Are employees aware of the address of the site/ capable of giving directions to emergency crew?		
Is anyone trained in first aid and CPR?		
Floor, Wall Openings, Stairways	**Yes**	**No**
Floor and roof openings guarded by guardrails and toe boards or a secured cover.		
Open-sided floors/platforms 6 feet or higher guarded are with railing and toe boards.		
Are stairs with four or more risers equipped with standard hand rail protection.		
Runways four feet or more above ground properly guarded.		
Anchor posts and framing capable of withstanding 200lb load in any direction.		
Tools: Hand and Power	**Yes**	**No**
Are tools free of any obvious physical damage?		
Are tools inspected for frayed or damaged cords?		
Are tools and cords properly grounded (ground pins are in good condition?		
Are double insulated tools in use and in good condition?		
Are the handles on all tools in good condition (not bent, splintered or broken)?		
Are all hoses on air or hydraulic tools in good condition?		
Are all shields and guards in place on the tools and in good condition?		
Operator qualified and instructed to use powder actuated tools?		

Welding and Cutting	**Yes**	**No**
Are non-combustible enclosures, (screens/shields) provided and used when welding?		
Welding goggles, gloves, and clothing being used by welder?		
Inspection for fire hazards after welding stops?		
Are gas cylinder, hoses, regulators, torches, torch tips and welding carts, in good condition?		

Hoist, Cranes and Derricks	**Yes**	**No**
Are cables and sheaves checked?		
Are slings, hooks, eyelets, chokes inspected?		
Are load capacities posted in cab?		
Are power lines at a safe distance?		
Do cranes have proper barricades around swing radius?		
Are crane inspection logs with crane?		

Excavation/Trenching	**Yes**	**No**
Have utility companies been notified of proposed excavation work?		
Are all tools, equipment, and shoring materials readily available prior to job start up?		
Are overhead utility lines noted and precautions taken to avoid contact with equipment?		
Is the spoil pile at least two feet from the edge of the excavation?		
Is the excavation inspected daily or more frequently when conditions could affect the soil?		
If needed, are barricades, stop logs, properly placed?		
Has soil classification been made by a competent person?		
Are excavations five feet or deeper correctly sloped, benched, shored or is a trench box used?		
Is a ladder or other means of egress provided in trenches or excavations six feet or deeper?		
When ladders are used, do they extend three feet above the surface and are they secured?		
Are shoring and shielding systems inspected daily by a competent person?		
Is the trench backfilled as soon a work is completed?		

Scaffolding	**Yes**	**No**
Are scaffold components visibly free of any physical damage? (no bent supports or bracing)		
Is scaffold properly erected with all pins and braces in place and locked?		
Are rolling scaffolds equipped with locking wheels?		
Are wheels locked when scaffold is in use?		
Is scaffold erected on a firm and substantial surface?		
Is planking of a scaffold grade?		
Planking in good condition and properly installed?		
Are toe boards and guardrails in place on scaffolds over 10 feet?		
Are workers on scaffolding protected from falling objects if overhead hazards exist?		
Ladder provided for access to scaffold work platform?		

Confined Space	**Yes**	**No**
Are all confined spaces properly labeled whether they should not be entered, permit required, or non-permit required along with proper barriers?		
Do you have a competent person onsite during entry?		

Have the rescue services been notified that a confined space entry is about to be made or do you have your own trained rescue team?		
Is atmospheric testing complete and the space is properly ventilated?		
Do all the entrants have proper training and knowledge of known hazards (oxygen deficiency, chemical inhalation etc.), including the signs of symptoms and results of exposure.		
Are all entrants wearing the proper protective equipment?		
If the confined space is deeper than 5 feet, is the retrieval equipment being utilized? (fall arrest harness, lanyards, and tripods)		
Is the confined space entry permit completed, signed off on, and posted?		
Is the atmosphere in the space being continually monitored?		
Are all confined spaces properly labeled whether they should not be entered, permit required, or non-permit required along with proper barriers?		

2.2 CONTROL OF HAZARDS

Where feasible, workplace hazards are prevented by effective design of the jobsite and/or supervision of the job. Where it is not feasible to eliminate such hazards, they must be controlled to prevent unsafe and unhealthy exposure. Once a potential hazard is recognized, the elimination or control must be done in a timely manner. These procedures include measures such as the following:

- Maintaining all extension cords and equipment in good working order.
- Ensuring all guards and safety devices are in place and working.
- Periodically inspecting the worksite for safety hazards.
- Establishing a medical program that provides applicable first aid to the site, as well as nearby physician and emergency phone numbers.
- Addressing any and all safety hazards with employees.
- In addition, Dowdy must address the hazards noted in the jobsite specific hazard assessment (see above)

Pinch Points - To avoid these pinch point injuries, appropriate attire should be worn while at work.

- Pants and sleeves should not be too long or too loose.
- Shirts should be fitted or tucked in.
- Avoid wearing loose and dangling jewelry.
- Tie back long hair and tuck braids and ponytails behind you or into your clothing.
- Wear the appropriate, well-fitting gloves for your job.

Before starting a task, take the time to plan out your actions and decide on the necessary steps to work safely. Give your work your full attention. Don't joke around, daydream, or try to multi-task on the job – most accidents occur when workers are distracted. Read and follow warning signs posted on equipment.

Moving Parts - Machinery can pose a hazard with moving parts, conveyors, rollers and rotating shafts. NEVER reach into a moving machine. Properly maintain and always use the machine and tool guards provided with your equipment; they act as barriers between the moving parts and your body. Don't reach around, under or through a guard and always report missing or broken barriers to your project supervisor. Turn equipment off and use lockout/tag out procedures before adjusting, clearing a jam, repairing, or servicing a machine.

Caught/Crush Hazards are not limited to machinery. Vehicles, powered doors, and forklifts can pose a crush hazard unless they have been blocked or tagged out. Never place your body under or between powered equipment unless it is de-energized. Doors, file drawers, and heavy crates can pinch fingers and toes. Take care where you place your fingers. Test the weight before lifting, carrying, and placing boxes; an awkward or heavy load can slip and pinch your hands or feet. Get help or use tools to move large and/or heavy items.

Struck-By - Other workers can avoid danger from moving equipment by staying alert, out of the way, and by never walking under, alongside moving equipment or near power take offs.

2.3 PERSONAL PROTECTIVE EQUIPMENT

PPE for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact."

Workers must use personal protective equipment (PPE) where necessary. However, personal protective equipment is not a substitute for taking all other safety measures. Workers still need to avoid hazards using administrative and engineering controls. Provided below is a summary of jobsite PPE requirements. For further details, see the company's written personal protective equipment program. This program includes a copy of the OSHA Personal Protective Equipment standards (29 CFR 1926 Subpart E).

Refer to the PPE Hazard Assessment.

HEAD PROTECTION

- Workers must wear hard hats when overhead, falling, or flying hazards exist or when danger of electrical shock is present.
- Inspect hard hats routinely for dents, cracks, or deterioration.
- If a hard hat has taken a heavy blow or electrical shock, you must replace it even when you detect no visible damage.
- Maintain hard hats in good condition, do not drill, clean with strong detergents or solvents, paint, or store them in extreme temperatures.

EYE AND FACE PROTECTION

- Workers must wear safety glasses or face shields for welding, cutting, nailing (including pneumatic), or when working with concrete and/or harmful chemicals.
- Eye and face protectors are designed for particular hazards so be sure to select the type to match the hazard.
- Replace poorly fitting or damaged safety glasses.

FOOT PROTECTION

- Shoes or boots with slip-resistant and puncture-resistant soles should be worn while on jobsites (to prevent slipping and puncture wounds).
- Safety-toed shoes are recommended to prevent crushed toes when working with heavy rolling equipment or falling objects.

Hand Protection

- High-quality gloves can prevent injury.
- Gloves should fit snugly.
- Glove gauntlets should be taped for working with fiberglass materials.
- Workers should always wear the right gloves for the job (for example, heavy-duty rubber for concrete work, welding gloves for welding).

Fall Protection

- Use a safety harness system for fall protection.
- Use body belts only as positioning devices—not for fall protection.

Safety Vests

- Hi-visibility safety vests must be used when in high-traffic areas or when working around heavy equipment.

2.4 FIRE PREVENTION

Fire prevention is an important part of protecting employees and company assets. Fire hazards must be controlled to prevent unsafe conditions. Once a potential hazard is recognized, it must be eliminated or controlled in a timely manner. At a minimum, the following fire prevention requirements must be met for each site:

- One conspicuously located 2A fire extinguisher (or equivalent) for every floor.
- One 2A conspicuously located fire extinguisher (or equivalent) for every 3000 ft2.
- No obstructions or combustible materials piled in the exits.

The objective of Dowdy's fire prevention plan is to prevent a fire from occurring in a workplace. It describes the fuel sources (hazardous or other materials) on-site that could initiate or contribute to the spread of a fire, as well as the building systems, such as fixed fire extinguishing systems and alarm systems in place to control the ignition or spread of a fire.

For further details, see the company's written personal Fire Safety program. This program includes a copy of the OSHA standards covering standards covering fire protection and prevention.

- Keep jobsites free from accumulation of combustible materials or weeds.
- Locate generators and internal combustion engines located away from combustible materials.
- Store no more than 25-gallons of combustible liquids on site at any one time.
- Provide fire extinguishers near all welding, soldering, or other sources of ignition.
- Keep fire extinguishers easy to see and reach in case of an emergency.
- Maintain a conspicuously located Class B fire extinguisher for each location more than 5-gallons of flammable liquids or gas are stored.
- Provide a minimum of one fire extinguisher per floor. Fire extinguishers should be located within 100 feet of employees for each 3,000 square feet of floor space.
- Don't store flammable or combustible materials in areas used for stairways or exits.
- Avoid spraying of paint, solvents, or other types of flammable materials in rooms with poor ventilation. Build-up of fumes and vapors can cause explosions or fires.
- Store gasoline and other flammable liquids in a safety can outdoors or in an approved storage facility.
- Don't store LP gas tanks inside buildings or enclosed spaces.
- Keep temporary heaters at least 6 feet away from any LP gas container.
- Ensure that leaks or spills of flammable or combustible materials are cleaned up promptly.
- Secure all LP & other gas containers to prevent tip-over.

CLASSES OF FIRE

Fires are classified based on the types of fuel (combustibles) that are involved in the fire. The type of fire extinguisher that can be used to fight a fire is dependent on the types of combustibles involved.

Class A - combustibles include common combustible materials (wood, paper, cloth, rubber, and plastics) that can act as fuel and are found in non-specialized areas such as offices. Water, multi-purpose dry chemical (ABC), and halon 1211 are approved fire extinguishing agents for Class A combustibles.

Class B - Class B combustibles include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers), flammable gases, and flammable aerosols.

Water should not be used to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude the air around the burning liquid. The following fire-extinguishing agents can be used on for Class B combustibles: carbon dioxide & multi-purpose dry chemical (ABC).

Class C - Class C fires involve electrical equipment, such as appliances, wiring, circuit breakers and outlets. Never use water to extinguish class C fires since the risk of electrical shock is far too great!

Class D - Class D fires involve combustible metals, such as magnesium, titanium, potassium, and sodium.

Fire Extinguishers

DO NOT attempt to fight a fire in the following situations:

- You have ANY DOUBT that you can extinguisher the fire safely
- The fire is spreading beyond the place where it started
- The fire could spread between you and the nearest fire exit (ALWAYS keep your back to the nearest fire exit!)
- You do not have an adequate number of fire extinguishers
- A flammable liquid is burning and not physically contained

When using a fire extinguisher to facilitate safe exit, use the P-A-S-S Method:

1. **PULL**... Pull the pin. This will also break the tamper seal.
2. **AIM**... Aim low, pointing the extinguisher nozzle (or its horn or hose) at the base of the fire. Note: Do not touch the plastic discharge horn on CO2 extinguishers, it gets very cold and may damage skin.
3. **SQUEEZE**... Squeeze the handle to release the extinguishing agent.
4. **SWEEP**... Sweep from side to side at the base of the fire until it appears to be out. Watch the area. If the fire re-ignites, repeat steps 2 - 4.

2.5 HOUSEKEEPING & SITE ACCESS

Good housekeeping in the workplace is more than an attempt to keep things looking presentable. It's also an important safety issue. OSHA requires that housekeeping for all jobsites during the course of construction, alteration, or repairs. A messy workplace is not only annoying and inefficient; it creates a number of potential safety hazards:

- Tripping and falling over equipment that doesn't belong on the floor, such as machines, tools, cords, hoses, scrap, and boxes.
- Getting hit by or bumping into objects: For instance, tools left perched on the edge of a roof, shelf or table, or a drawer that's left open.
- Punctures and splinters from sharp tools left lying around, or from rough pieces of wood or other sharp objects.
- Serious electrical hazards such as cords left near heat or water.
- Fire hazards, including flammable liquids or scrap left near ignition sources; dust or lint on machinery; or materials blocking fire exits or equipment.
- Chemical exposure or spills when chemical containers are left open.
- Chemical reactions from open chemical container contents exposed to other chemicals, water, or air.
- Potential fatalities if obstacles inhibit an emergency evacuation
- Potential injuries from falling objects.

The best way to prevent these dangers is assign a specific storage place for each item, and then insist that every item be kept in its assigned place whenever it is not in use.

Some basic housekeeping requirements include the following:

- Assign a specific storage place for each item, and then insist that every item be kept in its assigned place whenever it is not in use.
- Form and scrap lumber with protruding nails, and all other debris must be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.
- Keep all walkways and stairways clear of trash/debris and other materials such as tools and supplies to prevent tripping.
- Keep boxes, scrap lumber and other materials picked up. Put them in a dumpster or trash/debris area to prevent fire and tripping hazards.
- Provide enough light for workers to see and to prevent accidents.
- Containers should be provided for the collection and separation of waste, trash, oily and used rags, and other refuse.
- Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. must be equipped with covers.
- All garbage and other waste should be disposed of at frequent and regular intervals.

2.6 General Waste Management

Before starring work on a job, all project wastes, trash, and/or scrap must be taken into consideration. The waste that will be generated must be estimated and the need for containers and waste removal, if necessary, can be determined.

Waste materials must be properly stored and handled to minimize the potential for an accident or injury due to excessive clutter, the potential for a spill, or impact to the environment. During outdoor actives, receptacles must be covered to prevent dispersion of waste materials and to control potential runoff.

Before a job, employees must be instructed on the proper disposal method for wastes, including general instruction on disposal of non-hazardous wastes, trash or scrap metals. If wastes generated are classified as hazardous, employees must be trained to ensure proper disposal.

To minimize environmental impact, recycling is encouraged. All recyclable wastes should be segregated to ensure opportunities for reuse or recycling.

2.7 STAIRWAYS AND LADDERS

Stairways and ladders are pretty uncomplicated devices. But unfortunately, they cause more than their share of accidents. These accidents happen when people select the wrong ladder for the job, don't inspect it before using it, or get careless about how they use it. The basics of stairway and ladder safety are a combination of a little bit of knowledge and a lot of common sense.

OSHA is quite specific about design, inspection, and use of stairways and ladders. Regulations covering these areas are covered under 29 CFR 1926 Subpart X. These regulations describe everything from how far apart ladder rungs should be (1 foot) to specific "do's and don'ts" when you're working on stairways and ladders. You don't have to be concerned about design, but you should know what to look for to determine if stairways and ladders are safe to use.

Provided below is a summary of safety items covering safe stairway and ladder use.

- Install permanent or temporary guardrails on stairs before stairs are used for general access between levels to prevent someone from falling or stepping off edges.
- Do not store materials on stairways that are used for general access between levels.
- Keep hazardous projections such as protruding nails, large splinters, etc. out of the stairs, treads or handrails
- Report and correct any slippery conditions on stairways before they are used.
- Keep manufactured and job-made ladders in good condition and free of defects.
- Inspect ladders before use for broken rungs or other defects so falls don't happen. Discard or repair defective ladders.
- Secure ladders near the top or at the bottom to prevent them from slipping and causing falls.
- When you can't tie the ladder off, be sure the ladder is on a stable and level surface so it cannot be knocked over or the bottom of it kicked out.
- Place ladders at the proper angle (1 foot out from the base for every 4 feet of vertical rise).
- Extend ladders at least 3 feet (3 rungs) above the landing to provide a handhold or for balance when getting on and off the ladder from other surfaces.
- Do not set up a ladder near passageways or high traffic areas where it could be knocked over.
- Use ladders only for what they were made and not as a platform, runway, or as scaffold planks.
- Always face the ladder and maintain 3 points of contact when climbing a ladder.

2.8 Fall Protection in Construction

Though it's obvious that anyone who works high above the ground runs the risk of falling, a surprising number of workers seem to think it can't happen to them. This is a particular problem in construction, where several workers die each day from falls and many more are injured.

The workers at a specific site may change from day to day, and each site may have workers and equipment from more than one company. In addition, construction work often takes place outdoors, where weather can add to the hazards.

Floor and Wall Openings

- Install guardrails around openings in floors and across openings in walls when the fall distance is 6 feet or more. Be sure the top rails can withstand a 200-lb load.
- Construct guardrails with a top rail approximately 42 inches high with a mid-rail about half that high at 21 inches.
- Install toe boards when other workers are to be below the work area.
- Cover floor openings larger than 2x2 inches with material to safely support the working load.

Alternatives

- Use other fall protection systems such as slide guards, roof anchors or alternative safe work practices when a guardrail system cannot be used.
- Wear proper slip-resistant shoes or footwear to lessen slipping hazards.
- Train workers in safe work practices before performing work on foundation walls, roofs, trusses or before they perform exterior wall erections and floor installations.

Reinforcing Steel (Rebar)

- All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.
    - Guard all protruding ends of steel rebar with rebar caps or wooden troughs, or
    - Bend rebar so exposed ends are no longer upright.
- When employees are working at any height above exposed rebar, fall protection/ prevention is the first line of defense against impalement.

Aerial Lifts

- Only trained persons are permitted to operate an aerial lift.
- Lift controls must be tested daily before using the lift, to ensure that they are in good working condition.
- Never belt-off to an adjacent pole, structure or equipment while working from an aerial lift.
- Always stand firmly on the floor of the basket, do not sit or climb on the edge of the basket, or use planks, ladders or other devices for a work position.

- Fall protection equipment must be worn and attached to the boom or basket when working from an aerial lift.
- Boom and basket load limits specified by the manufacturer must not be exceeded.
- Brakes and positioning outriggers, when used, must be set on pads or a solid surface.
- Install wheel chocks before using an aerial lift on an incline.
- Control functions must be plainly marked.

Working Above or Adjacent to Water

When working over or adjacent to water, all jobsites shall adhere to the following guidelines:

- Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jackets or buoyant work vests.
    - When continuous fall protection is used (without exception) to prevent employees from falling into the water, the drowning hazard has effectively been removed, and life jackets or buoyant work vest are not needed.
    - Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.
- Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet.
- At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.
    - The lifesaving skiff needs to be located on the side of the river that is nearest to the construction being performed.
    - Those who are to operate the lifesaving skiff must have an understanding as to how the boat operates.
    - The lifesaving skiff shall be inspected regularly to assure proper function of the lifesaving skiff in the event the lifesaving skiff is needed.
- The use of safety nets as fall protection during marine construction activities usually will not eliminate the drowning hazard. In many cases (such as in bridge construction) there is a risk that materials heavy enough to damage the nets may fall. In such cases the personal flotation device, ring buoys, and lifesaving skiffs are still required.
- Employees working over or near water must be adequately trained in their responsibilities and the safe work practices associated with this task. Training will be provided prior to performing job duties requiring work near water, conducted annually, and maintained in a centralized location.
- A pre-task plan is required to be completed and signed by all members of the crew that may be working over or near water before the work may begin.
- Employees who will be performing work over or near water, where the danger of drowning exists, are not permitted to work alone at any time.

- Working under the influence of alcohol or illegal drugs may impair an employee's ability to make good judgment, therefore is the use of these substances are strictly prohibited
- Personal weapons such as firearms, pocket knives, tasers, etc. are strictly prohibited from the job site.

2.9 Fall Protection Systems when Working From Heights

All fall protection equipment and systems will meet the requirements of applicable ANSI, ASTM, or OSHA requirements. The requirements for specific fall protection systems are outlined below.

Guardrail Systems

- Top rail 42 inches above the walking/working level.
- Mid-rail (or suitable alternative) 21 inches above walking/working level.
- Ability to withstand a force of at least 200 pounds in any outward or downward direction.
- Surfaced as to prevent injury from puncture, laceration, or snagging of clothing.
- Designed so as not to constitute a projection hazard.
- Inspected at regular intervals.

Safety Net Systems

- Installed as close as practicable under the walking/working surface, but in not more than 30 feet (9.1 meters) below such level.
- Extend outward from outermost projection of the work surface.
- Installed with sufficient clearance under them to prevent contact with the surface due to impact on the net.
- Capable of absorbing an impact force equal to that produced by the drop test specified in OSHA's fall protection standard.
- Inspected at least weekly for wear, damage, and/or deterioration defective components removed.
- Mesh opening not to exceed 36 square inches (230 square centimeters) nor be longer than 6 inches (15 centimeters) on any side.

Personal Fall Arrest Systems

A personal fall arrest system is one option of protection that OSHA requires for workers on construction sites who are exposed to vertical drops of 6 feet or more.

- Connectors, D-rings, snap-hooks, lanyards, lifelines and anchorage are designed, constructed and installed according to specifications addressed in OSHA's fall protection standard.
- Limit maximum arresting force on an employee to 900 pounds when used with a body belt (as a positioning device), 1,800 pounds when used with a body harness.
- Rigged such that employees can neither free fall more than 6 feet (1.8 meters) nor contact any lower level.

- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters); and
- Have sufficient strength to withstand twice the potential impact energy of a person who is free falling a distance of 6 feet (1.8 meters) or the free fall distance permitted by the system, whichever is less.
- The anchorage connector must be attached to a suitable and strong attachment point
- Body belts and related components may be used only for employee positioning and not for fall protection.
- Personal fall arrest systems and components subject to impact loading shall be removed from service until inspected and approved for use by the Competent Person.
- In the event of a fall, employees will be promptly rescued.
- Personal fall arrest systems and their components must be inspected prior to each use for wear, damage and/or deterioration with defective components removed.
- Never attach to a guardrail system.
- Components of a fall arrest system must be used only for employee fall protection or positioning and not to hoist materials.

Harness Inspection

- Belts and Rings:
    - For harness inspections begin at one end, hold the body side of the belt toward you, grasping the belt with your hands six to eight inches apart. Bend the belt in an inverted "U." Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Check D-rings and D-ring metal wear pads for distortion, cracks, breaks, and rough or sharp edges. The D-ring bar should be at a 90-degree angle with the long axis of the belt and should pivot freely.
    - Attachments of buckles and D-rings should be given special attention. Note any unusual wear, frayed or cut fibers, or distortion of the buckles. Rivets should be tight and un-removable with fingers. Body side rivet base and outside rivets should be flat against the material. Bent rivets will fail under stress.
    - Inspect frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut or burnt stitches will be readily seen.
- Tongue Buckle:
    - Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Rollers should turn freely on the frame. Check for distortion or sharp edges.
- Friction Buckle:
    - Inspect the buckle for distortion. The outer bar or center bars must be straight. Pay special attention to corners and attachment points of the center bar.

Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures detailed below.

- **Hardware**
  - Snaps: Inspect closely for hook and eye distortion, cracks, corrosion, or pitted surfaces. The keeper or latch should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper rocks must provide the keeper from opening when the keeper closes.
  - Thimbles: The thimble (protective plastic sleeve) must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble should be free of sharp edges, distortion, or cracks.
- **Lanyards**
  - Steel Lanyards: While rotating a steel lanyard, watch for cuts, frayed areas, or unusual wear patterns on the wire. The use of steel lanyards for fall protection without a shock-absorbing device is not recommended.
  - Web Lanyard: While bending webbing over a piece of pipe, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Due to the limited elasticity of the web lanyard, fall protection without the use of a shock absorber is not recommended.
  - Rope Lanyard: Rotation of the rope lanyard while inspecting from end to end will bring to light any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period. When a rope lanyard is used for fall protection, a shock-absorbing system should be included.
- **Shock-Absorbing Packs**
  - The outer portion of the shock-absorbing pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to the D-ring, belt or lanyard should be examined for loose strands, rips and deterioration.

Visual Indication of Damage to Webbing and Rope Lanyards

- **Heat** - In excessive heat, nylon becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed and should not be used above 180 degrees Fahrenheit.
- **Chemical** - Change in color usually appears as a brownish smear or smudge. Transverse cracks appear when belt is bent over tight. This causes a loss of elasticity in the belt.
- **Ultraviolet Rays** - Do not store webbing and rope lanyards in direct sunlight, because ultraviolet rays can reduce the strength of some material.
- **Molten Metal or Flame** - Webbing and rope strands may be fused together by molten metal or flame. Watch for hard, shiny spots or a hard and brittle feel. Webbing will not support combustion, nylon will.
- **Paint and Solvents** - Paint will penetrate and dry, restricting movements of fibers. Drying agents and solvents in some paints will appear as chemical damage.

Cleaning of Equipment

Basic care for fall protection safety equipment will prolong and endure the life of the equipment and contribute toward the performance of its vital safety function. Proper storage and maintenance after use is as important as cleaning the equipment of dirt, corrosives or contaminants. The storage area should be clean, dry and free of exposure to fumes or corrosive elements.

- **Nylon and Polyester** - Wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion. Then wipe the belt dry with a clean cloth. Hang freely to dry but away from excessive heat.
- **Drying** - Harness, belts and other equipment should be dried thoroughly without exposure to heat, steam or long periods of sunlight. System consists of:
    - Anchorage Connector
    - Shock Absorbing Lanyard
    - Full Body Harness

Positioning Device Systems

- Rigged such that an employee cannot fall more than 2 feet (.9 meters).
- Secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater.
- Connectors, D-rings, and snap-hooks are designed, constructed, and installed according to specifications addressed in OSHA's fall protection standard.
- Inspected prior to each use to wear, damage and/or deterioration with defective components removed.

Warning Line Systems

- Erected around all sides of the roof work area.
- Erected not less than 6 feet (1.8 meters) from roof edge when mechanical equipment is not being used.
- Points of access, materials handling areas, storage areas and hoisting areas shall be connected to work area by an access path formed by two warning lines.
- Consist of ropes, wires or chains and supporting stanchions erected according to OSHA's fall protection standard.
- No employee allowed in area between roof edge and warning line without fall protection or dedicated safety monitor.
- Mechanical equipment on roofs used or stored only in areas where employees are protected by a warning line system, guardrail system or personal fall arrest system.

Controlled Access Zones

- Defined by a control line or other means that restricts access and flagged at 6-foot intervals for visibility.
- Control line to have a minimum breaking strength of 200 pounds.
- All employees working in a CAZ must comply promptly with fall hazard warnings from safety monitors.

Safety Monitoring Systems

- Before using a safety monitoring system, a company official must be notified.
- A Competent Person will be designated to monitor the safety of other employees.
- The Competent Person must not have any other responsibilities that could draw attention away from the safety monitoring duties. Duties include:
    - Recognizing fall hazards
    - Warn employees working under unsafe conditions or performing unsafe acts
    - Remain on same working surface and within visual sighting distance of employees
    - Remain close enough to employees communicate orally

Covers

- Secured when installed so as to prevent accidental displacement by wind, equipment, or employees
- Capable of supporting at least twice the maximum load to which it is exposed (i.e., vehicles, equipment, workers)
- Color-coded or marked with the work "HOLE" or "COVER" to provide warning of the hazard

♦ FALL PROTECTION CHECKLIST

Construction Work Six or More Feet High Requires:

- ❑ Walking/working surfaces approved to hold workers safely
- ❑ Employees trained to recognize fall hazards and use protective systems
- ❑ Fall protection systems for workers
- ❑ Procedures to prevent objects from falling.

Standard Fall Protection Systems:

1. Guardrails:

- ❑ Constructed at least 42 inches in height
- ❑ Mid-rails and screens are located where there is no wall higher than 21 inches
- ❑ Able to withstand force of at least 200 pounds
- ❑ Construction materials that can't puncture skin or snag clothes
- ❑ No steel or plastic bands for top or middle rails.

2. Safety Nets:

- ❑ 30 feet or less below elevated walking/working surface
- ❑ Strong rope border, with mesh openings smaller than 36 inches-square or 6 inches per side
- ❑ Strength certified or tested by dropping a 400 pound, 30-inch diameter bag of sand
- ❑ Inspected weekly for wear, damage, and deterioration
- ❑ Removed from use if not in top condition.

3. Personal Fall Arrest System:

- ❑ Body harness or belt connected to fixed anchor by lanyard, lifeline, or deceleration device.
- ❑ Prevent contact with lower level and more than six feet of free fall.
- ❑ Positioning device style used on elevated vertical surface work.
- ❑ Not used to hoist materials.
- ❑ Inspected before use. Not used if inspection reveals:
  - ❑ Cuts, tears, abrasions, deterioration, undue stretching
  - ❑ Mold
  - ❑ Distorted hooks, faulty hook springs
  - ❑ Nonfunctioning parts
  - ❑ Loose or damaged mountings
  - ❑ Tongues that don't fit shoulder of buckles
  - ❑ Contact with fire, acid, or other corrosives
  - ❑ Alterations or additions that limit effectiveness.
- ❑ Self-locking, self-closing connectors preferred

- ❑ Anchor can support at least 5,000 pounds per attached employee
- ❑ Can't connect to platform supports or suspension points, guardrails, or hoists
- ❑ Avoid connecting to rough or sharp edge; tie off to "H" or "I" beam only with webbing lanyard or lifeline with wire core
- ❑ Must not connect with one-and-one sliding hitch knot; avoid any hitch knot
- ❑ Use only when rescue system is in place.

Acceptable Fall Protection for Special Defined Situations:

1. Warning Line System:

- ❑ Lines placed at least six feet from and all-around roof edge
- ❑ Used only with guardrail, safety net, and/or personal fall arrest systems or safety monitoring system.

2. Controlled Access Zone:

- ❑ Area with unprotected edge set off by rope, wire, or tape lines
- ❑ Entry by authorized personnel only
- ❑ Lines run length of unprotected edge, at least 6 feet in (10 feet for overhand bricklaying) and connected to guardrail or wall at ends.

3. Safety Monitoring System:

- ❑ Used when the three standard protections are not feasible or would create greater hazard and/or with warning line system
- ❑ Places monitor on elevated surface with workers, close enough to be heard
- ❑ Monitor identifies hazards and warns workers.

4. Hole Covers:

- ❑ Identified by name or color.
- ❑ Secure enough not to move accidentally.
- ❑ Strong enough for twice the weight they might have to hold.

5. Fall Protection Plan:

- ❑ Site-specific, written by competent employer-authorized person
- ❑ Last-resort option for leading edges, precast concrete erection, or residential construction
- ❑ Explains why the three standard protections are not feasible or could create greater hazard
- ❑ Explains procedures/equipment to reduce or eliminate fall hazard
- ❑ Creates controlled access zones; names employees who can enter
- ❑ Explains when and how safety monitoring system will be used.

6. Roof Work

- ❑ Safe access and egress paths have been established.
- ❑ Ladders are tied off and properly secured
- ❑ The risk for falling objects has been assessed.

- ❑ Any overhead obstructions have been identified.
- ❑ Existing overhead services crossing or adjacent to the work area have been considered.
- ❑ Ducts or air outlets on the roof have been considered and any hazards from fumes have been mitigated.
- ❑ Barriers/edge protection are in place to prevent people/materials from falling.
- ❑ If necessary, guard rails & toe boards/anchorage points are provided for safety harnesses to prevent falls over the edge of the roof.
- ❑ Necessary PPE is available and is being worn by employees. Note PPE in use: _____

General Fall Prevention Precautions:

- ❑ Wear sturdy shoes with nonskid soles and buckles, snaps, or short laces.
- ❑ Avoid long, loose pants.
- ❑ Walk slowly, don't run.
- ❑ Watch where you're going
- ❑ Clean up all spills promptly.
- ❑ Take special care on wet or icy surfaces.
- ❑ Carry no more materials than you can see over.
- ❑ Keep only needed materials on aboveground work areas.
- ❑ Keep materials as far away from the edge as possible.
- ❑ Dispose of trash regularly and properly.
- ❑ Stay away from edges.
- ❑ Obey all verbal warnings, signs, and barriers.
- ❑ All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.
- ❑ Weather conditions are appropriate (no rain, snow, ice, etc.)

Protection From Falling Objects:

- ❑ Wear hard hat when objects might fall from above.
- ❑ Install guardrails, screens, or toeboards at least 3 1/2 inches high, plus screen or panel if nearby materials are taller than toeboard, OR
- ❑ Install canopy that will not collapse or be penetrated by falling objects, and place objects where they can't accidentally go over edge, OR
- ❑ Install barricades in area where objects could fall, keep employees out of barricaded area, and place overhead objects where they can't accidentally go over edge.
- ❑ Place only stable and self-supporting objects near roof edge.
- ❑ Store mortar and masonry equipment at least four feet from edge.
- ❑ Remove mortar scrap regularly.
- ❑ Keep roofing materials at least six feet from edge if there are no guardrails.

2.10 SCAFFOLDS AND OTHER WORK PLATFORMS

A scaffold is a temporary elevated platform with a supporting structure. Scaffolds (and the ropes, hoists, and other equipment used with them) must meet a lot of OSHA specifications to assure their strength and safety. Like any other equipment, however, scaffolds can't depend entirely on good design and construction to be safe. They also must be used and maintained correctly and safely. Though employees are not expected to know all the details of proper scaffold design, they should be familiar with the basics of scaffold safety.

Working on a platform above the ground (sometimes hundreds of feet above the ground) obviously presents some hazards. One construction industry review found that scaffold accidents accounted for about 9 percent of the industry's annual fatalities and about 2 percent of annual injuries. That study identified several common causes of scaffold injuries and deaths:

- The scaffold planking or support gave way.
- The employee slipped.
- The employee was hit by a falling object.

OSHA's scaffold standards for the construction industry are covered under 29 CFR 1926 Subpart L. Revised in the late 1990s to reflect the industry's relatively high rate of serious scaffold accidents, the construction regulations go into even more detail about scaffold design and placement. They also cover scaffold inspections, guardrail and fall protection systems, and training requirements for workers.

All OSHA regulations for scaffolds make it clear that a scaffold is not just some pieces of wood on a rope. No matter what its type, a scaffold has to be strong enough for its load. It also must be designed so that workers won't fall off and workers below it won't be hit by a falling scaffold, tools, materials, etc.

Another hazard that can affect scaffolds is electrical shock or electrocution. OSHA's construction standard includes information on how far to keep a scaffold from energized power lines. It's always wise to check before using a scaffold that there's no danger of the scaffold, the tools on it, or you risking shock or electrocution from power sources.

Summarized below are safe work practices to be followed when working on or with scaffolds. A checklist for reviewing scaffold conditions is provided at the end of this section.

- Provide safe access to get on and off scaffolds and work platforms. Use ladders safely (see Stairways and Ladders). Do not use scaffolding as a ladder.
- Keep scaffolds and work platforms free of debris. Keep tools and materials as neat as possible on scaffolds and platforms. These practices will help prevent materials from falling and workers from tripping.
- Erect scaffolds on firm and level foundations.
- Finished floors will normally support the load for a scaffold or work platform and provide a stable base.
- Place scaffold legs on firm footing and secure from movement or tipping, especially surfaces on dirt or similar surfaces.
- Erect and dismantle scaffolds only under the supervision of a competent person.

- Each scaffold must be capable of supporting its own weight and 4 times the maximum intended load.
- The competent person must inspect scaffolds before each use.
- Use manufactured base plates or mud sills made of hardwood or equivalent to level or stabilize the footings. Don't use blocks, bricks, or pieces of lumber.
- DO NOT:
    - Use damaged parts that affect the strength of the scaffold
    - Allow employees to work on scaffolds when they are feeling weak, sick, or dizzy
    - Work from any part of the scaffold other than the platform
    - Alter the scaffold
    - Move a scaffold horizontally while workers are on it, unless it is a mobile scaffold and the proper procedures are followed
    - Allow employees to work on scaffolds covered with snow, ice, or other slippery materials
    - Erect, use, alter, or move scaffolds within 10 feet of overhead power lines
    - Use shore or lean-to scaffolds
    - Swing loads near or on scaffolds unless using a tag line
    - Work on scaffolds in bad weather or high winds unless the competent person determines that the conditions are safe
    - Use ladders, boxes, barrels, or other makeshift contraptions to raise the work height
    - Let extra material build up on the platforms
    - Put more weight on a scaffold than it is designed to hold

PLANKING

- Fully plank a scaffold to provide a full work platform or use manufactured decking. The platform decking and/or scaffold planks must be scaffold-grade and must not have any visible defects.
- Keep the front edge of the platform within 14 inches of the face of the work. Extend planks or decking material at least 6 inches over the edges or cleat them to prevent movement. The work platform or planks must not extend more than 12 inches beyond the end supports to prevent tipping when workers are stepping or working.
- Be sure that manufactured scaffold planks are the proper size and that the end hooks are attached to the scaffold frame.

SCAFFOLD GUARDRAILS

- Guard scaffold platforms that are more than 10 feet above the ground or floor surface with a standard guardrail. If guardrails are not practical, use other fall protection devices such as safety harnesses and lanyards.
- Place the top rail approximately 42 inches above the work platform or planking with a mid-rail about half that high at 21 inches.
- Install toe boards (4-inch) when other workers will be below the scaffold.

♦ SCAFFOLDING CHECKLIST

Date of Inspection: _____ Time: _____

Location of Scaffold: _____

Inspected By (Designated Competent Person): _____

	Scaffolding Checklist	Yes	No	N/A
1	Has this work location been examined before the start of work operations and have all of the appropriate precautions been taken? (checking for overhead objects, falling or tripping hazards, uneven ground, etc.)	☐	☐	☐
2	Will fall protection be required for this scaffolding? (fall arrest harness, guardrails, etc.) • Please explain the fall protection needs: _____	☐	☐	☐
3	Has the scaffold been setup according to manufacturer's instructions?	☐	☐	☐
4	Does scaffold conform to the 4 to 1 base to height ratio requirement?	☐	☐	☐
5	Scaffolds that do not meet the 4 to 1 base to height ratio must be secured to the structure by the use of ties (to include ties, guying, bracing or equivalent means)	☐	☐	☐
6	Are scaffolds erected on adequate firm footings?	☐	☐	☐
7	Is scaffold plumb and braced to prevent swaying or displacement?	☐	☐	☐
8	Has the scaffold been constructed and loaded in accordance with the design of a qualified person with a safety factor of 4 to 1?	☐	☐	☐
9	Are all platforms at least 18 inches wide?	☐	☐	☐
10	Are platforms that are less than 18 inches protected by guardrail systems or will all employees have personal fall arrest systems?	☐	☐	☐
11	Are open sides of scaffold less than 14 inches from the work face?	☐	☐	☐
12	Where open sides of scaffolds are more than 14 inches will fall protection systems be used by all employees?	☐	☐	☐
13	Are all platform units cleated, restrained by hooks or equivalent means, or extending over the center line of their supports by at least 6 inches?	☐	☐	☐
14	Has the scaffold platform been fully planked with less than 1" between planks or between planks and the uprights?	☐	☐	☐
15	Has safe access been provided for all scaffold platforms that are more than 2 feet above or below the point of access?	☐	☐	☐
16	Have cross braces been prohibited as a means of access?	☐	☐	☐
17	Are ladders positioned as not to tip the scaffold?	☐	☐	☐
18	Is the bottom rung less than 24 inches above the supporting surface?	☐	☐	☐
19	Have falling object hazards been eliminated according to 1926.451(h)?	☐	☐	☐
20	Have toeboards been installed to prevent falling objects?	☐	☐	☐
21	Where required, have screens been installed to protect employees from falling objects?	☐	☐	☐
22	Are toeboards at least 3-1/2 inches in height?	☐	☐	☐

2.11 JOB HAZARD ANALYSIS

Hazards analysis can get pretty sophisticated and go into much detail. Where the potential hazards are significant and the possibility for trouble is quite real, such detail may well be essential. However, for many processes and operations — both real and proposed — a solid look at the operation or plans by a variety of affected people may be sufficient. The easiest and possibly most effective method is using the step-by-step process of the Job Hazard Analysis (JHA), which is sometimes referred to as a Job Safety Analysis (JSA).

Job Hazard Analysis (JHA) is based on the following ideas:

- A specific job or work assignment can be separated into a series of relatively simple steps.
- Hazards associated with each step can be identified.
- Solutions can be developed to control each hazard.

Job Hazard Analysis is a relatively simple process that involves the following four basic steps:

- Select the job to be analyzed. In performing JSA, the term "job" is used to describe a single task or operation workers do as part of their occupation; it is a definite sequence of steps or separate activities that lead to the completion of a work goal.
- Separate the job into its basic steps.
- Identify the hazards associated with each step.
- Control each hazard.

Through this process, responsible officials can determine the safest, most efficient manner of performing a given job. JHA systematically carries out the basic strategy of accident prevention: The recognition, evaluation, and control of hazards.

Once a JHA has been developed, it is prepared in chart form, listing the basic job steps and the corresponding hazards and safe procedures for each step. A completed JHA chart can then be used as a training guide for employees; it provides a logical introduction to the work, its associated hazards, and the proper and safe procedures to be followed.

For experienced workers, a JHA chart is reviewed periodically to maintain a safety-awareness on the job and to keep abreast of current safety procedures. Review is also useful for employees who have been assigned new or infrequent tasks.

♦ JOB HAZARD ANALYSIS FORM

Job Task: _____ **Date:**

Job Location: _____ **Prepared by:** _____

Supervisor: _____ **Reviewed by:** _____

Approved by:

Required and/or Recommended Personal Protective Equipment:

☐ Hard Hat ☐ Safety Glasses ☐ Steel Toed Boots ☐ High-Vis Vest ☐ Fall Arrest Harness

☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____

Sequence of Basic Job Steps *Beware of being too detailed. Record only the information needed to describe each job action. Rule of thumb, no more than 10 steps/tasks being evaluated.*	**Potential Accidents or Hazards** *Hazard Classification Categories: struck by/against; caught in/between; slip, trip, or fall; overexertion; ergonomic (awkward Postures, excessive Force, vibration, repetitive motion)*	**Recommended Safe Job Procedure** *Hazard Control Categories: Engineer out (new way to do, change physical conductions or work procedures, adjust/modify/replace work station components/tools, decrease performance frequency); personal protective equipment (PPE); training; improve housekeeping*

♦ Risk Analysis Form

Project #: _____ Client Name: _____ Project Location: _____

Date of Analysis: _____ Contractor: _____ Sub-Contractor: _____

Date of Work: _____ Project Name: _____

Hazard Risk Rating

What are the consequences of this hazard occurring? Consider what the most probable consequence is (below) with respect to this work hazard.		What is the likelihood (below) of the hazard consequence in Step 1 occurring?		1. Take Step 1 rating and select the correct column. 2. Take Step 2 rating and select the correct line. 3. Use the risk score where the two ratings cross on the matrix below. **H = High, S = Serious, M = Medium, L = Low**
Extreme	Multiple fatalities or permanent injuries	**Almost Certain**	Is expected to occur in most circumstances	
Critical	Single fatality or permanent injury	**Likely**	Will probably occur at least once	
Major	Medical treatment or lost time injury	**Possible**	Event might occur at some time	
Minor	First aid treatment	**Unlikely/Rare**	Event not expected to occur or only in exceptional circumstances	
Insignificant	Incident or near miss –no treatment			

Likelihood	Insignificant	Minor	Major	Critical	Extreme
Almost Certain	M	S	H	H	H
Likely	M	M	S	H	H
Possible	L	M	M	S	S
Unlikely/ Rare	L	L	M	M	S

Process/Activity	Job/Task Hazard Sub Category	Hazardous Element (List the hazards relating to the work)	Hazard Risk Rating (prior to control)	Controls (List the controls to manage each of the hazards)	Hazard Risk Rating (After Controls)	Comments and/or Assigned to

2.12 HAZARD COMMUNICATION

Chemicals pose a wide range of health hazards (such as irritation, sensitization, and carcinogenicity) and physical hazards (such as flammability, corrosion, and reactivity). In order to ensure that the hazards associated with chemicals are conveyed to employers and employees, OSHA requires chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import and to provide information about them through labels on shipped containers and detailed safety data sheets.

WRITTEN PROGRAM

Construction processes and other operations performed at the various Dowdy jobsites sometimes require the use of hazardous materials and/or chemicals. Dowdy has developed a written Hazard Communication Program that describes how the criteria for labels and other forms of warning, safety data sheets, and employee information and training are addressed. A copy of this program will be kept in the main office and will be made available for review by any employee, upon request.

SAFETY DATA SHEETS (SDS)

SDSs must be retained for each hazardous chemical used in the workplace. The SDS log will be maintained in an organized fashion and will be readily available to employees, and is maintained in trailers and/or the project supervisor's company vehicle at the jobsite. If a new chemical is used at the jobsite, the site project supervisor will ensure that the SDS is received from the distributor and appropriately filed.

The site project supervisor must provide other contractors, temporary workers, and/or employees of other employers on the jobsite who may be exposed to hazardous chemicals used by Dowdy with the following information:

- Location of onsite SDS for each hazardous chemical that they may be exposed to while working
- Precautionary measures that need to be taken to protect employees during normal operating conditions in foreseeable emergencies
- The labeling system used
- Procedures to follow if they are exposed

In addition, each contractor or sub-contractor must provide any information concerning chemical hazards the sub-contractor is bringing into the workplace, and vice versa.

CHEMICAL LABELING

Each container of a hazardous chemical that is used in or around the work area must be properly labeled, tagged, or marked with a product identifier; signal word; hazard statement(s); pictogram(s); precautionary statement(s); and the name, address, and telephone number of the chemical manufacturer, importer, or other responsible party. The labels must be prominently displayed, and in English, although other languages may also be included, if necessary.

It is the responsibility of the site project supervisor to verify that each container of hazardous chemicals in the workplace is appropriately labeled. Worn and torn labels must be replaced. It is the responsibility

of employees to report inappropriate labels or the need to replace them to the foreman. Labels are not to be defaced or removed.

Alternative Labeling Systems

For hazardous chemical containers that have no labels from the manufacturer (usually secondary containers that are used when contents from a manufacturer's container are poured into another container), the site project supervisor will assure that labels that provide the required information are affixed to the container.

Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS III) may be used to convey the hazards associated with chemicals in workplace containers. After June 1, 2016, the information supplied on these labels must be consistent with the revised HCS, e.g., no conflicting hazard warnings or pictograms.

Emergency Response to Hazardous Substances

For construction companies not normally involved in hazardous waste cleanups:

- If any substance of unknown origin is found, company policy is to LEAVE IT ALONE!
- Immediately evacuate the area, and contact the nearest hazardous material response team.
- Do not allow employees on site until declared safe by the response team.

Hazardous Material Identification System and Labeling System

The Hazardous Material Identification System (HMIS III) provides a format for hazard determinations, complies with the OSHA Hazard Communication Standard, and simplifies the employee training and information process. This system was developed by the paint manufacturers (National Paint and Coatings Association) to address situations more common to their environment than those encountered by firefighters.

The HMIS provides clear, recognizable information to employees by standardizing the presentation of chemical information. This is accomplished by using color codes corresponding to the hazards of a product, assigning numeric ratings to indicate the degree of severity of health effects, flammability, and stability/reactivity hazards, along with providing alphabetical codes to designate appropriate personal protective equipment (PPE) employees should use while handling the material.

Hazard severity is indicated by a numerical rating that ranges from zero (0), indicating a minimal hazard, to four (4), indicating a severe hazard. The information is arranged using a color bar system as follows. A blue bar at the top provides health information, a red bar at second from the top indicates flammability, a yellow or orange bar second from the bottom physical properties or instability/reactivity, and a white bar at the bottom addresses personal protective equipment.

With this system, the white section is used to indicate what level of protective equipment is required. Instead of a hazard ranking, a level of protection is indicated by a letter, with each letter specifying a

different level of protection. A wide variety of icons include the physical hazards, target organs, as well as the continued use of icons for PPE.

All alternative labeling must meet the GHS labeling standards.

A sample HCS label is located below:

Health Hazard  ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity	Flame  ▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides	Exclamation Mark  ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  ▪ Gases Under Pressure	Corrosion  ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals	Exploding Bomb  ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
Flame Over Circle  ▪ Oxidizers	Environment (Non-Mandatory)  ▪ Aquatic Toxicity	Skull & Crossbones  ▪ Acute Toxicity (fatal or toxic)

HMIS Label & Key

HMIS Label – Health

The health section conveys the health hazards of the material. In the latest version of the HMIS label, the blue health bar has two spaces, one for an asterisk and one for a numeric rating.

If present the asterisk signifies a chronic health hazard, meaning that long term exposure to the material could cause a health problem such as emphysema or kidney damage.

The numeric ratings for the HMIS system are as follows.

4-Life Threatening – Major or permanent damage may result from single or repeated overexposures.
3 - Major injury likely unless prompt action is taken and medical treatment is given.
2 - Temporary or minor injury may occur.
1 - Irritation or minor reversible injury may occur.
0 - No significant risk to health.

HMIS Label – Flammability

OSHA defines a flammable liquid as "any liquid having a flash point below 100 degrees F. (37.8 degrees C.), except any mixture having components with flash points of 100 degrees F. (37.8 degrees C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids." A flammable material can be a solid, liquid or gas.

The numeric ratings for the HMIS system are as follows.

4 - Flammable gases or very volatile flammable liquids with flash points below 73°F, and boiling points below 100°F. Materials may ignite spontaneously with air. (Class IA).
3 - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73°F and boiling points above 100°F, as well as liquids with flash points between 73° F and 100° F. (Classes IB & IC).
2 - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100°F but below 200°F. (Classes II & IIIA).
1 - Materials that must be preheated before ignition will occur. Includes liquids, solids, and semi-solids having a flash point above 200°F. (Class IIIB).
0 - Materials that will not burn.

HMIS Label – Physical Hazard (HMIS® III)

These hazards are assessed using the OSHA criterion of physical hazard. Seven such hazard classes are recognized:

- Water Reactive
- Organic Peroxides
- Explosives
- Compressed gases
- Pyrophoric materials
- Oxidizers
- Unstable Reactives

The numeric ratings for the HMIS system are as follows.

4 - Materials which are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure.

3 - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion.

2 - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

1 - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

0 - Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

HMIS Label – Reactivity or Stability (HMIS I & 2 – Now Obsolete)

"Reactive or Unstable" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature. The numeric ratings for the HMIS system are as follows.

4 - Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This degree should include materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

3 - Materials which in themselves are capable of detonation or of explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This degree should include materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.

2 - Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This degree should include materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. It should also include those materials which may react violently with water or which may form potentially explosive mixtures with water.

1 - Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.

0 - Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

HMIS Label – Personal Protection

A	=	Safety glasses
B	=	Safety glasses, gloves
C	=	Safety glasses, gloves, chemical apron
D	=	Face shield, gloves, chemical apron
E	=	Safety glasses, gloves, dust respirator
F	=	Safety glasses, gloves, chemical apron, dust respirator
G	=	Safety glasses, gloves, vapor respirator
H	=	Splash goggles, gloves, chemical apron, vapor respirator
I	=	Safety glasses, gloves, dust and vapor respirator
J	=	Splash goggles, gloves, chemical apron, dust and vapor respirator
K	=	Airline hood or mask, gloves, full chemical suit, boots
X	=	Ask project supervisor

Note: before using any respirator contact EH&S for assistance.

2.13 CONFINED SPACES

Fatalities and injuries constantly occur among workers who, during the course of their jobs, are required to enter confined spaces. In some circumstances, these workers are exposed to multiple hazards, any of which may cause bodily injury, illness, or death. Newspaper and magazine articles abound with stories of workers injured and killed from a variety of atmospheric factors and physical agents. Throughout the jobsite, contractors and workers encounter both inherent and induced hazards within confined workspaces.

CLASSIFICATIONS OF CONFINED SPACES

A confined space is defined as any location that has limited openings for entry and egress, is not intended for continuous employee occupancy, and is so enclosed that natural ventilation may not reduce air contaminants to levels below the threshold limit value (TLV).

Confined spaces are classified as “Non-Permit” or “Permit-Required,” depending on hazardous conditions. According to OSHA, "Non-permit confined space" means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

OSHA defines "Permit-required confined space (permit space)" as a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

TYPES OF HAZARDS

Inherent Hazards

Inherent hazards, such as electrical, thermal, chemical, mechanical, etc., are associated with specific types of equipment and the interactions among them. Examples include high voltage (shock or corona discharge and the resulting burns), radiation generated by equipment, defective design, omission of protective features (no provision for grounding non-current-carrying conductive parts), high or low temperatures, high noise levels, and high-pressure vessels and lines (rupturing with resultant release of fragments, fluids, gases, etc.). Inherent hazards usually cannot be eliminated without degrading the system or equipment, or without making them inoperative. Therefore, emphasis must be placed on hazard control methods.

Induced Hazards

Induced hazards arise and are induced from a multitude of incorrect decisions and actions that occur during the job. Some examples are: omission of protective features, physical arrangements that may cause unintentional worker contact with electrical energy sources, oxygen-deficient atmospheres created at the bottom of pits or shafts, lack of safety factors in structural strength, and flammable atmospheres.

Entry into confined spaces without proper precautions could result in injury, impairment, or death due to:

- An atmosphere that is flammable or explosive;
- Lack of sufficient oxygen to support life;
- Contact with or inhalation of toxic materials; or
- General safety or work area hazards such as steam or high-pressure materials.

COMPETENT PERSON

Dowdy has designated, the project supervisor to identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees. The project supervisor will have authorization to take prompt corrective measures to eliminate them. Before work begins at a worksite, the competent person must identify all confined spaces.

Other duties will include reevaluating a confined space when there are changes in the use or configuration that might increase the hazards to entrants as well as reclassifying a non-permit required confined space to a permit-required confined space when necessary.

JOBSITE PROVISIONS FOR MULTI-EMPLOYER

Before entry operations begin, the host employer must provide the following information, if it has it, to the controlling contractor:

- The location of each known permit space;
- The hazards or potential hazards in each space or the reason it is a permit space; and
- Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space.

Before entry operations begin, the controlling contractor must:

- Obtain the host employer's information about the permit space hazards and previous entry operations; and
- Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:
- The information received from the host employer;
- Any additional information the controlling contractor has about the subjects; and
- The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of employees in the permit spaces.

Before entry operations begin, each entry employer must:

- Obtain all of the controlling contractor's information regarding permit space hazards and entry operations; and
- Inform the controlling contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.

The controlling contractor and entry employer(s) must coordinate entry operations when:

- More than one entity performs permit space entry at the same time; or
- Permit space entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed.

After entry operations:

- The controlling contractor must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s) during entry operations;
- The entry employer must inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during entry operations; and the controlling contractor must apprise the host employer of the information exchanged with the entry entities pursuant to this subparagraph.
- Unless a host employer or controlling contractor has or will have employees in a confined space, it is not required to enter any confined space to collect the information.
- If there is no controlling contractor present at the worksite, the requirements for, and role of, controlling contactors in §1926.1203 must be fulfilled by the host employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

Air Monitoring

Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the pre-testing information.

No hazardous atmosphere is permitted within the space whenever any employee is inside the space.

The atmosphere within the space must be continuously monitored unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient. If continuous monitoring is used, the employer must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous

atmosphere. Any employee who enters the space, or that employee's authorized representative, must be provided with an opportunity to observe the required testing.

Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.

Entry Permits

Before entry is authorized, each entry employer must document the completion of measures by preparing an entry permit.

The entry project supervisor identified on the permit must sign the entry permit to authorize the confined space entry.

The completed permit must be made available at the time of the entry to all authorized entrants or their authorized representatives, by posting it at the entry portal so that the entrants can confirm that pre-entry preparations have been completed.

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

The entry permit form documents compliance with this section and authorizes entry to a permit space must identify:

- The permit space to be entered;
- The purpose of the entry;
- The date and the authorized duration of the entry permit;
- The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;
- Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working;
- Each person, by name, currently serving as an attendant;
- The individual, by name, currently serving as entry supervisor, and the signature or initials of each entry project supervisor who authorizes entry;
- The hazards of the permit space to be entered;
- The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;
- The acceptable entry conditions;
- The results of tests and monitoring performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed;
- The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services;

- The communication procedures used by authorized entrants and attendants to maintain contact during the entry;
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment;
- Any other information necessary, given the circumstances of the particular confined space, to ensure employee safety; and
- Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

The entry supervisor must terminate entry and take the following action when any of the following apply:

- Cancel the entry permit when the entry operations covered by the entry permit have been completed; or
- Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it; and
- Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is not covered.

Types of Confined Spaces

Following are examples of confined workspaces in construction which contain both inherent and induced hazards.

Pipe Assemblies – One of the most frequently unrecognized types of confined spaces encountered throughout the construction site is the pipe assembly. Piping of sixteen to thirty-six inches in diameter is commonly used for a variety of purposes. For any number of reasons, workers will enter the pipe. Once inside, they are faced with potential oxygen-deficient atmospheres, often caused by purging with argon or another inert gas. Welding fumes generated by the worker in the pipe, or by other workers operating outside the pipe at either end, subject the worker to toxic atmospheres.

The generally restricted dimensions of the pipe provide little room for the workers to move about and gain any degree of comfort while performing their tasks. Once inside the pipe, communication is extremely difficult. In situations where the pipe bends, communication and extrication become even more difficult.

Electrical shock is another problem to which the worker is exposed. Ungrounded tools and equipment or inadequate line cords are some of the causes. As well, heat within the pipe run may cause the worker to suffer heat prostration.

Attics or Crawl Spaces – Crawl spaces and attics can be both confined spaces and permit-required confined spaces under the new standard. For instance, working in an attic and applying a large amount of spray foam (or another chemical) in a short period of time can expose a worker to low oxygen levels or a hazardous atmosphere. In addition, changes to the entry/exit, the ease of exit, and air flow could create a confined space or cause the space to become permit-required.

Confined Space within a Confined Space – By the very nature of construction, situations are created which illustrate one of the most hazardous confined spaces of all--a confined space within a confined space. This situation appears as tanks within pits, pipe assemblies or vessels within pits, etc.

In this situation, not only do the potential hazards associated with the outer confined space require testing, monitoring, and control, but those of the inner space also require similar procedures. Often, only the outer space is evaluated. When workers enter the inner space, they are faced with potentially hazardous conditions. A good example of a confined space within a confined space is a vessel with a nitrogen purge inside a filtering water access pit. Workers entering the pit and/or the vessel should do so only after both spaces have been evaluated and proper control measures established.

Hazards in One Space Entering Another Space – During an examination of confined spaces in construction, one often encounters situations which are not always easy to evaluate or control. For instance, a room or area which classifies as a confined space may be relatively safe for work. However, access passages from other areas outside or adjacent to the room could, at some point, allow the transfer of hazardous agents into the "safe" one. One such instance would be a pipe coming through a wall into a containment room. Welding fumes and other toxic materials generated in one room may easily travel through the pipe into another area, causing it to change from a safe to an unsafe workplace. A serious problem with a situation such as this is that workers working in the "safe" area are not aware of the hazards leaking into their area. Thus, they are not prepared to take action to avoid or control it.

TRAINING

All employees required to enter into confined or enclosed spaces must be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. Employers should comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

Training must be provided to each affected employee:

- In both a language and vocabulary that the employee can understand;
- Before the employee is first assigned duties under this standard;
- Before there is a change in assigned duties;
- Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained; and
- Whenever there is any evidence of a deviation from the permit space entry procedures required by paragraph §1926.1204(c) of this standard or there are inadequacies in the employee's knowledge or use of these procedures.

♦ CONFINED SPACE ENTRY PERMIT

GENERAL INFORMATION

Confined space ID#_____

Confined Space Location: _____

Purpose of entry: _____

_____

Date: _____ Time: _____ to _____

This entry permit is valid only for the date and time specified.

Additional Permits (Check only those that apply):	Yes	No
Hot Work	☐	☐
Lockout/Tagout	☐	☐
Line Breaking	☐	☐
Other (Specify)_____	☐	☐

PERSONNEL

Entry Supervisor: _____

Attendant(s): _____

Entrant(s)	Time In:	Time Out:
_____	_____	_____
_____	_____	_____
_____	_____	_____

*Only Designated Personnel are Authorized to Enter Permit Spaces

PROCEDURES/EQUIPMENT

Procedures/Equipment (check all that apply)	Yes	No
Isolation		
Lockout/Tagout	☐	☐
Double block and bleed	☐	☐
Blanking and Blinding	☐	☐
Line breaking/misalignment	☐	☐
Inerting (specify) _____	☐	☐
Ventilation		
Continuous forced air ventilation	☐	☐
Local exhaust ventilation	☐	☐
Air Monitoring		
Initial	☐	☐
Periodic (i.e., 15-minute intervals)	☐	☐
Continuous	☐	☐
Respirator Protection (specify) _____	☐	☐
Personal Protective/Rescue Equipment		
Tripod with Mechanical Equipment	☐	☐
Full Body Harness	☐	☐
Portable Lighting	☐	☐

HAZARDS

Hazards (check all that apply)	Yes	No
Mechanical	☐	☐
Electrical	☐	☐
Engulfment	☐	☐
Configuration (entrapment)	☐	☐
Atmospheric	☐	☐
Oxygen deficient	☐	☐
Oxygen Enrichment	☐	☐
Explosive (gas/vapor)	☐	☐
Explosive (dust)	☐	☐
Hydrogen Sulfide	☐	☐
Carbon Monoxide	☐	☐
Other (i.e., Radiation, Noise, Toxics)		
_____	☐	☐
_____	☐	☐

EMERGENCY SERVICES

Provided by:

Name: _____

Telephone Number: _____

Method of Summoning (Check all that apply)	Yes	No
Radio	☐	☐
Telephone (Specify)	☐	☐
Other (Specify)	☐	☐
Verification of Emergency Services – Initials	☐	☐

COMMUNICATION

Attendant/Entrant (check all that apply)	Yes	No
Visual	☐	☐
Radio	☐	☐
Other (specify)	☐	☐

AIR MONITORING

Contaminant	*Acceptable Exposure Level*	*Time*	*Reading*	*Time*	*Reading*	*Time*	*Reading*
Oxygen 19.5-23.5%							
Explosive (gas/vapor) <10% LFL							
Explosive (dust) < LFL (5 ft. visibility)							
Hydrogen Sulfide 10 ppm							
Carbon Monoxide 25 ppm							

*Record calibration check on the back of this form

Air monitoring conducted by:

AUTHORIZATION

Entry Authorized by:

Name:_____ Date:_____

Signature: _____ Date:_____

Post Entry Permit at Entrance to Permit Space

CANCELLATION

Entry Cancelled by:

Name: _____ Date: _____

Signature: _____ Date: _____

Return completed Entry Permit to Appropriate Authority

2.14 EXCAVATIONS AND TRENCHING

Cave-ins are perhaps the most feared trenching hazard. But other potentially fatal hazards exist, including asphyxiation due to lack of oxygen in a confined space, inhalation of toxic fumes, drowning, etc. Electrocution or explosions can occur when workers contact underground utilities.

OSHA requires that workers in trenches and excavations be protected, and that safety and health programs address the variety of hazards they face. The following hazards cause the most trenching and excavation injuries:

- No protective system
- Failure to inspect trenches and excavations
- Unsafe spoil pile placement
- Unsafe access and/or egress

Provided below are suggested practices for safe excavation and trenching operations. For further details, refer to the OSHA standards covering excavation (29 CFR 1926, Subpart P).

GENERAL

- Find the location of all underground utilities by contacting the local utility locating service, Sunshine 811, before digging. The location of underground installations shall be determined before excavation.
- Keep workers away from digging equipment and never allow workers in an excavation when equipment is in use.
- Keep workers from getting between equipment in use and other obstacles and machinery that can cause crushing hazards.
- Keep equipment and the excavated dirt (spoils pile) back 2 feet from the edge of the excavation.
- Have a competent person conduct daily inspections and correct any hazards before workers enter a trench or excavation.
- Provide workers a way to get into and out of a trench or excavation that is 4 feet or more in depth, such as ladders and ramps. They must be within 25 feet of the worker.
- For excavations and utility trenches over 5 feet deep, use shoring, shields (trench boxes), benching, or slope back the sides. Unless soil analysis has been completed, the earth's slope must be at least 1½ feet horizontal to 1 vertical.
- Keep water out of trenches with a pump or drainage system, and inspect the area for soil movement and potential cave-ins.
- Keep drivers in the cab and workers away from dump trucks when dirt and other debris are being loaded into them. Don't allow workers under any load and train them to stay clear of the backs of vehicles.

SOIL CLASSIFICATIONS:

Soil classifications must be determined by testing and protective systems designed according to soil classifications. Each soil and rock deposit at an excavation site must be classified by your competent person as stable rock, Type A, Type B, or Type C soil. Examples of the different soil types are:

- **Stable Rock** – Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
- **Type A** – Examples include clay, silty clay, sand clay, clay loam, and sometimes silty clay loam and sandy clay loam.
- **Type B** – Examples include silt, silt loam, sandy loam and sometime silty clay loam and sandy clay loam.
- **Type C** – Examples include granular soils like gravel, sand, loamy sand, submerged soil, and soil from which water is freely seeping, and submerged rock that is not stable.

FOUNDATIONS

- After the foundation walls are constructed, take special precautions to prevent injury from cave-ins in the area between the excavation wall and the foundation wall.
- The depth of the foundation/basement trench cannot exceed 7½ feet deep unless you provide other cave-in protection.
- Keep the horizontal width of the foundation trench at least 2 feet wide. Make sure no work activity vibrates the soil while workers are in the trench.
- Plan the foundation trench work to minimize the number of workers in the trench and the length of time they spend there.
- Inspect the trench regularly for changes in the stability of the earth (water, cracks, vibrations, spoils pile). Stop work if any potential for cave-in develops and fix the problem before work starts again.

♦ TRENCH INSPECTION & ENTRY AUTHORIZATION FORM

LOCATION:				**DATE:**	
TIME OF INSPECTION(S):					
WEATHER CONDITIONS:				**APPROX. TEMP.:**	
CREW LEADER:				**Project Supervisor:**	
DIMENSIONS:	**DEPTH =**			Yes No	**HAZARDOUS CONDITIONS**
	TOP =	W	L	❑ ❑	..... Saturated soil / standing or seeping water
	BOTTOM =	W	L	❑ ❑	..... Cracked or fissured wall(s)
SOIL TYPE:		**TESTED:**		❑ ❑	..... Bulging wall(s)
❑ Solid rock (most stable)		❑ Yes		❑ ❑	..... Floor heaving
❑ Average soil		❑ No		❑ ❑	..... Frozen soil
❑ Fill material				❑ ❑	..... Super-imposed loads
❑ Loose sand				❑ ❑	..... Vibration
				❑ ❑	..... Depth greater than 10’
PROTECTION METHODS:				**PLACEMENT OF SPOILS & EQUIPMENT**	
(Walls MUST be vertical—NO voids)				❑ ❑	..... Spoils at least 2 feet from edge of trench
SHORING				❑ ❑	..... Equipment at least 2 feet from edge
❑ Timber				❑ ❑	..... Backhoe at end of trench
❑ Pneumatic				❑ ❑	..... Compressor, etc. at remote location
❑ Hydraulic				**LADDER LOCATION**	
❑ Screw Jacks				❑ ❑	..... Located in protected area
❑ Trench Shield				❑ ❑	..... Within 25 feet of safe travel
UNEVEN, IRREGULAR WALLS				❑ ❑	..... Secured
❑ Trench Box				❑ ❑	..... Extends 36 inches above the landing
Sloping:	**q 1:1 (45°)**	**q 1 ½:1 (34°)**		❑ ❑	..... Leads to safe landing
Yes No	**ENVIRONMENTAL CONDITIONS:**			**OTHER:**	
❑ ❑	Gas detector used?			❑ ❑	Shoring equip. & materials inspected prior to use?
❑ ❑	Confined space permit issued?			❑ ❑	Is trench SAFE to enter?
COMMENTS:					
				Work Order #	

N O T E	All unsafe conditions must be corrected prior to trench entry. If any hazardous conditions are observed, the trench must be immediately evacuated and no one allowed to re-enter until corrective action has been taken.	**TO BE FILLED OUT BY TRAINED SUPERVISORY PERONNEL** **Excavation Entry Authorized By:** **Project Supervisor**

3.1 Extreme Weather Conditions – Heat & Cold

Heat Related Weather Conditions

When the body is unable to cool itself by sweating, several heat-induced illnesses can occur, and can result in death. High temperature and humidity, direct sun or heat, limited air movement, physical exertion, poor physical condition, certain medications, inadequate tolerance for hot workplaces, and insufficient water intake can all lead to heat stress.

Types of Heat Illnesses

Heat Stroke is the most serious heat related disorder and occurs when the body's temperature regulation fails and body temperature rises to critical levels. It is a medical emergency that may result in death. If a person shows signs of possible heat stroke, professional medical treatment should be obtained immediately.

The primary signs and symptoms of heat stroke are:

- Dry, hot skin with no sweating.
- Mental confusion or losing consciousness.
- Seizures or convulsions

Heat Exhaustion is a result of the combination of excessive heat and dehydration. Signs and symptoms of heat exhaustion include:

- Headaches, dizziness, lightheadedness or fainting.
- Weakness and moist skin.
- Mood changes such as irritability or confusion.
- Upset stomach or vomiting

Heat Cramps are usually caused by performing hard physical labor in a hot environment.

- Thirst cannot be relied on as a guide for the need for water, drink water every 15-20 minutes
- Studies have shown that drinking carbohydrate-electrolyte replacement liquids is effective in recovery

Heat Rashes are the most common problem in hot environments where the skin is persistently wetted by un-evaporated sweat.

- Heat rash looks like a red cluster of bumps or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creased.
- The best treatment is to provide a cooler, less humid environment and keep the affected area dry.

Prevention

Water coolers are provided for drinking water only and shall be periodically cleaned and sanitized to eliminate any build-up, prevent growth of bacteria and keep the water safe to drink. Water coolers shall be periodically cleaned with a simple solution of soap and water. Use a sponge to wash it, getting into all of the crevices. After washing, rinse and dry the cooler.

Do not store sodas, drinking bottles, or anything else in the water cooler. Your hands carry germs and bacteria that will be transferred into the drinking water when retrieving bottles and cans from inside the water cooler.

Caution: Employees under doctor orders limiting their intake of fluids and employees on low-salt diets should consult with their doctor before drinking a sports beverage or taking salt tablets.

Tips for preventing heat illness include:

- Adjust work schedules to provide workers with a rest from the heat
- Postpone nonessential tasks
- Provide cool rest areas as well as shade and water for workers
- Wear proper protective clothing
- Ensure workers are drinking enough water to stay hydrated
- Allow workers time to acclimate to the hot environment
- Educate workers and project supervisors to recognize heat illness and how to prevent it
- Know signs/symptoms of heat-related illnesses; monitor yourself and coworkers.
- Allow yourself to become acclimatized to hot weather
- Block out direct sun or other heat sources.
- Use cooling fans/air-conditioning and rest regularly
- Drink lots of water; ½ your body weight in oz (i.e. – if you weight 150 lbs drink 75 oz of water.)
- Wear lightweight, light colored, loose-fitting clothes (do not remove your shirt).
- Avoid alcohol, caffeinated drinks, or heavy meals

First Aid for Heat Illness

- Call 911 (or local emergency number) at once.
- While waiting for help to arrive:
    - Move the worker to a cool, shaded area.
    - Loosen or remove heavy clothing.
    - Provide cool drinking water.
    - Fan and mist the person with water.

COLD RELATED WEATHER CONDITIONS

More people are dying from hypothermia in the United States, a new government report shows, raising fresh worries for a nation that has been pounded by a steady succession of winter storms this year.

Workers who are exposed to extreme cold while working in harsh environments can be at risk of cold stress or other occupational illness and injuries such as:

- Hypothermia
- Frostbite
- Trench Foot

Hypothermia is a condition in which the body uses up its stored energy and can no longer produce heat. A core temperature of the body is less than 95 degrees Fahrenheit. It often occurs after prolonged exposure to cold temperature or if the person becomes chilled from rain, sweat, or submersion in cold water.

The primary signs and symptoms of hypothermia are:

- Early symptoms include: shivering, fatigue, loss of coordination, confusion & disorientation.
- Late symptoms include: no shivering, blue skin, dilated pupils, and loss of consciousness

Frost Bite is an injury to the body caused by freezing of the skin and underlying tissues.

The primary signs and symptoms of frostbite are:

- Reddened skin develops gray/white patches
- Numbness in the affected part
- Feels firm or hard
- Blisters may occur in the affect part.

What NOT To Do for Frostbite:

- Do not rub the affected area to warm it because this action can cause more damage.
- Do not apply snow/water.
- Do not break blisters.
- Do not try to rewarm the frostbitten area before getting medical help; for example, do not place in warm water. If a frostbitten area is rewarmed and gets frozen again, more tissue damage will occur. It is safer for the frostbitten area to be rewarmed by medical professionals.

Immersion/Trench Foot is caused by prolonged exposure to wet and cold temperatures, and may occur at temperatures as high as 60 degrees Fahrenheit if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet.

The primary signs and symptoms of trench foot:

- Redness of the skin, swelling, numbness, & blisters.

PREVENTION

- Listen to the weather forecast
- Plan ahead
- Dress for cold related environments.

- Seek shelter
- Stay dry.
- Keep active
- Be aware.

Effects on the Worksite

- Take time throughout the day, every day, to walk through the jobsite and look for hazards created by snow and ice.
- Ensure to take time snow-clearing equipment, de-icing equipment, heating systems, winterized vehicles and cold-weather clothing
- Carefully remove icicles, especially if temperatures are beginning to warm. If this isn't possible, rope off the area under the icicles until they are no longer a hazard.

First Aid for Cold related Injuries

- Call 911 immediately in an emergency; otherwise seek medical assistance as soon as possible.
- Move the person to a warm, dry area.
- Remove wet clothes and replace with dry clothes, cover the body (including the head and neck) with layers of blankets; and with a vapor barrier (e.g. tarp, garbage bag). Do not cover the face.
- If medical help is more than 30 minutes away:
- Give warm sweetened drinks if alert (no alcohol), to help increase the body temperature. Never try to give a drink to an unconscious person.
- Place warm bottles or hot packs in armpits, sides of chest, and groin. Call 911 for additional rewarming instructions.
- Give CPR if the worker is found unconscious.

3.2 OUTDOOR SAFETY

INTRODUCTION

Outdoor workers are exposed to many types of hazards that depend on their type of work, geographic region, season and duration of time that they are outside. Employees who are exposed to outdoor hazards will be trained about the hazards, including hazard identification and recommendations for preventing and controlling their exposure.

Potential outdoor hazards may include: snake bites, mosquitoes, fire ants, bees, ticks, spiders, and poisonous plants

PERSONAL PROTECTIVE EQUIPMENT

Selecting the proper personal protective equipment is a crucial part of protecting yourself against potential hazards. PPE should be selected based off of what you could be exposed to. Some suggestions include: Heat Protection, Gloves, Leather boots, & Light colored, long sleeve pants and shirt.

Depending on the types of conditions that you're working in, also remember to follow these tips:

- Keep clothing tucked in
- Avoid wearing colognes or perfumes
- Wear insect repellant containing DEET
- Expose as little skin as possible
- Conduct an all-over body check when you leave the area.

ILLNESSES FROM MOSQUITO BITES:

- Encephalitis
    - Inflammation of the brain
    - Can cause flu-like symptoms such as fever and severe headache
- West Nile Virus
- Zika Virus

STINGING INSECTS

Fire Ants

Fire ant venom is toxic and can be life threatening If a swarm is disturbed, a person can be stung as many as 5,000 times within a few seconds Nests can be found under buildings, utility boxes, field mounds and piles of dirt. DO NOT attempt to remove a colony yourself. Call an exterminator.

Bee Stings

The most common bees are the yellow jacket and the honey bee. Yellow jackets sting repeatedly while honey bee stings remain in your skin. If you are stung while on the jobsite, it is important to notify an employee of the company. Seek shelter immediately if there is a swarm of bees. The following tips should be utilized for prevention and response:

- Look out for swarms
- Keep food and drinks in vehicles
- Avoid hollow trees and branches
- If attacked, seek shelter immediately
- Notify co-workers and call 911

Ticks

Ticks are mostly active in the months of May-July. In order to protect yourself from coming into contact with ticks, high grass areas should be avoided and clothes should be treated with permethrin. Further protection should include using repellent with at least 20% DEET and conducting a full body check when returning from infested areas. Coming in contact with ticks can cause:

Lyme Disease

- Red bulls-eye skin rash
- Flu-like symptoms: headache, fatigue
- Can result in heart abnormalities, nervous system damage and joint disorders
- Can last years after exposure
- Also carried by deer, mice, black bears, raccoons, squirrels and foxes

Rocky Mountain Spotted Fever

- Flu-like symptoms
- Mental confusion
- Potentially fatal

SPIDERS

The two most dangerous types of spiders are the Black Widow and Brown Recluse. Black Widow bites are 15 times more poisonous than that of a rattlesnake. Symptoms of this bite include heavy abdominal pain which can last up to 48 hours. A bite from a Brown Recluse can result in body tissue damage.

VENOMOUS SNAKES:

- Northern Copperheads
- Timber Rattlesnake
- Eastern Massasauga

Rodents and Viruses:

Hantaviruses

Hantavirus is the result from exposure to rodent droppings which can result in respiratory failure. If droppings or nesting material are swept into the air, the virus is able to be breathed in. Farm workers, Animal Lab workers and Construction workers are the most frequently exposed. Symptoms of Hantavirus include flu-like fever, chills and aches. If droppings are found:

- Drench droppings with a 1:10 water to bleach ratio and pick up with a damp towel
- Use latex/vinyl gloves and a HEPA filter air purifying respirator

Poisonous Plants:

Poison Ivy is the most commonly found urushiol plant and has many different species ranging in a variety of habitats. It typically has three shiny green leaves; however, leaves may be red in the fall.

Poison Oak can be found in a variety of soils and contains three leaves, similar to that of poison ivy.

Poison Sumac is most commonly found in swamps and bogs where soil is acidic and wet. It contains 7-13 leaves arranged in pairs.

Poison Ivy

Poison Oak

Poison Sumac

Additional Facts:

- Urushiol poisonings are the single most common Worker's Comp. Claim in the US
- The most common way to avoid is the folk saying "Leaflets three, let it be."
- Poison Sumac is the only plant without three leaves. It can have up to 13 leaflets, usually in an odd number.
- Wearing long sleeves and pants can usually help avoid the common rash symptoms. Tools and clothing can remain contaminated for years.
- Wash rigorously with cold water and soap

First Aid Procedures:

The following first aid procedures shall be followed if employees are to come in contact with any of the following hazards:

Mosquito Bites	**Bee Stings**	**Fire Ants**
• Watch for flu-like symptoms • If symptoms persist, seek medical attention	• Watch for reactions such as Anaphylactic Shock • Never squeeze stingers • Remove stingers horizontally with a knife • Wash with soap and water • Apply ice	• Watch for blisters. If breathing becomes difficult, call 911
Ticks	**Spiders**	**Snake Bites**
• If a tick is found, remove it with tweezers; not your fingers • Do not twist the tick's body, pull straight out • Do not use a match • Watch for symptoms of Lyme Disease	• Watch for symptoms such as red swollen areas • If you experience high blood pressure, seek medical attention	• Use a belt/rope to constrict the poison • Do not raise the wound - keep below your heart • Get to a hospital immediately

3.3 DRIVING SAFETY

According to the Bureau of Labor Statistics' National Census of Fatal Occupational Injuries, roadway incidents accounted for 57% of the fatal work injury total for 2014. That number is 57 percent of the annual number of fatalities from occupational injuries. The following Driving Safety rules and procedures have been established.

SAFETY RULES:

- Only authorized employees may drive a motor vehicle in the course and scope of work or operate a company-owned vehicle.
- Drivers must have a valid and current license to operate the vehicle.
- Operating a vehicle while under the influence of alcohol, illegal drugs, or certain medications that may impair driving skills is prohibited.
- Seatbelts must be worn by all vehicle occupants at all times whenever a vehicle is in motion.
- Authorized drivers must follow safe driving practices including, but not limited to:
    - Practice defensive driving techniques
    - Do not use any electronic equipment that my cause distraction
    - Obey all posted traffic and speed limit signs
    - Maintain a safe distance between vehicles at all times
    - Report all traffic violations and accidents to project supervisors
- All collisions and traffic violations that have occurred while driving on company duties must be reported.
- All vehicles used for company business must be fit for purpose and maintained in a safe working order.
- Loads must be secure and shall not exceed the manufacturer's specifications and legal limits for the vehicle.

DEFENSIVE DRIVING TECHNIQUES

Following the rules of the road can help you concentrate on what you should be doing…driving. Stay out of the other vehicle's blind spot and avoid tailgating. Instead, keep a safe distance from other drivers by maintaining a safety cushion of driving space between your vehicle and those around you. As an extra precaution, know the condition of the weather and road and drive only as fast as those conditions allow.

Be cautious by staying alert and expecting the unexpected. Watch out for and anticipate other drivers, pedestrians or children on or near the road. Safe drivers scan constantly for hazards, predicting how they may be affected by a hazard and pre-determining how to avoid or reduce them.

The ever-changing variable of the road and other vehicles can make drivers instantly vulnerable to accidents. If drivers don't practice these safe practices on the road, they might personally discover why vehicle deaths and serious injuries now total more than all the wartime wounded and fatalities since 1776. Be aware of the following items while driving:

- Know and observe all traffic rules and regulations
- Constantly be alert for the illegal acts and driving errors of other drivers. Make timely adjustments in your own driving so that these illegal acts and errors will not involve you in an accident.
- Know your vehicle and be aware of special hazards presented by abnormal, unusual, or changing conditions.
- Be aware of the rules of right of way and be willing to yield to the right of way to the other driver whenever necessary

The following outlines general principles of defensive driving:

- **See the hazard**—when driving, think about what is going to happen or what might happen as far ahead of encountering a situation as possible. You should never assume everything will be "all right."
- **Understand the defense**—specific situations require specific ways of handling. Become familiar with the unusual conditions which you may face and learn them well so that you can apply them when the need arises.
- **Act in time**—once you've noted a hazard and understand the defense against it, act! Never take a "wait and see" attitude.

Taking these three steps and keeping good driving techniques in mind, you'll learn to "give in" a little; to tailor your driving behavior to the unexpected actions of other drivers and pedestrians; the unpredictable and ever-changing factors of light, weather, road, and traffic conditions; and the mechanical condition of your vehicle.

3.4 TOOLS AND EQUIPMENT

Hand and power tools are a common part of our everyday lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Special attention toward hand and power tool safety is necessary in order to reduce or eliminate these hazards.

Hand and power tools are addressed in specific standards for the construction industry. General OSHA requirements state that all hand and power tools and similar equipment, whether furnished by the employer or the employee, be maintained in a safe condition. They establish standards for guarding, personal protective equipment, and switches. Specific standards apply to hand tools; power-operated hand tools; abrasive wheels and tools; woodworking tools; jacks; air receivers; and mechanical power-transmission apparatus. The items below summarize safe practices for use of hand and power tools.

- Maintain all hand tools and equipment in a safe condition and check them regularly for defects. Identify broken or damaged tools and equipment by tagging or locking the controls until they can be repaired or disposed of.
- Follow the manufacturer's requirements for safe use of all tools.
- Use double insulated tools, or ensure that the tools are grounded.
- Equip all power saws (circular, skill, table, etc.) with blade guards.
- Make sure guards are in place before using power saws. Don't use power saws with the guard tied or wedged open.
- Turn off saws before leaving them unattended.
- Raise or lower tools by their handles, not by their cords.
- Don't use wrenches when the jaws are sprung to the point of slippage. Replace them.
- Don't use impact tools with mushroomed heads. Replace them.
- Keep wooden handles free of splinters or cracks and be sure the handles stay tight in the tool.
- Workers using powder-activated tools must receive proper training prior to using the tools.
- Always be sure that hose connections are secure when using pneumatic tools.
- Never leave cartridges for pneumatic or powder-actuated tools unattended. Keep equipment in a safe place, according to the manufacturer's instructions.
- Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases will be provided with particular PPE necessary to protect them from the hazard.

HAND TOOLS

Hand tools are non-powered. They include anything from axes to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance.

Some examples of misused hand tools:

- Using a screwdriver as a chisel may cause the tip of the screwdriver to break and fly, hitting the user or other employees.
- If a wooden handle on a tool such as a hammer or an axe is loose, splintered, or cracked, the head of the tool may fly off and strike the user or another worker.
- A wrench must not be used if its jaws are sprung, because it might slip.

- Impact tools such as chisels, wedges, or drift pins are unsafe if they have mushroomed heads. The heads might shatter on impact, sending sharp fragments flying.

Saw blades, knives, or other tools are to be directed away from aisle areas and other employees working in close proximity. Knives and scissors must be kept sharp. Dull tools can be more hazardous than sharp ones.

Around flammable substances, sparks produced by iron and steel hand tools can be a dangerous ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will be provided for safety.

Pneumatic Power Tools

Pneumatic tools are powered by compressed air; they include chippers, drills, hammers, and sanders. There are several dangers encountered in the use of pneumatic tools. The main hazard is the danger of getting hit by one of the tool's attachments, or some kind of fastener the worker is using with the tool. Noise is another hazard associated with pneumatic tools.

Pneumatic tools that shoot nails, rivets, or staples, and operate at more than 100 pounds per square inch (psi), must be equipped with a special device to keep fasteners from being ejected unless the muzzle is pressed against the work surface. Eye protection is required and face protection is recommended for employees working with pneumatic tools. Noise is another hazard. Working with noisy tools such as jackhammers requires proper, effective use of ear protection.

When using pneumatic tools, employees must check to see that they are fastened securely to the hose by a positive means to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard.

Airless spray guns which atomize paints and fluids at high pressures (1,000 psi or more) must be equipped with automatic or visual manual safety devices which will prevent pulling the trigger until the safety device is manually released.

If an air hose is more than one–half inch in diameter, a safety excess flow valve must be installed at the source of the air supply to shut off the air automatically in case the hose breaks. In general, the same precautions should be taken with an air hose that are recommended for electric cords, since the hose is subject to the same kind of damage or accidental striking and presents tripping hazards. The manufacturer’s safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded. In addition, the use of hoses for hoisting or lowering is not permitted.

A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel. Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.

Compressed air guns should never be pointed toward anyone. The user should never "dead–end" it against him or herself or anyone else. Compressed air shall not be used to blow dirt, debris, or similar material off of your clothing, unless reduced to less than 30 psi. If using less than 30 psi for cleaning purposes, effective chip guarding and personal protective equipment meeting the requirements of 29 CFR 1926, Subpart E must be used.

Heavy jackhammers can cause fatigue and strains; heavy rubber grips reduce these effects by providing a secure handhold. Workers operating a jackhammer must wear safety glasses and safety shoes, which protect against injury if the hammer slips of falls. A face shield should also be used.

Electric Tools

Employees using electric tools must be aware of several dangers; the most serious is the possibility of electrocution. Among the chief hazards of electric–powered tools are burns and slight shocks which can lead to injuries or even heart failure. Under certain conditions, even a small amount of current can result in fibrillation of the heart and eventual death. A shock also can cause the user to fall off a ladder or another elevated work surface.

To protect the user from shock, tools must either have a three–wire cord and be grounded, be double insulated, or be powered by a low–voltage isolation transformer. Three–wire cords contain two current–carrying conductors and a grounding conductor. One end of the grounding conductor connects to the tool's metal housing. The other end is grounded through a prong on the plug. Anytime an adapter is used to accommodate a two–hole receptacle, the adapter wire must be attached to a known ground. The third prong should never be removed from the plug.

Double insulation is more convenient. The user and the tools are protected in two ways: by normal insulation on the wires inside, and by a housing that cannot conduct electricity to the operator in the event of a malfunction.

The following general practices should be followed when using electric tools:

- Electric tools should be operated within their design limitations.
- Gloves and safety footwear are recommended during use of electric tools.
- When not in use tools should be stored in a dry place.
- Electric tools should not be used in damp or wet locations.
- Work areas should be well lighted.

Abrasive Wheels

Abrasive wheels are power tools used to grind, cut, polish, and buff materials and surfaces. There are different types of wheels, depending upon their uses, but they all have one thing in common: hazards are involved. Refer to 29 CFR 1910.215.215 for exact language and specific details about abrasive wheels.

The tasks abrasive wheels are used for involve the hazards of flying particles. As the wheels begin spin material is applied against them to achieve the desired results, whether it is to grind, cut, polish, or buff. There is also a risk that, while the wheel is spinning at high speeds, it could fly apart.

Before an abrasive wheel is mounted, it should be inspected closely and ring tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non–metallic implement. If they sound cracked or dead, they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or "ring."

To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, but not tight enough to distort the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.

Due to the possibility of a wheel disintegrating (exploding) during start–up, the employee should never stand directly in front of the wheel as it accelerates to full operating speed.

In addition, when using a powered grinder:

- Always use eye protection.
- Turn off the power when not in use.
- Never clamp a hand–held grinder in a vise.

To help prevent injuries, closely inspect the wheels to ensure they have not been damaged. Do not mount a wheel if there are signs of damage or defects. The spindle speed of the machine must be checked before mounting the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel. Use only wheels marked with the type of wheel and maximum speed in revolutions per minute. Always select the right wheel for the job. A wheel is dangerous when used for work for which it was not designed.

Abrasive wheels need to be handled and stored carefully; avoid dropping or bumping them. Transport wheels in containers designed to provide support for the wheels if they are too heavy to carry by hand. When storing abrasive wheels, do not allow other items, such as tools, to be piled on top. Place them in racks or bins with dividers for different types of wheels. This will help with quick and safe identification. Place straight or tapered wheels on end in a cradle or chocked position to prevent them from rolling.

Never store wheels near excessive heat or cold, in contact with oil or moisture, or in drawers with loose tools. This may cause them to bump together and may cause the wheels to crack. Follow the manufacturer's instructions for length of time a wheel should be stored and how to store thin wheels.

Maintain grinding machines in good working condition. Make sure that only qualified employees provide maintenance on grinding machines.

Abrasive wheels greater than 2 inches can only be used on machines with safety guards. Because of the hazards involved, safety guards must be installed and located so as to be between the operator and the wheel during use. Adjustment of the guard must be done so pieces of an accidentally broken wheel will be deflected away from the operator. The top half of the wheel should be enclosed at all times.

GUARDING

Hazardous moving parts of a power tool need to be safeguarded. For example, belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded if such parts are exposed to contact by employees.

Guards, as necessary, should be provided to protect the operator and others from the following:

- Point of operation
- In-running nip points
- Rotating parts, and
- Flying chips and sparks.

Safety guards must never be removed when a tool is being used. For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except when it makes contact with the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work.

When power tools are designed to accommodate guards, they will be equipped with such guards at all times when in use. All power saws (circular, skill, table, etc.) will be equipped with blade guards. Ensure that guards are in place before using a piece of equipment that is equipped with guards. Do not use power saws with the guard tied or wedged open.

Portable grinding tools need to be equipped with safety guards to protect workers, not only from the moving wheel surface, but also from flying fragments in case of breakage.

Guarding shall meet the requirements set forth in ANSI B15.1. Guards may not be manipulated in such a way that will compromise its integrity or the protection in which intended.

3.5 CRYSTALLINE SILICA

Silica is a term which refers broadly to the mineral compound silicon dioxide (SiO2) and can be in the form of crystalline silica or amorphous silica. Crystalline silica is significantly more hazardous to employees than amorphous silica, and the term “silica” refers specifically to crystalline silica.

Crystalline silica is the basic component of sand, quartz, and granite rock. In addition to causing the disabling and irreversible lung disease known as silicosis, crystalline silica has been classified as a human carcinogen by the International Agency for Research on Cancer (IARC). Crystalline silica is an important industrial material and occupational exposure occurs across a broad range of industries.

More than two million U.S. workers are exposed to crystalline silica. OSHA estimates that more than 840,000 of these workers are exposed to silica levels that exceed the new permissible exposure limit (PEL). Processes associated historically with high rates of silicosis include sandblasting, sand-casting foundry operations, mining, tunneling, and granite cutting. Workers may be exposed to crystalline silica in a variety of industries, including, but not limited to: construction, mining, foundry work, stone cutting, ceramics or pottery work, glass manufacturing, shipyards, or manufacturing.

HEALTH EFFECTS

Occupational exposure to crystalline silica dust has long been known to produce pulmonary silicosis, a disabling, nonreversible, incurable lung disease caused by the inhalation of respirable crystalline silica particles. Additionally, there is evidence that exposure to crystalline silica-containing dusts causes or is associated with the following conditions: lung cancer, tuberculosis, chronic obstructive pulmonary disease (including emphysema and bronchitis), autoimmune diseases or immunologic disorders, chronic renal disease, and subclinical renal changes. Smoking adds to the damage. Silicosis was considered to be the most serious occupational hazard during the 1930’s when federal, state, and professional efforts started to focus attention on prevention strategies.

Once the microscopic particles are deposited in the lungs, they cause tissue damage and lead to the formation of fibrosis (scar tissue). This scarring decreases the lungs' ability to extract oxygen from the air. Smoking adds to the damage. There are three types of silicosis:

- **Chronic Silicosis**: Usually occurs after 10 or more years of exposure to crystalline silica at low levels. This is the most common type of silicosis. Symptoms may not appear in the early stages of chronic silicosis. In fact, chronic silicosis may go undetected for 15 to 20 years after exposure. Eventually, silicosis can result in respiratory failure and death.
- **Accelerated Silicosis**: Results from exposure to higher levels of crystalline silica and occurs 5 to 10 years after exposure. Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in chronic silicosis.
- **Acute Silicosis**: Can occur after only weeks or months of exposure to very high levels of crystalline silica. Death occurs within months. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels. Acute silicosis may develop after short periods of overexposure

As silicosis progresses, symptoms may include: shortness of breath, severe cough, weakness, occasional bluish skin at the ear lobes or lips, fatigue, or loss of appetite. Due to the presence of silica in the lungs, the body's ability to fight infections may be weakened and other illnesses (such as tuberculosis) may result

and can cause fever, weight loss, night sweats, chest pains, or respiratory failure. These symptoms can become worse over time, leading to death.

General Requirements

Dowdy has made a commitment to prevent silicosis at the worksite by taking the necessary steps to reduce employee exposure. It is our goal to comply with OSHA's Crystalline Silica standard, 29 CFR 1926.1153, and to ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of OSHA's permissible exposure limit (PEL) of 50 µg/m3 calculated as an 8-hourTWA.

This plan will be available for examination and copying, upon request, to each employee covered by 29 CFR 1926.1153, their designated representatives, the Assistant Secretary and the Director. The plan will be reviewed and evaluated for effectiveness at least annually and updated as necessary.

Control Methods

In order to reduce our workers' exposure to silica, tools will be operated and maintained in accordance with the manufacturer's instructions in order to minimize dust emissions. The following tasks involve exposure to respirable crystalline silica. Dowdy plans to utilize the control methods outlined below in order to reduce exposure:

- **Handheld power saws** – Integrated water delivery systems with continuously fed water to the blades. Respiratory protection with an APF 10 is required when used indoors, in an enclosed area, or outdoors for more than 4 hours.
    - When used for cutting fiber-cement board (with blade diameter of 8 inches or less), a drill equipped with a shroud or cowling with dust collection system will be used along with a filter with 99% or greater efficiency and a filter cleaning mechanism. A HEPA-filtered vacuum will be utilized when cleaning holes.
- **Walk-behind saws** – Integrated water delivery systems with continuously fed water to the blades. Respiratory protection with an APF 10 is required when used indoors, in an enclosed area, or outdoors for more than 4 hours.
- **Handheld and stand-mounted drills (including impact and rotary hammer drills)** – A commercially available shroud or cowling with dust collection system that provides the air flow recommended by the tool manufacture, or greater, and having a filter with 99% or greater efficiency and filter-cleaning mechanism. A HEPA filtered vacuum will be used when cleaning holes.
- **Jackhammers and handheld powered chipping tools** – Water delivery system with continuously stream or spray at the point of impact. Respiratory protection with an APF 10 is required when used indoors, in an enclosed area, or outdoors for more than 4 hours. OR a tool equipped with a shroud and dust collection system will be used along with a filter with 99% or greater efficiency and a filter cleaning mechanism. Respiratory protection with an APF 10 is required when used indoors, in an enclosed area, or outdoors for more than 4 hours.
- **Handheld grinders for mortar removal (i.e., tuckpointing)** – Respiratory protection with an APF 10 is required when used for 4 hours or less and APF 25 when used for more than 4 hours. A grinder equipped with a shroud and dust collection system will be used along with a dust collector with 25 cubic feet per minute or greater airflow and have a filter with 99% or greater efficiency and a filter cleaning mechanism.

- **Handheld grinders for uses other than mortar removal** – An integrated water delivery system that supplies water to grinding surface or a grinder equipped with a shroud and dust collection system will be used along with a dust collector with 25 cubic feet per minute or greater airflow per inch of the wheel diameter, and has a filter with 99% or greater efficiency and a filter cleaning mechanism. Respiratory protection with an APF 10 is required to be used when used indoors or in an enclosed area for more than 4 hours.
- **Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials** – Operate equipment from an enclosed cab. When employees are outside of the cab, water and/or dust suppressants will be used.
- **Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: demolishing, abrading, or fracturing silica-containing materials** – Water and/or dust suppressants will be used. OR the equipment will be operated within an enclosed cab.

Wherever feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, Dowdy will nonetheless use them to reduce employee exposure to the lowest feasible level and supplement the controls with the use of respiratory protection that complies with the requirements of 29 CFR 1910.1053(g).

When control methods are not feasible or practical, Dowdy will conduct an exposure assessment for each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level of 25 in accordance with OSHA's prescribed methods, detailed at 29 CFR 1926.1153(d).

When it is not feasible to fully and properly comply with the engineering controls, work practice controls, and respiratory protection described in OSHA's exposure Methods table outlined in 29 CFR 1926.1153(c)(1), the following measures will be implemented:

- Ensure that no employee is exposed to an airborne concentration of respirable silica in excess of 50 µg/m3 (micrograms of silica per cubic meter of air), calculated as an 8-hour TWA
- Assess the exposure of each employee who is or may be expected to be exposed to respirable silica at or above the action level of 25 µg/m3
- Use engineering and work practice controls to reduce and maintain employee exposure to respirable silica to or below the PEL, unless such controls are not feasible.
- Reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection.

HOUSEKEEPING

Housekeeping practices that have the potential to expose workers to silica such as dry sweeping, dry brushing and use of compressed air on surfaces that could contribute to employee exposure of respirable silica shall be replaced with methods that minimize the likelihood of exposure where feasible. Some alternative measures consist of wet sweeping HEPA-filtered vacuuming and ventilation systems that effectively capture the dust clouds.

MEDICAL SURVEILLANCE

If employees will be required to use a respirator for 30 or more days per year due to silica exposure as outlined in 29 CFR 1926.1153, medical surveillance will be offered at no cost to the employee.

Dowdy will ensure that medical surveillance complies with the following:

- All medical examinations and procedures required are performed by a PLHCP
- An initial (baseline) medical examination is made available within 30 days of initial assignment unless the employee has received a medical examination in the last three years that meet OSHA's exam requirements.
- Medical examinations shall be available at least every three years.

Exams will include at least the following items:

- A medical & occupational history to collect data on worker exposure
- Physical examination with special emphasis on the respiratory system
- Chest X-rays
- Pulmonary function testing
- Testing for latent tuberculosis

A form that may be used to document if an employee declines participation in the medical surveillance program is located at the end of the Crystalline Silica section in the Hazard Communication program.

Worker Responsibilities

Signs warning workers of hazardous work areas will be posted. These signs will contain the hazards and specify any personal protective equipment that is required. Workers are responsible for the following:

- Using engineering controls properly
- following safe work practices
- Participating in air monitoring and training programs
- Using the appropriate type of respirator when necessary
- Washing hands and face before eating, drinking, etc.
- Eating, drinking, etc. Only in areas where there is no crystalline silica dust;
- If possible, wearing disposable or washable work clothes and change into clean clothing before leaving the worksite.

Training

Workers will be trained about the jobs that present a silica hazard, crystalline silica's health effects, engineering and work practice controls to reduce exposures, the importance of maintenance and good housekeeping, the proper type and fitting of respirators (according to the facility's written respiratory protection program), Hazcom, and the proper use and care of personal protective equipment at least annually.

Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal measures required.

Training for employees who operate sandblasting, abrasive blasting, and hydroblasting equipment; and employees who work in close proximity to these operations will be trained before performing these operations, and at least annually.

3.6 COMPRESSED GAS AWARENESS

Hazards associated with compressed gases include oxygen displacement, fires, explosions, and toxic gas exposures, as well as the physical hazards associated with high pressure systems. Special storage, use, and handling precautions are necessary in order to control these hazards

Compressed gas is defined as:

- A material or mixture in a container with an absolute pressure of 40 psi (pounds per square inch) at 70 °F.
- A material or mixture in a container with an absolute pressure exceeding 104 psi at 130 °F
- A liquid material having a vapor pressure exceeding 40 psi absolute at 100 °F.

Absolute pressure is the pressure reading on the gauge plus local atmospheric pressure (14.7 psi at sea level).

COMPRESSED GAS HAZARDS

Gases may be hazardous because they are:

- Under high pressure: When a high-pressure cylinder accidentally ruptures or when a valve assembly breaks off, rocketing can occur. If the pressure of the contents increases enough, it can drive the cylinder, turning it into a missile that can blast its way right through a concrete wall.
- Flammable: Flammable gases catch fire easily and burn quickly. Hydrogen, acetylene, ethylene, propane, and natural gas are some examples. If you were to add flammability to a compression hazard, you would have some extremely dangerous materials.
- Asphyxiant (inert): Inert gases displace oxygen for breathing and can lead to suffocation of the exposed employee.
- Oxidizing: Oxidizing gases can explode violently when they react with organic and combustible materials. It is important that containers of oxidizing gases or oxygen and associated equipment be free of oils, greases, and other hydrocarbon-based materials. In addition, clothing which has been exposed to an oxygen-rich atmosphere is a fire hazard.
- Corrosive: Corrosive gases attack tissue and other materials. Employees should be aware that they will be required to wear special PPE and a self-contained breathing apparatus when handling these gases. Eyewashes and emergency showers must be available. Point out their location.
- Toxic or highly toxic: Poison (toxic) gases such as arsine, diborane, methyl bromide, nitric oxide, nitrogen dioxide, phosgene, and phosphine can only be handled by specially trained personnel. Workers must be fully aware of the potential hazards involved and must wear the appropriate PPE to handle them.
- Cryogenic (extremely cold): A cryogenic liquid has a boiling point colder than -150 degrees Fahrenheit at 14.7 psia. Besides causing frostbite or burning the skin on contact, such a liquid has an asphyxiation hazard associated with it, too. Cryogenic liquids require a higher level of PPE than other substances contained in pressurized tanks.

STORAGE, MAINTENANCE, & HANDLING

Employees must be trained on the proper use, handling and storage of compressed gas cylinders. The following is a list of recommendations for storage, maintenance, and handling of compressed gas cylinders:

- Make sure the contents of the compressed gas cylinder are clearly stenciled or stamped on the cylinder or on a durable label.
- Do not identify a gas cylinder by the manufacturer's color code.
- Never use cylinders with missing or unreadable labels.
- Visually inspect all cylinders for damage before use.
- Be familiar with the properties and hazards of the gas in the cylinder before using.
- Wear appropriate protective eyewear when handling or using compressed gases.
- Use the proper regulator for each gas cylinder.
- Do not tamper with or attempt to repair a gas cylinder regulator.
- Never lubricate, modify, or force cylinder valves.
- Open valves slowly using only wrenches or tools provided by the cylinder supplier directing the cylinder opening away from people.
- Check for leaks around the valve and handle using a soap solution, "snoop" liquid, or an electronic leak detector.
- Leaking cylinders should be moved to an isolated, well-ventilated area, away from ignition sources. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Contact the supplier and ask for response instructions.
- Close valves and relieve pressure on cylinder regulators when cylinders are not in use. Label empty cylinders "EMPTY" or "MT" and date the tag; treat in the same manner that you would if it were full.
- Always attach valve safety caps when storing or moving cylinders.
- Transport cylinders in a vertical secured position with an approved cart with a safety chain; never move or roll gas cylinders by hand.
- Securely attach all gas cylinders (empty or full) to a wall or laboratory bench with a clamp or chain, or secure in a metal base in an upright position.
- Store cylinders by gas type, separating oxidizing gases from flammable gases by either 20 feet or a 30-minute firewall that is 5 feet high.
- Store gas cylinders in cool, dry, well-ventilated areas away from incompatible materials and ignition sources.
- Do not subject any part of a cylinder to a temperature higher than 125 °F or below 50 °F.
- Store empty cylinders separately from full cylinders.
- When a cylinder cap cannot be removed by hand, cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.
- Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.
- Cylinders must be equipped with the correct regulators. Regulators and cylinder valves should be inspected for grease, oil, dirt and solvents.

RESOURCES

With so many compressed gas hazards, OSHA developed general compressed gas regulations as well as gas-specific regulations to eliminate and prevent injury and illness associated with compressed gases, regardless of content or packaging (cylinder, portable tank, or standing tank). General compressed gas requirements are outlined in 29 CFR 1910.101, and are summarized below:

- Each compressed gas cylinder under the employer's control must be maintained in a safe condition as determined by a visual inspection
- The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965, which is incorporated by reference as specified in Sec. 1910.6.
- Compressed gas cylinders, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963, which is incorporated by reference as specified in Sec. 1910.6.

3.7 Rigging Material Handling

Rigging equipment must never be loaded in excess of its recommended safe working load. Safe working load charts are available in the construction regulations (1926.251, Tables H- 1 through H-20) for each type of sling.

When not in use, rigging equipment should be removed from the immediate work area so as to not prevent a hazard to employees, to protect the sling from jobsite hazards such as dirt, oil, grease, and not being walked on or run over by construction traffic.

Custom lifting equipment (grabs, hooks, clamps, etc.) designed for specific functions such as lifting modular panels, prefabricated structures, and similar materials, must be marked to indicate its safe working loads. Such equipment must be proof-tested prior to use to 125 percent of its rated load.

Your competent person must visually inspect all slings, fastenings, and attachments for damage or defects at the following frequencies. Damaged or defective equipment shall not be used and must be immediately removed from service

- Prior to use on each shift.
- As necessary during operations to ensure continued integrity of the sling, especially if the sling is subjected to heavy stresses.

General Industry Rules That Apply to Construction

OSHA has determined that the following general industry rules (1910.184) also apply to construction applications.

- Slings must not be shortened with knots or bolts or other makeshift devices.
- Sling legs that have been kinked must not be used.
- Slings used in a basket hitch must have the loads balanced to prevent slippage.
- Slings must be padded or protected from load sharp edges.
- Hands or fingers must not be placed between the sling and its load while the sling is being tightened around the load.

Other Safety Rules

- Suspended loads must be kept clear of all obstructions.
- Crane operators should avoid sudden starts and stops when moving suspended loads.
- Employees must remain clear of loads about to be lifted and suspended.
- Tag lines should be used unless their use creates an unsafe condition.
- All shock loading is prohibited.
- Latches must be in place on all hooks, thus eliminating the hook throat opening.
- All employees shall be kept clear of loads about to be lifted and of suspended loads

3.8 VEHICLES AND MOBILE EQUIPMENT

If vehicle safety practices are not observed, employees risk being pinned between construction vehicles and walls, struck by swinging backhoes, crushed beneath overturned vehicles, or other similar accidents. In addition, work near public roadways present the risk being struck by trucks or cars.

Provided below are suggested practices for operations involving vehicles and mobile equipment. For further details, refer to the OSHA standards covering motor vehicles and mechanized equipment.

- Only authorized employees are allowed to operate mobile equipment.
- Employees must be instructed to stay clear of backing and turning vehicles and equipment with rotating cabs.
- All off-road equipment used on site must be equipped with rollover protection (ROPS) (Figure 21).
- Back-up alarms for equipment with limited rear view or use someone to help guide them back must be maintained.
- Conduct pre-shift inspections on the assigned equipment to verify that the equipment is in working order.
- Be sure that all vehicles have fully operational braking systems, brake lights, and a working backup alarm.
- Use seat belts when transporting workers in motor and construction vehicles.
- Maintain at least a 10-foot clearance from overhead power lines when operating equipment.
- Block up the raised bed when inspecting or repairing dump trucks.
- Know the rated capacity of the crane and use accordingly.
- Ensure the stability of the crane.
- Use a tag line to control materials moved by a crane.
- Verify experience or provide training to crane and heavy equipment operators.
- Passengers are not permitted to ride on equipment unless the equipped to accommodate passengers.
- The equipment operator shall use access provided to get on and off equipment.
- If the mobile equipment does not have an enclosed cab, eye protection must be used when in operation.
- Vehicles and mobile equipment must only be used in the manner in which it was designated and intended for.
- Before fueling, the operator of a gasoline or diesel vehicle must shut off the engine and shall see that the nozzle of the filling hose makes contact with the filling neck of the tank. No one shall be on the vehicle during fueling operations except as specifically required by design. There shall be no smoking or open flames in the immediate area during fueling operation.

3.9 HAND-SIGNALING CONTROL

The primary function of traffic control procedures is to move vehicles and pedestrians safely and expeditiously through or around temporary traffic control zones while protecting on- site workers and equipment.

QUALIFICATIONS FOR FLAGGERS

Because flaggers are responsible for public safety and make the greatest number of public contacts of all highway workers, they should have the following minimum qualifications:

- Sense of responsibility for the safety of the public and workers
- Training in safe traffic control practices
- Average intelligence
- Good physical condition, including sight and hearing
- Mental alertness and the ability to react in an emergency
- Courteous but firm manner
- Neat appearance

HIGH-VISIBILITY CLOTHING

For daytime work, the flagger's vest, shirt, or jacket shall be orange, yellow, strong yellow green or fluorescent versions of these colors. For nighttime work, similar outside garments shall be retro-reflective. The retro-reflective material shall be orange, yellow, white, silver, strong yellow-green, or a fluorescent version of one of these colors and shall be visible at a minimum distance of 1,000 feet. The retro-reflective clothing shall be designed to identify clearly the wearer as a person and be visible through the full range of body motions.

Uniformed law enforcement officers may be used as flaggers in some locations, such as an urban intersection, where enforcement of traffic movements is important. Uniformed law enforcement officers may also be used on freeways where traffic is channeled around work sites and it is necessary to assure that advisory and regulatory speeds are being enforced. For nighttime work and in low-visibility situations, a retro-reflective garment as described above should be worn.

HAND-SIGNALING DEVICES

Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags are used to control traffic through temporary traffic control zones. The STOP/SLOW paddle, which gives drivers more positive guidance than red flags, should be the primary hand-signaling device. The standard STOP/SLOW sign paddle shall be 18 inches, square with letters at least 6 inches high. A rigid handle should be provided. This combination sign should be fabricated from light semi-rigid material, and shall have an octagonal shape. The background of the STOP face shall be red with white letters and border. To improve conspicuity, the STOP/SLOW paddles may be supplemented by one or two symmetrically positioned alternately flashing white high-intensity lamps on each side. The background of the SLOW face shall be orange with black letters and border. When used at night, the STOP/SLOW paddle shall be retro-reflectorized in the same manner as signs.

Flag use should be limited to emergency situations and at low-speed and/or low-volume locations which can best be controlled by a single flagger. Flags used for signaling shall be a minimum of 24 inches square,

made of a good grade of red material, and securely fastened to a staff about 3 feet long. The free edge should be weighted so the flag will hang vertically, even in heavy winds. When used at night, flags shall be retro-reflective red.

Hand-Signaling Procedures

STOP/SLOW paddle and flag use are illustrated in the figure on the next page. The following methods of signaling with STOP/SLOW paddles should be used:

- To Stop Traffic-The flagger shall face traffic and extend the STOP sign paddle in a stationary position with the arm extended horizontally away from the body. The free arm should be raised with the palm toward approaching traffic.
- To Direct Stopped Traffic to Proceed-The flagger shall face traffic with the SLOW paddle held in a stationary position with the arm extended horizontally away from the body. The flagger should motion with the free hand for traffic to proceed.
- To Alert or Slow Traffic-The flagger shall face traffic with the SLOW sign paddle held in a stationary position with the arm extended horizontally away from the body. The flagger may motion up and down with the free hand, palm down, indicating that the vehicle should slow down.

The following methods of signaling with a flag should be used:

- To Stop Traffic-The flagger shall face traffic and extend the flag staff horizontally across the traffic lane in a stationary position, so that the full area of the flag is visible hanging below the staff. The free arm should be raised with the palm toward approaching traffic.
- To Direct Stopped Traffic to Proceed. The flagger shall face traffic with the flag and arm lowered from view of the driver. With the free hand, the flagger should motion traffic to proceed. Flags shall not be used to signal traffic to proceed.
- To Alert or Slow Traffic. The flagger shall face traffic and slowly wave the flag in a sweeping motion of the extended arm from shoulder level to straight down, without raising the arm above a horizontal position.

Flagger Stations

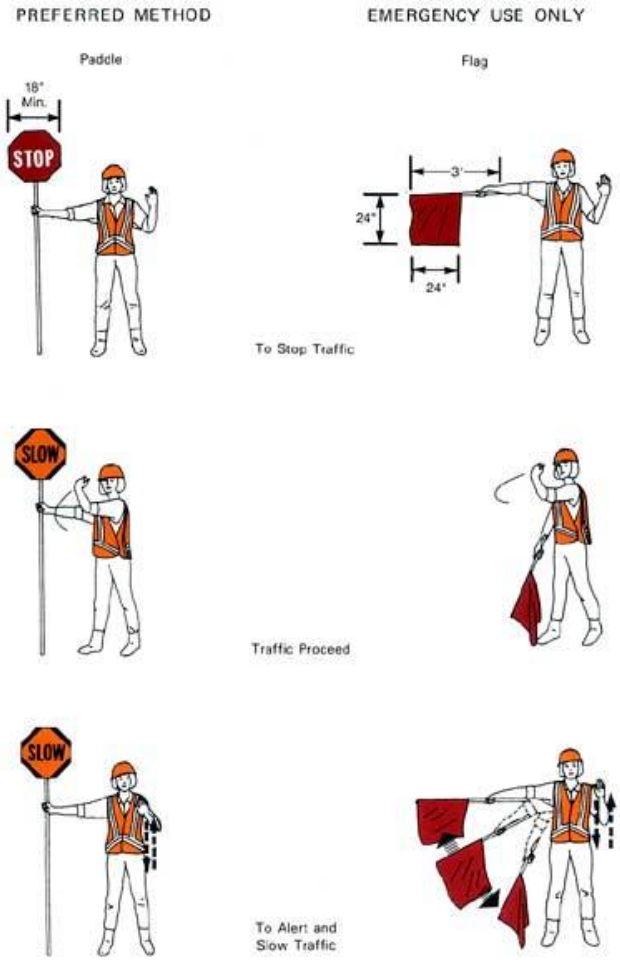
Flagger stations shall be located far enough ahead of the work space so that approaching traffic has sufficient distance to stop before entering the work space. Table VI-1 in the Manual on Universal Traffic Control Devices (Guidelines for Length of Longitudinal Buffer Space), may be used for locating flagger stations in advance of the work space. This distance is related to approach speeds, friction factors, and pavement and tire conditions. These distances may be increased for downgrades.

The flagger should stand either on the shoulder adjacent to the traffic being controlled or in the barricaded lane. At a "spot" obstruction, a position may have to be taken on the shoulder opposite the barricaded section to operate effectively. A flagger should stand only in the lane being used by moving traffic after traffic has stopped, and the flagger needs to be visible to other traffic or to communicate with drivers. Because of the various roadway geometrics, flaggers should be clearly visible to approaching traffic at all times. For this reason, the flagger should stand alone.

Other workers should not be permitted to congregate around the flagger station. The flagger should be stationed far enough ahead of the work force to warn them (for example with horns, whistles etc.) of approaching danger, such as vehicles out of control.

Flagger stations should be visible far enough ahead to permit all vehicles to stop. Table VI-1 in the Manual on Universal Traffic Control Devices (Guidelines for Length of Longitudinal Buffer Space), may be used in selecting the location of flaggers. This distance is related to approach speeds, friction factors, and pavement and tire conditions. These distances may be increased for downgrades. These distances are calculated in a manner similar to those calculated in the first paragraph of 6E-6. Flagger stations should be preceded by proper advance warning signs. Under certain geometric and traffic situations, more than one flagger station may be required for each direction of traffic. At night, flagger stations should be illuminated.

At two-way, unusually low-volume and/or unusually low- speed short lane closings where adequate sight distance is available for the safe handling of traffic, the use of one flagger may be sufficient.



Use of Hand Signaling Devices by Flagger

3.10 ELECTRICAL SAFETY

Electrical current exposes workers to a serious, widespread occupational hazard; practically all members of the workforce are exposed to electrical energy during the performance of their daily duties, and electrocutions occur to workers in various job categories. Many workers are unaware of the potential electrical hazards present in their work environment, which makes them more vulnerable to the danger of electrocution.

Electrical injuries consist of four main types: electrocution (fatal), electric shock, burns, and falls caused as a result of contact with electrical energy.

Safety and health programs must address electrical incidents and the variety of ways electricity becomes a hazard. In general, OSHA requires that employees not work near any part of an electrical power circuit unless protected. The following hazards are the most frequent cause of electrical injuries:

- Contact with power lines
- Lack of Ground-Fault Protection
- Path to Ground Missing or Discontinuous
- Equipment Not Used in Manner Prescribed
- Improper Use of Extension and Flexible Cords

Provided below is a summary of jobsite safety practices that will help guide Dowdy in avoiding common electrical hazards. For exact language and specific details Occupational Safety and Health Administration's (OSHA) Electrical Safety Standards for the Construction Industry refer to 29 CFR 1926 Subpart K.

- Prohibit work on new and existing energized (hot) electrical circuits until all power is shut off and a positive Lockout/Tagout System is in place.
- Don't use frayed or worn electrical cords or cables.
- Use only 3-wire type extension cords designed for hard or junior hard service. (Look for any of the following letters imprinted on the casing: S, ST, SO, STO, SJ, SJT, SJO, SJTO.)
- Maintain all electrical tools and equipment in safe condition and check regularly for defects.
- Remove broken or damaged tools and equipment from the jobsite.
- Protect all temporary power (including extension cords) with ground fault circuit interrupters (GFCIs). Plug into a GFCI-protected temporary power pole, a GFCI protected generator, or use a GFCI extension cord to protect against shocks (Figure 22).
- Don't bypass any protective system or device designed to protect employees from contact with electrical current.
- Locate and identify overhead electrical power lines. Make sure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.

3.11 GROUND-FAULT CIRCUIT INTERRUPTERS (GFCI)

Dowdy uses Ground Fault Circuit Interrupters whenever feasible. A ground-fault occurs when there is a break in the low-resistance grounding path from a tool or electrical system. The electrical current may then take an alternative path to the ground through the user, resulting in serious injuries or death. The ground-fault circuit interrupter, or GFCI, 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. It works by comparing the amount of current going to and returning from equipment along the circuit conductors. When the amount going differs from the amount returning by approximately 5milliamperes, the GFCI interrupts the current.

The GFCI is rated to trip quickly enough to prevent an electrical incident. If it is properly installed and maintained, this will happen as soon as the faulty tool is plugged in. If the grounding conductor is not intact or of low-impedance, the GFCI may not trip until a person provides a path. In this case, the person will receive a shock, but the GFCI should trip so quickly that the shock will not be harmful.

The GFCI will not protect you from line contact hazards (i.e. a person holding two "hot" wires, a hot and a neutral wire in each hand, or contacting an overhead power line). However, it protects against the most common form of electrical shock hazard, the ground-fault. It also protects against fires, overheating, and destruction of wire insulation.

Because GFCIs are so complex, they require testing on a regular basis. Test permanently wired devices monthly, and portable-type GFCIs before each use. All GFCIs have a built-in test circuit, with test and reset buttons, that triggers an artificial ground-fault to verify protection. Ground-fault protection, such as GFCIs provide, is required by OSHA in addition to (not as a substitute for) general grounding requirements.

Receptacle Type: The Receptacle Type incorporates a GFCI device within one or more receptacle outlets. Such devices are becoming popular because of their low cost.

Portable: Portable Type GFCIs come in several styles, all designed for easy transport. Some are designed to plug into existing non-GFCI outlets, or connect with a cord and plug arrangement. The portable type also incorporates a no-voltage release device that will disconnect power to the outlets if any supply conductor is open. Units approved for outdoor use will be in enclosures suitable for the environment. If exposed to rain, they must be listed as waterproof.

Cord-Connected: The Cord-Connected Type of GFCI is an attachment plug incorporating the GFCI module. It protects the cord and any equipment attached to the cord. The attachment plug has a non-standard appearance with test and reset buttons. Like the portable type, it incorporates a no-voltage release device that will disconnect power to the load if any supply conductor is open.

3.12 ERGONOMICS & MANUAL LIFTING

Ergonomic injury risk factors include forceful movements, repetitive motions, awkward postures, and lack of rest. Rest periods give the body time to recover from work; break time exercises and stretches strengthen the body. Workers should think of themselves as Industrial Athletes; athletes wouldn't participate in a sport without proper rest and warm-up, so use the same preparation on the job.

Breaks - Pay attention to signs of discomfort and fatigue on the job; these are warning signs from your body. As muscles tire during a work task, slouching can lead to poor posture, sloppy, uncontrolled movements, and injuries. Rest breaks mean recovery for the body. During a job task, take micro-breaks lasting 10-15 seconds every ten minutes. Take periodic mini-breaks lasting 3-5 minutes. These short breaks give the body a rest, reduce discomfort, and improve your performance.

Rest Periods - Alternate your work activities and postures throughout the day. Rotating tasks may seem inefficient, but the rest and use of different muscle groups increases energy and maintains productivity. For example, if you are a landscaper, don't trim all of the shrubs, sweep up the trimmings, and then leaf-blow the whole area; work in sections and trim, sweep, and leaf-blow in alternating tasks. If you work at a single workstation and job task all day, move into different postures while you work: first standing, then standing with one foot resting on a stool, then sitting.

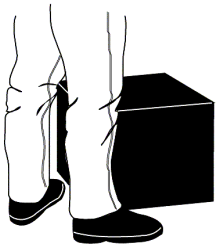
Stretches - Stretches help you to warm-up before work and relax during breaks; they increase flexibility and boost blood flow and oxygen to muscles. Perform stretches slowly and gently; avoid extreme postures and stop stretching if you feel pain or discomfort. Physical and Occupational Therapists are the most qualified individuals to generate a specific stretching and warm-up program.

Proper Lifting Techniques - There are a wide variety of injuries that can happen to the back. Some injuries are serious enough to require surgery. Some injuries lead to permanent disability. Any back injury can limit all of your activities, both on and off of the job. By using the correct lifting posture, you can avoid back injury.

The basic rules of good lifting are:

- Size up the load before you lift. Test by lifting one of the corners or pushing. If it's heavy or feels too clumsy, get a mechanical aid or help from another worker. When in doubt, don't lift alone.
- Bend the knees. Note that this item is the single, most important aspect of lifting.
- Place your feet close to the object and center yourself over the load.
- Get a good handhold.
- Lift straight up, smoothly, and let your legs do the work, not your back.
- Do not twist or turn your body once you have made the lift.
- Make sure beforehand that you have a clear path to carry the load.
- Set the load down properly.
- Always push, not pull, the object when it's on a cart or dolly.
- If it's a long load, get some help.
- Split the load into several smaller ones when you can.

SAFE LIFTING TECHNIQUES



1. Stand close to the load with feet spread apart about shoulder width, with one foot slightly in front of the other for balance.

2. Squat down bending at the knees (not your waist). Tuck your chin while keeping your back as vertical as possible.

3. Get a firm grasp of the object before beginning the lift.

4. Begin slowly lifting with your LEGS by straightening them. Never twist your body during this step.

5. Once the lift is complete, keep the object as close to the body as possible. As the load's center of gravity moves away from the body, there is a dramatic increase in stress to the lumbar region of the back.

4.1 SAFETY MEETINGS

Safety meetings are an important part of jobsite safety. They are an opportunity for employees and their supervisor to discuss specific hazards encountered at the jobsite and how best to address them.

Meetings will focus on situations faced by the workers in the current work environment. Prior to each shift, supervisors should address the hazards that will face the workers on the particular jobsite. Individual workers should be encouraged to provide input on their observations of hazards that exist or will be encountered during the shift that is about to begin.

Effective safety meetings should incorporate the following:

- Discuss safety policies and procedures with management and make recommendations for improvements.
- Review accident investigation reports on all accidents and "near-misses".
- Identify unsafe conditions and work practices and make recommendations for corrections.
- Discuss problems that have arisen or that are anticipated along with any other safety and health topics.

The meeting should be a valuable educational experience by:

- Keep the discussion flowing and on-topic
- Start and stop the meetings on time
- Use illustrated material and demonstrations to make the point
- Discuss each topic thoroughly
- Review accidents, injuries, property losses, and near misses
- Evaluate accidents, injuries, property losses, and near misses for trends and similar causes to initiate corrective actions.

Safety meetings may also incorporate various training topics in the form of toolbox talks which are brief discussions regarding areas of safety applicable to a particular task or jobsite. Tool box talks that include subject matter applicable to construction are included in the training section of this document.

Each safety meeting will be documented on the form on the following page.

♦ SAFETY MEETING MINUTES

Jobsite: _____ Date: _____

Supervisor: _____

Topics Discussed:

_____

_____

_____

_____

_____

Action Items:

_____

_____

_____

_____

_____

Meeting Attended By:

Print Name:	Signature:

4.2 TRAINING & EDUCATION

Training is an essential component of an effective safety and health program addressing the responsibilities of both management and employees at the site. Training is most effective when incorporated into other education on performance requirements and job practices.

Training programs should be provided as follows:

- Initially when the safety and health plan is developed
- For all new employees before beginning work
- When new equipment, materials, or processes are introduced
- When procedures have been updated or revised
- When experiences/operations show that employee performance must be improved
- At least annually

Besides the standard training, employees should also be trained in the recognition of hazards – be able to look at an operation and identify unsafe acts and conditions. A list of typical hazards employees should be able to recognize may include:

- **Fall Hazards** - falls from- floors, roofs and roof openings, ladders (straight and step), scaffolds, wall openings, tripping, trenches, steel erection, stairs, chairs
- **Electrical Hazards** - appliances, damaged cords, outlets, overloads, overhead high voltage, extension cords, portable tools (broken casing or damaged wiring), grounding, metal boxes, switches, ground fault circuit interrupters(GFCI)
- **Caught-Between** – cave-ins, unguarded machinery, equipment, confined spaces
- **Struck-By** – vehicles, machinery, flying/falling objects, concrete/masonry walls
- **Housekeeping Issues** - exits, walkways, floors, trash, storage of materials (hazardous and non-hazardous), protruding nails, exits (blocked), trips/slips, stairs, un-even flooring, electrical cords, icy walkways, etc.
- **Fire Hazards** - oily-dirty rags, combustibles, fuel gas cylinders, exits (blocked)
- **Health Hazards** - silicosis, asbestos, loss of hearing, eye injury due to flying objects, chemical exposures, poison ivy, stagnant water

Employees trained in the recognition and reporting of hazards and project supervisors trained in the correction of hazards will substantially reduce the likelihood of a serious injury.

4.3 New Hire Orientation

Whenever a new employee comes on board, there is a period of training and learning in which the new employee learns about the company's safety and health programs, emergency action plans, fire protection policy, and any other safety-related issues that the employee must know. This is also an opportunity to influence the new employee on the safety culture of the company, and positively influence that employee to keep safety always in mind.

The employee orientation will be started during the employee's first day on the job. A qualified company representative will conduct the new hire orientation. The entire orientation program may be broken up over a period of a few days, but when it is complete, employees should know the following safety information:

- The organization's safety objectives and goals.
- The function of the corporate safety committee.
- What employees should do if they are injured on the job.
- The procedures for reporting accidents, near-miss incidents, hazards, injuries, and illness.
- What to do in case of an emergency.
- The facility's use of warning signs and tags.
- OSHA's recordkeeping requirements and employee access to exposure and medical records.
- The safety rules and safe procedures that apply to their jobs (especially for tasks with OSHA-required training).

As part of the new hire orientation process, the following topics, at minimum, will be covered:

- OSHA's Employee Responsibilities
- Personal Protective Equipment
- Hazard Communication
- Emergency Evacuation & Fire Safety
- Bloodborne Pathogens

TAB 5: TOOLBOX TALKS

Toolbox Talk
Carbon Monoxide

Overview

Carbon monoxide is a clear, odorless gas which is created by inefficient combustion emissions. The most common sources in industry are gasoline or diesel powered pressure washers, air compressors, forklifts or other petroleum fired machinery.

The chemical makeup of CO is a carbon molecule linked to an oxygen molecule. Carbon monoxide kills by binding up the hemoglobin in the blood. Since CO has an affinity for hemoglobin several hundreds of times greater than the oxygen that is ever present, that being about 200,000 parts per million in normal air. Therefore it takes only a small amount of CO to bind up a large amount of hemoglobin. This decreases the amount of oxygen delivered to the tissues and without oxygen, you will slowly suffocate to death.

What does this mean for workers? Carbon Monoxide will affect workers as follows:

- Slight headache and dizziness
- Nausea
- Drowsiness and an euphoric feeling
- Unconsciousness
- Death

Signs and Symptoms of Exposure

Acute exposure: Signs and symptoms may include headache, flushing, nausea, vertigo, weakness, irritability, unconsciousness, and in persons with pre-existing heart disease and atherosclerosis, chest pain and leg pain.

Chronic exposure: Repeated bouts of carbon monoxide poisoning may cause persistent signs and symptoms, such as anoxia (oxygen deprivation to tissue or organs), headache, lassitude (lack of energy or weariness), dizziness, and ataxia (poor muscle control causing clumsy voluntary movements).

Toolbox Talk Attendance Record

Carbon Monoxide

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Preventing Caught or Crushed Injuries

Overview

Each year, workers suffer approximately 125,000 caught or crushed by injuries that occur when body parts get caught between two objects or entangled with machinery. These hazards are also referred to as "pinch points or nip points." The physical forces applied to a body part caught in a pinch point can vary and cause injuries ranging from bruises, cuts, and scalping to mangled and amputated body parts, and even death.

Prevention

To avoid these types of injuries dress appropriately for work with pants and sleeves that are not too long or too loose. Shirts should be fitted or tucked in. Avoid wearing loose and dangling jewelry. Tie back long hair and tuck braids and ponytails behind you or into your clothing. Wear the appropriate, well-fitting gloves for your job.

Look for possible pinch points before you start a task. Take the time to plan out your actions and decide on the necessary steps to work safely. Give your work your full attention. Don't joke around, daydream, or try to multi-task on the job – most accidents occur when workers are distracted. Read and follow warning signs posted on equipment.

Machinery can pose a hazard with moving parts, conveyors, rollers and rotating shafts. NEVER reach into a moving machine. Properly maintain and always use the machine and tool guards provided with your equipment; they act as barriers between the moving parts and your body. Don't reach around, under or through a guard and always report missing or broken barriers to your supervisor. Turn equipment off and use lockout/tagout procedures before adjusting, clearing a jam, repairing, or servicing a machine.

Caught/crush hazards are not limited to machinery. Vehicles, powered doors, and forklifts can pose a crush hazard unless they have been blocked or tagged out. Never place your body under or between powered equipment unless it is de-energized. Doors, file drawers, and heavy crates can pinch fingers and toes. Take care where you place your fingers. Test the weight before lifting, carrying, and placing boxes; an awkward or heavy load can slip and pinch your hands or feet. Get help or use tools to move large and/or heavy items.

Toolbox Talk Attendance Record
Preventing Caught for Crushed Injuries

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Chemical Safety

Overview
Chemicals come in various forms and can affect those exposed in different ways. A chemical can take the form of a mist, vapor, liquid, dust, fume or gas. The type of chemical, the way it is used, and the form that it takes determine its effect and what should be done to avoid harmful exposure.

Precautions
Some basic safety precautions should be understood and followed including:

- Know what to do in an emergency. If there is a leak or spill, keep away from the area, unless you know what the chemical is and how to safely clean it up. Know where emergency protective equipment and supplies kept and how to use them.
- Use appropriate protective clothing and equipment (glasses, aprons, boots, gloves, etc.) as required or as necessary.
- If the clothing becomes contaminated by the chemical, shower or wash the skin areas exposed. Change and decontaminate clothing (or dispose of clothing if it is designed to single use).
- Do not take contaminated clothing home to be laundered because by doing so, it could expose family members to the contaminant.
- When working with chemicals, always wash hands thoroughly before eating. If necessary, shower and change clothes before going home.
- Never take food into the work area where chemicals are being used or stored.
- If work will be done in an area where there is a possibility of exposure to toxic substances, use a buddy system or establish an emergency communication system. A worker can be dangerously exposed or overcome by a chemical and need immediate assistance.
- Keep the workplace clean to reduce the risk of contamination. Where possible, wipe up and absorb the contaminant, using proper protective equipment as required. Clean up spills immediately and dispose of contaminated material properly. With some chemicals a vacuum is recommended for cleanup rather than a broom or compressed air. The idea is to collect and confine the contaminant, not just spread it around.

You should know the company's system for identifying hazardous chemicals. You must know and understand the specific health and safety hazards of the chemicals with which they work and follow the recommended safety precautions. All chemicals must be stored, labeled and disposed of in accordance with the hazard communication program

Toolbox Talk Attendance Record
Chemical Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Working in Confined Spaces

A "confined space" may be generally defined as any area which has limited means of egress and is subject to oxygen deficient atmosphere or to the accumulation of toxic or flammable gases or vapors. Examples of these are:

- Tanks
- Vats
- Boilers
- Bins
- Hoppers
- Process Vessels
- Sewers
- Pits
- Deep Trenches
- Vaults
- Silos

Working in any confined space is a potential killer. The hazards are lack of oxygen and a variety of gases/vapors which may replace the oxygen and/or accumulate to toxic or explosive levels.

A normal atmosphere contains approximately 20% oxygen. Any atmosphere containing less than 19.5 % oxygen is considered to be oxygen deficient. Air containing 16 % or less oxygen is lethal. An oxygen deficient atmosphere may be produced by consumption of oxygen without replacement or displacement of oxygen by another gas.

The following safety precautions should be taken to avoid death or serious injury when working in confined spaces:

a) Don't enter any confined space without knowing what and what was in it and what precautions to take
b) If possible, purge the involved space with steam, water, compressed or fresh air using exhaust and blowing devices. Retest the atmosphere after purging. If purging is impossible or impractical:
    1. Inform employees of the hazards, what they can expect and what they must do.
    2. Provide sufficient general ventilation to guarantee fresh air,
    3. Provide an approved air-supplied respirator and safety harness with a life line if there is a possibility of the atmosphere becoming hazardous.
    4. Don't contaminate your own air. Avoid use of toxic solvents, leaky acetylene hoses, carbon tetrachloride and other similar lethal materials.
c) Have competent people test the atmosphere with gas detection equipment to determine if there are any toxic gases and if there is sufficient oxygen to support life.
d) Close and lock-out any supply lines, chutes, pipes, etc., to confined space in which work is being done. Continue to monitor the atmosphere in a confined space even if it was "safe" when work began.
e) Remove any remaining sludge or other deposits. This must be done carefully since some caustic cleaning solvents can react violently with some residues.
f) Where an explosive or flammable atmosphere is present, avoid all possible sources of ignition and use extreme care in purging the contaminated space.

Anyone entering a hazardous atmosphere should be equipped with an air-supplied respirator or self-contained breathing equipment, a safety harness and a life line. He/she should be backed up by a similarly equipped worker to assist in the event of any emergency. A third worker within sight and hearing of this work should be informed that workers are going into the confined space.
If an emergency situation arises in a confined space, the "stand-by" man, before entering the area, should:

★ Sound an alarm or summon help by voice communication.
★ Put on and properly adjust the life line and respiratory protective equipment
★ Enter confined space only after help has arrived.

Another condition frequently encountered in confined spaces is high temperature. Heat stroke, which can be fatal, or more commonly, heat cramps or heat exhaustion causing only temporary discomfort can result from physical exertion in a hot atmosphere. Methods used to alleviate this condition would include:

a) Adequate natural or forced ventilation.

b) Cooling of air by portable air conditioning units.
c) Providing intermittent rest periods in cooler atmosphere outside the confined space,
d) Use of salt tablets and ample drinking water to replace liquids and salts lost. (CAUTION: Persons with heart problems or those on a "Low Sodium" diet or whose intake of salt must be restricted -- consult a physician on how to care for persons with these conditions.)
e) Get medical help.

Toolbox Talk Attendance Record
Working in Confined Spaces

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Punctures and Cuts

Overview

Punctures and cuts are common on-the-job injuries. Punctures occur when objects such as splinters, nails, glass, and sharp tools such as scissors and knives pierce the skin and cause a small hole. Cuts occur when sharp objects, including knives, scissors, sharp metal edges, and glass slice through the skin superficially or into the deeper layers of fat, tendons, muscles, and even bone.

Prevention

The best way to deal with cuts and punctures is to avoid getting them in the first place. Wear appropriate clothing on the job such as sturdy shoes or work boots, long sleeve shirts, and long pants. Consider sturdy coveralls to protect your skin from sharp and flying objects. Wear personal protective equipment (PPE) appropriate to your job tasks such as gloves, safety glasses, work boots, gauntlets, and chaps.

Follow safe work practices and know how to use your tools properly. Inspect, maintain, and replace your tools when necessary. Always use the correct tool for the job. Ensure that blades on cutting tools are sharpened; dull cutting surfaces can cause accidents. When working with sharp tools, always know where both of your hands are at all times. Practice good housekeeping with your sharp and cutting tools by sheathing and storing them properly. Place tools far back on workbenches and shelves, not against the edge where someone walking by might get stuck.

If you have to pick up broken glass or metal shards, use a broom and a dustpan or pieces of cardboard. Never pick up broken glass with your bare hands. Dispose of sharp objects properly in rigid sided containers that will not get punctured and spill. Label these containers with the word “Sharp” to warn coworkers of the hazard. Never reach into a garbage can with your hands or try to “tamp” it down with your hands or booted feet in case someone has improperly disposed of a sharp object or even a syringe. To properly dispose of syringes, pick them up with tongs and place them into hard plastic medical waste containers.

Exposure

If you receive a puncture or cut on the job, notify your supervisor immediately. If you can, gently wash the area with soap and water. To stop bleeding, apply gentle pressure to the wound with clean gauze, cotton, or other absorbent material. When bleeding has stopped, apply an antibacterial ointment and a clean dressing to the wound. If you cannot stop the bleeding, if the wound is very large, or if you are impaled with an object, seek medical attention. Watch your wounds for signs of infection including fever, severe pain, redness beyond the wound edge, swelling, warmth, or pus drainage. Get medical attention immediately if you suspect infection.

If your wound was caused by stepping on a nail or other sharp object in contact with the soil, you may be exposed to the bacteria that cause tetanus. Consider getting regular boosters for tetanus every five to ten years. If your wound was caused by a needlestick, seek medical testing and treatment due to a potential exposure to bloodborne pathogens. Consider a Hepatitis B vaccination if you are exposed to potential needlesticks.

Any way you cut it, puncture and cut wounds expose you to pain and potential infection, so avoid them through good work practices!

Toolbox Talk Attendance Record
Punctures and Cuts

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Dermatitis

Overview

Dermatitis is an inflammation of the skin from exposure to an irritant. Although one exposure to a substance may be enough to cause a skin reaction, workers can become sensitized through prolonged and repeated exposures to a substance. The delay can be as short as a day, but can be as long as several months.

Causes

Generally, causes of dermatitis are chemical, mechanical, physical, or biological.

- Chemicals can produce reactions ranging from chemical burns to mild skin irritation (concrete, caustics, acids, etc.).
- Mechanical causes of dermatitis include friction, pressure, and trauma resulting in abrasions, wounds, bruises, or foreign bodies (like glass fiber) getting into the skin.
- Physical agents that lead to dermatitis are excessive heat, cold, sunlight, ultraviolet light, X-rays or other ionizing radiation.
- Biological agents such as bacteria, viruses, fungi, poisonous plants, and insects can cause or complicate dermatitis.

Prevention

Dermatitis is easier to prevent than to cure. What can you do? If possible, eliminate skin contact with irritating chemicals and substances or substitute less toxic and irritating ones. Use protective clothing and equipment including aprons, eye and face shields, finger cots, gloves, and chemical-resistant clothing, provided they are kept clean and in good repair. Make sure irritating materials are removed from all work clothing so they cannot be transported home.

Personal cleanliness is one of the best preventive measures against skin irritation and dermatitis. Workers should wash their hands often with a mild, non-abrasive soap solution, and they should wash any skin area right away if it's been exposed to an irritating substance. Protective creams and buffered solutions, when used properly, provide limited protection.

Toolbox Talk Attendance Record
Dermatitis

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Aggressive Driving

Overview of Topic
Every year there are hundreds of thousands of collisions resulting in many injuries and thousands of fatalities. Unsafe speed, improper turning, failure to yield the right of way, and obey traffic signals were the most frequent causes, which led the Department of Transportation (DOT) to estimate that two-thirds of traffic fatalities may be caused by aggressive driving.

Triggers
Aggressive driving can be caused by longer commutes, traffic congestion, and other drivers' behaviors. It can also be caused by your own mood, reactions, and ability to deal with stress on and off the road. Aggressive driving is triggered by anger – yours or another driver. Aggressive drivers are more likely to speed, make unsafe lane changes, ignore the right of way, and violate traffic signals. Aggressive driving behavior includes tailgating, unsafe passing, honking your horn, making rude gestures, or swearing at other drivers.

Prevention
Help prevent aggressive driving by first adjusting your attitude. Forget the idea of "winning" on the road. Driving is not a race; it should not be a contest to see who finishes first. Leave plenty of time for a trip so that if traffic or another delay occurs, you can keep your cool. Think of the highway as a conveyor belt – everyone will get to their destination eventually, so there is no need to speed or drive erratically to save a few minutes.

Put yourself in the other driver's shoes. Have you ever made a mistake on the road, been lost, or unsure of your turn-off point? Instead of being angry at another driver making the same mistakes, give them the benefit of the doubt. When you make mistakes, acknowledge them and give the drivers around you a friendly nod or wave. Polite behavior makes driving safer. Regardless of where you drive, there will always be bad actors that want to break the rules. Ignore rude and bad drivers on the road; it is not your job to enforce the rules of the road. Do not try to teach other drivers "a lesson."

If you encounter an angry or aggressive driver on the road, don't engage them. Avoid eye contact and do not make (or return) rude gestures or comments. Give an angry driver a lot of room by putting distance between you. Slow down or exit the roadway, if necessary, but do not pull off to the side of the road or try to "reason" with an angry driver. Get help by using your cell phone or driving to a public area such as a police station or shopping center.

Toolbox Talk Attendance Record
Aggressive Driving

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Safe Driving Techniques

Overview

Those who drive for a living would be the first to agree it can be mighty dangerous out there on the road. Although the common factors of inexperience, recklessness, and aggressive driving contribute to many vehicle accidents, it doesn't explain why so many professional drivers get into accidents. A driver may be trained, experienced, and competent behind the wheel, but the very flood of vehicles competing for space on the roads today presents added danger to all drivers. Even the very best drivers must learn to operate their vehicles with in a safe manner.

Drivers should take extra care of their vehicles' maintenance by keeping them in good operating condition. Before getting behind the wheel, do a simple walk around the vehicle to ensure that tires are properly inflated and have good tread, check that lights are clear and working, and see that windshields are clean and wipers blades are sharp.

Once inside the vehicle, drivers should take the extra time to check the gas gage, adjust the mirrors, seat, and seatbelt to a comfortable position and, if it's an unfamiliar vehicle, locate the lights, brakes, and wipers. Horns, flasher lights, and other warning devices are not just accessories but vital parts of the safety built into any vehicle, so make sure they operate properly.

On the roadways, be extra careful by driving defensively. Following the rules of the road can help you concentrate on what you should be doing…driving. Stay out of the other vehicle's blind spot and avoid tailgating. Instead, keep a safe distance from other drivers by maintaining a safety cushion of driving space between your vehicle and those around you. As an extra precaution, know the condition of the weather and road and drive only as fast as those conditions allow.

Be cautious by staying alert and expecting the unexpected. Watch out for and anticipate other drivers, pedestrians or children on or near the road. Safe drivers scan constantly for hazards, predicting how they may be affected by a hazard and pre-determining how to avoid or reduce them.

The ever-changing variable of the road and other vehicles can make drivers instantly vulnerable to accidents. If drivers don't practice these safe practices on the road, they might personally discover why vehicle deaths and serious injuries now total more than all the wartime wounded and fatalities since 1776.

Toolbox Talk Attendance Record
Safe Driving Techniques

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Proper Grounding of Electrical Tools

Overview

Each year many workers suffer shock when handling electrical tools and equipment. To protect ourselves against the hazards of electricity, we must understand the basic facts about the causes of shock and death. One of the big problems in understanding the dangers of electrical shock is the mistaken belief that only high voltages kill. It's not the voltage that kills, but the amount of current that passes through the body and the condition under which the current passes.

Hazards

Water and electricity can be a fatal combination. Damp areas and metal objects can offer good shortcuts for electricity to reach the ground. If a worker's hands are sweaty, if socks and shoes are moist or damp, if the floor is wet, or if the worker is standing in a puddle of water, the moisture will allow more current to pass through the body. If work is to be done with metal objects or in damp areas, workers should recognize the hazards and take necessary precautions. These precautions may include rubber gloves and rubber soled boots, or insulated tools

Prevention

The following tips can help avoid electrical accidents:

- Treat every electric wire as if it were a live one.
- Inspect equipment and extension cords before each use.
- Take faulty equipment or plugs with bent or missing prongs out of service for repair.
- Only qualified electricians should repair electrical equipment or work on energized lines.
- If a plug doesn't have three prongs or if the receptacle doesn't have three openings, make sure the tool is grounded in some other way before use.
- Never try to bypass an electrical system by cutting off the third prong of a plug.
- Turn off the power and report the smell of hot or burning plastic, smoke, sparks or flickering lights.
- Stop using a tool or appliance if a slight shock or tingling is felt.
- Never disconnect an electrical plug by pulling on the cord.
- Whenever working on an electric circuit, the circuit should be turned off and locked out at the circuit breaker or fuse box to ensure that the circuit cannot be accidentally turned on.
- Those who regularly work on or around energized electrical equipment should be trained in emergency response and CPR.

In wet, winter months, extra caution should be observed when working with electrical equipment or when working near grounded objects.

Toolbox Talk Attendance Record
Proper Grounding of Electrical Tools

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Ergonomic Breaks, Rest Periods, and Stretches

Overview

Ergonomic injury risk factors include forceful movements, repetitive motions, awkward postures, and lack of rest. Rest periods give the body time to recover from work; break time exercises and stretches strengthen the body. Workers should think of themselves as Industrial Athletes; athletes wouldn't participate in a sport without proper rest and warm-up, so use the same preparation on the job.

Breaks

Pay attention to signs of discomfort and fatigue on the job; these are warning signs from your body. As muscles tire during a work task, slouching can lead to poor posture, sloppy, uncontrolled movements, and injuries. Rest breaks mean recovery for the body. During a job task, take micro-breaks lasting 10-15 seconds every ten minutes. Take periodic mini-breaks lasting 3-5 minutes. These short breaks give the body a rest, reduce discomfort, and improve your performance.

Rest Periods

Alternate your work activities and postures throughout the day. Rotating tasks may seem inefficient, but the rest and use of different muscle groups increases energy and maintains productivity. For example, if you are a landscaper, don't trim all of the shrubs, sweep up the trimmings, and then leaf-blow the whole area; work in sections and trim, sweep, and leaf-blow in alternating tasks. If you work at a single workstation and job task all day, move into different postures while you work: first standing, then standing with one foot resting on a stool, then sitting.

Stretches

Stretches help you warm-up before work and relax during breaks; they increase flexibility and boost blood flow and oxygen to muscles. Perform stretches slowly and gently; avoid extreme postures and stop stretching if you feel pain or discomfort. Physical and Occupational Therapists are the most qualified individuals to generate a specific stretching and warm-up program.

Toolbox Talk Attendance Record
Ergonomic Breaks, Rest Periods, and Stretches

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Repairing Damaged Flexible Cords

Overview

It shouldn't happen, but it does. Even heavy-duty extension cords become damaged. If cords do become damaged you can make repairs, rather than getting a new cord. But merely re-attaching and wrapping the wires doesn't mean the repair is proper or safe. This tool box talk will review the correct way to repair electrical cords. The first *obvious* step is often overlooked. Unplug the cord and take control of both ends.

- Splices: Cut back only enough of the outer and inner insulation to make the repair. Keep in mind that the color-coded wires on one side need to be connected to the like-colored wires on the other. In other words, black-to-black, white-to-white, green-to-green. Stagger the lengths of the inner wire so that, even if the insulation goes bad, the conductors will not come in contact with each other. If the black wire is long on one side, it should be short on the other. Make good mechanical connections. Twist the conductors together and solder, using electrical solder. The splices now need to be insulated. Electrical tape is not very reliable. Shrink tubing works well. This is a sleeve of plastic put over one of the wires before it is connected to the other. When the joint is completed, the sleeve is slipped over the joint, and heated with a small heat source. A hair dryer, match or lighter will do. When heat is applied, the tubing shrinks around the conductor, forming tight insulation. We now need to pay attention to the outer jacket. This is important because the outer jacket protects the inner wires from additional damage. Shrink tubing could again be used: See NFPA-70 (National Electric Code) for restrictions on splicing flexible cords.

- Plugs: Remove only as much outer jacket as is needed to make the repair. The outer jacket must be long enough to go into the plug or cap and be gripped by the strain relief clamp. After the jacket and wires are cut to length, we again must pay attention to the color coding. *The black (or sometimes red) wire is "hot". It goes to the smaller prong on the plug, which has a brass screw for attachment. The white wire is neutral. It goes to the larger prong, which is attached with a chrome screw. The green wire is "ground." This goes to the half-round or curved prong and is attached with a green colored screw.* Make a good connection. All screws must be tight. Reassemble the plug and tighten the clamp until it is snug on the cord. Do not over-tighten the clamp.

- Testing: The repair is not done until the cord has been tested. The easiest way to check for continuity and correct wiring is to use a simple, inexpensive test light. This device plugs into the end of the cord and, by way of three lights, indicates if you have continuity and proper polarity. If you do *not*, you must redo the repair. You have created a dangerous situation. Good repairs take simple skills--but you cannot take shortcuts. Incomplete or improper repairs create fire and shock hazards. Do the job right

Toolbox Talk Attendance Record
Repairing Damaged Flexible Cords

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Confined Space

Overview
The OSHA definition of a confined or enclosed space for construction activities is:

(1) limited means of getting out, and
(2) subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere

Normally excavations are not considered confined spaces; they are enclosed areas but are usually subject to natural ventilation. You do not find reference to confined spaces in the excavation rule.

Hazardous Atmospheres
However, you do find reference to hazardous atmospheres. Under this provision, a competent person must test excavations where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen), or a hazardous atmosphere exists or could reasonably be expected to exist.
The atmospheres in the excavation must be tested before employees enter excavations greater than four feet deep. Adequate precaution must be taken to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of its lower flammable limit.

Excavations that could raise a red flag as "could reasonably be expected to exist" are excavations in landfill areas, areas where hazardous substances are stored nearby, hazardous waste cleanup sites, trenches next to roads on which traffic is flowing (exhaust may allow carbon monoxide build-up), and underground storage tank digs.

Engineering Controls
If hazardous conditions exist, controls such as proper respiratory protection or ventilation must be provided. Ventilation is probably the best and most effective method of abating a hazardous atmosphere. In numerous places throughout the OSHA regulations, it says you must engineer or administrate out hazardous atmospheres before resorting to respiratory protection. When controls such as ventilation are used to reduce atmospheric contaminants to accept-able levels, the atmosphere must be tested as necessary to ensure it remains safe.

Rescue Operations
Where adverse atmospheric conditions may exist or develop in an excavation, the employer must provide and ensure that emergency rescue equipment (e.g., breathing apparatus, a safety harness and line, basket stretcher, etc.) is readily available. This equipment must be attended when used.

Employee Training
No specific training is mentioned in the Excavation Standard for employees. There are, however, a number of places where "implied" training is required for competent persons and engineers.
Of course, in accordance with the "general" training reference for all construction workers, 1926.21(b)(2), employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards. This is especially true for trenching and shoring activities.

Training Tips
Dwell on what makes an excavation a confined space—hazardous atmospheres. Most excavations do not have a limited means of egress. Evaluate your excavation sites. Are they subject to adverse atmospheric conditions existing or developing?

Toolbox Talk Attendance Record
Excavation for Construction - Confined Space

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - OSHA's Top Five Excavation Violations

Overview of Topic
Based on National Institute for Occupational Safety and Health (NIOSH) statistics, an average of 60 workers die in trench/excavation cave-ins each year. Of the 607 cave-in fatalities identified by NIOSH researchers in the ten-year period from 1980 to 1989, construction workers accounted for 77% of those deaths. Almost without exception, trench/excavation deaths can be prevented by following existing OSHA safety regulations. Several factors contribute to trench cave-ins. For example, soil stability is related to soil type, and may be affected by changes in weather. In the spring, un-shored trench walls, heavy from rain, can become unstable. Also, when damp soil is exposed to air during excavation, it can dry out and lose the ability to stand on its own, increasing the risk that it will slide into the trench. Other factors, such as proximity to highways, large machinery, backfilled areas or existing structures, can affect soil stability as well.

The following trench/excavation rules are those that OSHA recently cited the most when inspecting construction jobsites.

#1 — Protection in excavations
Employees in an excavation must be protected from a cave-in by an adequate protective system unless the excavation is: (1) made entirely in stable rock, or (2) less than 5 feet deep and a competent person has determined there is no indication of a potential cave-in. Protective systems that may be used include: sloping and benching, trench shields, or support systems such as timber or aluminum hydraulic shoring. (§1926.652(a)(1))
This is currently the 4th most violated construction regulation.

#2 — Inspections
Your competent person must make daily inspections of excavations, the adjacent areas, and protective systems, for evidence of situations that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other haz-ardous conditions. Your competent person must conduct the inspection prior to the start of work and as needed throughout the shift. Inspections must also be made after every rain-storm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated. (§1926.651(k)(1))
This is currently the 21st most violated construction regulation.

#3 — Access and egress
In excavations that are 4 feet or more deep, a stairway, ladder, ramp, or other safe means of getting out must be located so as to require no more than 25 feet of lateral travel for employees to reach the escape method. (§1926.651(c)(2))
This is currently the 24th most violated construction regulation.

#4 — Spoil piles and other fall back
Employees must be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into the excavation. Protection must be provided by placing and keeping materials/equipment at least 2 feet from the edge of the excavation, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary. (§1926.651(j)(2))

#5 — Exposed employees
Where your competent person finds evidence of a situation that could result in a possible cave-in, indications of a failure of a protective system, hazardous atmospheres, or other hazardous conditions, exposed employees must be removed from the hazardous area until the necessary precautions have been taken to ensure their safety. (§1926.651(k)(2))

Toolbox Talk Attendance Record
OSHA's Top Five Excavation Violations

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Pipeline Construction

Overview of Topic
The following pipeline construction toolbox talk is based on OSHA safety inspection findings at various pipeline installation sites of the same contractor. The contractor received willful and serious violations of the Occupational Safety and Health Act. The citations were for inadequately guarded trenches, improper operation and maintenance of pipe laying cranes, and allowing unauthorized employees to ride on machinery. The inspections were: (1) spot checks conducted under OSHA's special emphasis program for trenching and excavation, (2) complaints or calls from the general public alleging unsafe working conditions, and (3) a fatality inspection at one of the jobsites.

Cave-in-protection
The common hazard found at most of the worksites was the lack of adequate cave-in protection for employees working in trenches five feet or more in depth. **Twenty-Five American workers died in trenching-related cave-ins in 1998.** OSHA standards require that effective collapse protection be in place and in use before employees enter a trench. The absence of such protection leaves workers exposed to being struck by and buried beneath tons of soil before they have a chance to react or escape.
Other trenching and shoring violations that were observed were:

- Water accumulating in a trench.
- An inadequately guarded trench.
- A trench lacked a ladder or other means of exit every 25 feet.
- Spoil piles were placed too close to the edge of excavations.

Unauthorized modifications to heavy equipment
A pipe laying crane boom that was pulling an equipment sled fell, struck, and killed an employee riding on the sled. OSHA cited the company for making unauthorized modifications to the pipe layer and allowing employees to ride the sled.
Other equipment problems that were cited were:

- A custom-made lifting device had not been load-tested or had its load lifting capacity marked on the device.
- Damaged crane slings were in use.
- A sling was not marked with its load rating.
- A forklift truck was not inspected for defects.

Employee Training
No specific training is mentioned in the excavation standard or the OSHA rigging equipment requirements. However, §1926.21(b)(2) says employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards. The OSHA rules at §1926.20(b)(4) says that employers shall permit only those employees qualified by training or experience to operate equipment and machinery.

Toolbox Talk Attendance Record
Excavation for Construction - Pipeline Construction

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Protective Systems

Overview of Topic

Excavation workers are exposed to many hazards, the chief one being danger of cave-ins. OSHA requires that all excavations, where employees are exposed to potential cave-ins, must be protected by sloping, or benching; timber or aluminum hydraulic shoring of or placing a shield between the side of the excavation and the work area. Employers are free to choose the most practical design approach for a particular circumstance. Once an approach is selected, the required performance criteria for that system must be met. The standard does not require protective systems when an excavation:

- is made entirely in stable rock, or
- is less than 5 feet deep and a competent person has examined the ground and found no indication of a potential cave-in.

Protective Systems

Designing a protective system is complex because of the number of factors involved: soil classification, depth of cut, water content of soil, changes due to weather and climate, or other operations in the vicinity. The OSHA regulations, however, provides several different methods and approaches. Protective systems must be able to resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system. One method is to slope the sides to an angle not steeper than one and one-half horizontal to one vertical. A slope of this gradation (for Type C soil) or less is considered safe for any type of soil.

A second design method, which can be applied for both sloping and shoring, involves using tabulated data, such as tables and charts, approved by a registered professional engineer (RPE).

Contractors may also use a trench box or shield that is either designed or approved, or is based on tabulated data prepared or approved by an RPE. Timber, aluminum, or other suit-able materials may also be used. OSHA standards permit the use of a trench shield (also known as a welder's hut) as long as the protection provided is equal to or greater than the protection that would be provided by the appropriate shoring system.

Installation and Removal of Protective Systems

The standard requires the following steps for protecting employees when installing support systems:

1. securely connect,
2. safely install,
3. never overload members, and
4. install other structural members to carry loads imposed on the support system when temporary removal of individual members is necessary.

As soon as work is completed, the excavation should be backfilled as the protective system is dismantled. After the excavation is cleared, workers should slowly remove the protective system from the bottom up, taking care to release members slowly.

Materials and Equipment

Employers are responsible for the safe condition of materials and equipment used for protec-tive systems. Defective and damaged materials and equipment can result in the failure of a protective system and cause excavation hazards. If materials and equipment are not safe for use, they must be removed from service. These materials cannot be returned to service with-out the evaluation and approval of a registered professional engineer.

Toolbox Talk Attendance Record
Excavation for Construction - Protective Systems

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Rescue Operations

Overview of Topic

Over 50% of the workers who die in confined spaces are attempting to rescue other workers. Unplanned rescue, such as when someone instinctively rushes in to help a downed coworker, can easily result in a double fatality or even multiple fatalities if there is more than one would-be rescuer.

Construction Regulations

When your "excavation" competent person determines that hazardous atmospheric condi-tions exist or may reasonably be expected to develop during work in an excavation, and that excavation is greater than four feet deep, emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, is required to be readily avail-able. This determination is based on the conditions at each jobsite.

Standby person(s) must attend emergency equipment when the determination is made that it is necessary. Constant visual or auditory communication with the person on the inside must be maintained. In an OSHA Letter of Explanation, it was determined that a contractor cannot rely on a local rescue squad instead of providing rescue equipment. Many emergency situations associated with the hazards involved with hazardous atmospheres in trenches would normally require an immediate response within a few minutes or even seconds. A rescue squad would be unable to provide the necessary response.

General Industry—Permit Required Confined Spaces

Although not a part of the construction regulations you can get some good ideas for your excavation rescue procedures from the OSHA general industry rule at 1910.146-Permit Required Confined Spaces.

Attendants — A confined space attendant must:

- know the hazards of confined spaces,
- be aware of behavioral effects of potential exposures,
- maintain continuous count and identification of authorized entrants,
- remain outside the space until relieved, and
- should communicate with entrants as necessary to monitor entrant status.
- monitor activities inside and outside the permit space and order exit if required,
- summon rescuers if necessary,
- prevent unauthorized entry into the confined space, and
- perform non-entry rescues if required.

Attendants may not perform other duties that interfere with their primary duty to monitor and protect the safety of authorized entrants.

An attendant should be assigned to remain on the outside of the confined space and be in constant contact (visual or speech) with the workers inside. The attendant should not have any other duties but to serve as standby and know who should be notified in case of emer-gency. Attendants should not enter a confined space until help arrives, and then only with proper protective equipment, life lines, and respirators.

Employee Training

No specific training is mentioned in the Excavation Standard for employees. There are, however, a number of places where "implied" training is required for competent persons and engineers. Of course, in accordance with the "general" training reference for all construction workers, 1926.21(b)(2), employees must be trained to recognize and avoid unsafe conditions and the reg-ulations applicable to his work environment to control or eliminate the hazards. This is espe-cially true for trenching and shoring activities.

Toolbox Talk Attendance Record
Excavation for Construction - Rescue Operations

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Site Safety

Overview of Topic

Many excavation accidents are a direct result of inadequate initial planning. It is important, before beginning an excavation job, to establish and maintain a safety and health plan for the worksite. This plan should provide adequate policies, procedures, and practices to pro-tect employees from, and allow them to recognize, job-related safety and health hazards. The plan should reflect the unique characteristics of the jobsite. To be sure safety policies are implemented effectively, there must be cooperation among supervisors, employee groups, including unions, and individual employees. Each supervisor must understand the degree of responsibility and authority he or she holds in a particular area. It is a good idea for contractors to develop safety checklists to make certain there is adequate information about the jobsite and all needed items are on hand. When preparing checklists, specific site conditions should be taken into account. Some of those are:

- traffic
- nearness of structures and their condition
- soil
- surface and ground water
- the water tables
- overhead and underground utilities
- weather

Checklists should also incorporate elements of relevant OSHA standards as well as other information necessary for safe operations. These and other conditions can be determined by a jobsite safety analysis to identify poten-tial hazards, observations, test borings for soil type or conditions, and consultations with local officials and utility companies. It is also important, before beginning work, to provide employees exposed to public vehicular traffic with warning vests or other suitable garments marked with or made of reflective or high-visibility material. You must ensure that they wear the safety equipment. Workers must also be instructed to remove or neutralize surface encumbrances that may create a hazard. In addition, no employee should operate a piece of equipment without first being properly trained to handle it, and fully alerted to its potential hazards.

Equipment Inventory

When all the necessary specific information about the job site is assembled, the contractor is ready to determine the amount, kind, and cost of the safety equipment needed. No matter how many trenching, shoring and backfilling jobs have been done in the past, each job should be approached with the utmost care and preparation.

Competent Person

The standard requires that a competent person inspect, on a daily basis, excavations and the adjacent areas for possible cave-ins, failures of protective systems and equipment, hazard-ous atmospheres, or other hazardous conditions. If these conditions are encountered, exposed employees must be removed from the hazardous area until the necessary safety pre-cautions have been taken. Inspections are also required after natural or man-made events, such as blasting, or heavy rains, that may increase the potential for hazards.

Toolbox Talk Attendance Record
Excavation for Construction - Site Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Soil Classification

Overview of Topic

Soil classification must be a part of the initial planning stage of an excavation. Mistakes in soil classification can be costly by requiring changes in shoring and/or sloping decisions and even excavation failure. Excavation failure can mean extra costs and possibly injury and death to employees. Designing a protective system can be complex because of the number of factors involved-soil classification, depth of cut, water content of soil, changes due to weather and climate, or other operations in the vicinity. It is the responsibility of your excavations "competent person" to classify the soil at the exca-vation site and then select a proper sloping, or benching system to protect workers.

Soil Classification

Each soil and rock deposit at an excavation site must be classified by your competent person as stable rock, Type A, Type B, or Type C soil. Examples of the different soil types are:

- ***Stable rock*** - Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
- ***Type A*** - Examples include clay, silty clay, sand clay, clay loam, and sometimes silty clay loam and sandy clay loam.
- ***Type B*** - Examples include silt, silt loam, sandy loam and sometime silty clay loam and sandy clay loam.
- ***Type C*** - Examples include granular soils like gravel, sand, loamy sand, submerged soil, and soil from which water is freely seeping, and submerged rock that is not stable.

Soil classification is not necessary if the excavation will be sloped to an angle of one and one-half horizontal to one vertical. Appendix A to the excavation rules describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth depos-its. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

The appendix can be used to design a method of protection for employees from cave-ins when: (1) sloping or benching, (2) timber shoring, or (3) aluminum hydraulic shoring, is used. The soil classification must be made based on the results of at least one visual and one man-ual analysis. The visual and manual analysis must be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification. In a layered system, the system must be classified by its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes must be evaluated by your competent person and the deposit reclassified as necessary.

Toolbox Talk Attendance Record
Excavation for Construction - Soil Classification

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Trench Safety

Overview of Topic

Trenches/excavations can either be death traps or safe places for employees to work. Do you let employees enter an unsafe trench for just a minute? Do you follow OSHA and company rules for excavation work? It all adds up. Before allowing employees to enter a trench do you:

- Clear all surface hazards and move the spoil pile back the required two feet?
- Locate and protect, support, or remove all underground utilities and other hazards?
- Provide a safe means of entry and exit from excavations that are more than four feet deep, that meets OSHA requirements?
- Test for and abate hazardous atmospheres if they exist, or could reasonably be expected to exist?
- Provide emergency rescue equipment where hazardous atmospheres exist or could rea-sonably be expected to develop during work in the excavation?
- Provide adequate protection for employees working in excavations where water is accu-mulating or could accumulate?
- Provide protection for employees from loose rock or soil that could pose a hazard by falling or rolling from the excavation face?
- Do you require your company competent person to:
    - Inspect the excavation, adjacent area, and protective systems daily for evidence of situ-ations that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions?
    - Inspect the excavation after every rainstorm or other hazard increasing occurrence?
    - Remove employees from the trench/excavation if any of the above hazards exist?
- Provide walkways where employees and/or equipment are required or permitted to cross over excavations?
- Protect employees in an excavation from a cave-in by an adequate protective system designed in accordance with the OSHA regulations (this could include sloping and benching, support, or shield systems)?

If you can answer yes to all of the previous questions, then you can be reasonably sure your employees are safe while working on your excavation project.

Employee Requirements

Make sure employees are aware of and know:

- The previous listed requirements.
- When to leave an excavation and how to respond to an emergency.
- How to properly use the equipment and protective gear you have provided.
- Safe work practices when you or the company competent person is not around.
- How to report unsafe situations immediately to their supervisor/competent person.

Trenches are nothing to monkey around with. Your employees need to know you are sincere about following the rules and you expect them to do the same.

Toolbox Talk Attendance Record
Excavation for Construction - Trench Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation Safety

Overview

Excavation and trenching cave-ins result in more than 100 fatalities annually in the United States. Too often an improperly protected trench or excavation wall will collapse, trapping workers. These accidents can be eliminated if we follow proper excavation and trenching procedures. OSHA Construction Standards for Excavation can be found in Subpart P 1926.650-.652.

An excavation is any mechanically-made cavity or depression in the earth's surface, from cellars to highways. A shoring system, sloping of ground, or some other equivalent means must be used to protect all employees exposed to danger from moving ground in all excavations. In addition, all trenches over 5 feet deep in either hard and compact, or soft and unstable soil must be sloped, shored, sheeted, braced or otherwise supported. Trenches less than 5 feet in depth must also be effectively protected when hazardous ground movement may be expected.

Any surface encumbrances which may create a hazard to employees shall be removed or supported, as necessary, to safeguard employees. The presence of all underground installations such as sewer, telephone, fuel, electric, or water lines shall be determined prior to opening an excavation.

Prevention

There are three ways to protect against accidents. Protective systems include shoring, sloping, and a trench shield or box. Shoring is a structure such as a metal hydraulic, mechanical, or timber bracing system that supports the sides of an excavation. A shoring system may include sheeting, bracing or jacks. Sloping is accomplished by cutting the banks of the excavation back to the angle of repose. At this angle the soil won't slide. This angle varies, and depends on the soil type. A trench shield or box is a heavy metal box designed to be placed in a trench; it prevents the sides of the trench from caving in. Trench boxes are used in many types of sewers and pipeline work.

A competent person must inspect the excavation and adjacent areas daily for possible cave-ins, failure of protective systems, hazardous atmospheres, or any other condition which may present a hazard.

Excavations 4 feet deep or more must have sufficient means of exit and these must be within 25 feet of lateral travel.

Toolbox Talk Attendance Record
Excavation Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Excavation for Construction - Underground Utilities

Overview of Topic

Accidental contact with underground utilities can be both deadly and costly. It is a routine event for local radio stations to announce that a gas, electric transmission, or sewer line, etc., was damaged by construction workers. This should not be the accepted norm.

Locating Underground Utilities

Before excavation work begins, OSHA rules require contractors doing the work to determine the estimated location of utility installations: sewer, telephone, fuel, electric, water lines, or any other underground installations that may be encountered during digging. Contractors must contact the utility companies or owners and inform them, within established or customary local response times, of the proposed work. In some areas, this could also be accomplished by calling diggers hotline or a one-call system. Contractors must also ask the utility companies or land/building owners to find the exact location of the underground installations. If they cannot respond within 24 hours (unless the period required by state or local law is longer), or if they cannot find the exact location of the utility installations, contractors may proceed with caution.
Construction companies need not contact utility companies or owners when the excavation work is to be done in a remote location where:

- No underground installations are likely to be hit, or
- There are no features which would indicate the presence of underground installations.

However, it may be a good idea to make a phone call to the utility companies or land/building owners just to verify the possibility of underground utilities, however remote.

Detection Equipment and Locating the Installations

If contractors proceed on their own, detection equipment or other acceptable means to locate utility installations must be used. When the operation approaches the estimated location of underground installations, the exact location must be determined by a safe and acceptable means. The underground utility must be located and totally exposed before machine digging begins.

Hazardous Atmospheres

You must remember that where there are utilities, there is the possibility of hazardous atmospheres. If there is the potential that hazardous atmospheres exist or could reasonably be expected to exist, atmospheric testing and control is required. After utility discovery, and while the excavation is open, underground installations must be protected, supported, or removed as necessary to safeguard employees.

Toolbox Talk Attendance Record
Excavation for Construction - Underground Utilities

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction - Falling Object Protection

Overview of Topic
The falling object protection rules require you to take measures to protect employees exposed to falling object hazards. Although the fall protection rule doesn't mention hard hats, they are the number one defense against overhead hazards, including falling objects. However, just as in the scaffold rule, you must use hard hats and an additional method of protection described in the regulations. This OSHA provision applies when there are employees below a walking/working surface or wall opening from which an object could fall.

Falling object protection alternatives
OSHA provides a number of falling object protection methods to select from depending on your need. Your choices are toeboards and screens, guardrails, protective canopies, signs, barricades, or simply moving the objects away from an edge a distance sufficient to prevent them from falling should they accidentally be moved.

Falling object protection methods

- ***Guardrails*** - When guardrails are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects.
- ***Toeboards*** - When toeboards are used as protection from falling objects, they must be erected along the edges of the overhead walking/working surface for a distance sufficient to protect persons working below. To ensure a toeboard can stop falling objects, they must be capable of withstanding a force of at least 50 pounds applied in any downward or outward direction at any point along the toe-board. Toeboards must be a minimum of 3.5 inches tall from their top edge to walking/working sur-face, have no more than 0.25 inches clearance above the walking/working surface, and be solid or have openings no larger than one inch. Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening must be erected from the walking/working surface or toeboard to the top of a guardrail system's toprail or midrail, for a distance sufficient to protect employees below.
- ***Materials storage*** - To prevent tripping hazards, no materials or equipment, except masonry and mortar, can be stored within four feet of working edges. Excess mortar, broken or scattered masonry units, and all other materials and debris must be kept clear of the working area by removing regularly. During roofing work, materials and equipment cannot be stored within six feet of a roof edge unless guardrails are erected at the edge. Materials piled, grouped, or stacked near a roof edge must be stable and self-supporting.
- ***Canopies*** - When used as a protection from falling objects, canopies must be strong enough to prevent collapse and prevent penetration by any objects that may fall onto them.

Toolbox Talk Attendance Record
Fall Protection for Construction - Falling Object Protection

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction - Inspecting Your Harness & Lanyards

Overview of Topic
Personal fall arrest systems, as the name implies, are used to keep a worker from falling from a working level. The fall arrest system consists of an anchorage, connectors, body harness, and may include a lanyard, deceleration device, lifeline or a combination. Employees need to know that when using fall protection equipment:

- the fall protection is something they cannot take for granted.
- that they must wear it for it to work.
- that the fall protection must be inspected each and every time before it is used.
- when any defects are noted, the fall protection must not be used until it has been repaired.

Employees trust their lives to the fall protection equipment, so it only makes sense for them to take the time to inspect it prior to use.

OSHA requirements
OSHA requires the pre-use inspection of fall protection equipment. Fall protection must be inspected for wear, damage, and other deterioration (29 CFR 1926.502(d)(21)). If the equipment is defective, it must be removed from service.

What to look for
There are some common causes of wear and damage. As with all equipment, read and follow the manufacturer's guidelines for inspections.

- **Excessive dirt**
  - can cause deterioration of the equipment. Contaminants can come into contact with the harness or lanyard, and get into the webbing. The dirt abrades the fibers of the webbing which weakens them. Certain chemicals can also eat into the fibers or negatively react with the material. Try to keep fall protection gear as clean as possible.
- **Fading**
  - caused by exposure ultraviolet (UV) rays can damage the fibers of the webbing. Inspect webbing for stiff, brittle, or discolored areas, and for webbing that looks faded.
- **Cuts, tears, and holes**
  - are caused by contact with or damage from tools, equipment, or materials. Check the edges of the webbing, and also check around stitching, connectors, and buckles.
- **Burns or areas that are eaten away**
  - are areas of damage caused by heat or by chemical contact. Fall protection used in hazardous environments (mixing chemicals, pouring molten metals, welding, and other hot work) need special attention. Webbing in these situations can be severely damaged in a very short period of time.

When used in these severe environments, employees may need to inspect their fall protection equipment several times during the course of a shift. If employees are not sure of the state of their fall protection equipment, or if there are questions as to the suitability of the equipment, take it out of service until it can be inspected by a competent person familiar with fall protection equipment.

Toolbox Talk Attendance Record
Fall Protection for Construction - Inspecting Your Harness & Lanyards

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction - OSHA's Top 5 Fall Protection Violations

Overview of Topic
Each year, falls account for the greatest number of fatalities in the construction industry, and are always a major concern in other industries. This 5 Minute lesson gives you the opportunity to share with your employees those top five fall protection violations that OSHA inspectors constantly find not being followed or followed incorrectly at construction jobsites.
Note: These OSHA citations cover general fall protection. They do not cover falls from scaffolds, aerial lifts, steel erection, etc. Those subject areas have their own fall protection rules.

1. **Unprotected sides and edges**
    a. Each employee on a walking/working surface with an unprotected side or edge 6 feet or more above a lower level must be protected from falling by the use of guardrail, safety net, or personal fall arrest systems. (§1926.501(b)(1)) This is currently the No. 1 most cited construction regulation.
2. **Residential construction**
    a. Except as otherwise provided in .501(b), employees doing residential construction activities 6 feet or more above lower levels must be protected by a guardrail, safety net, or personal fall arrest system. (§1926.501(b)(13) If you can demonstrate that it is infeasible or creates a greater hazard to use one of the above systems, you can develop and implement a fall protection plan meeting the requirements of paragraph .502(k) of the fall protection regulations. This is currently the 4th most cited construction regulation.
3. **Training requirements**
    a. You must provide a training program for each employee who may be exposed to fall hazards. Your program must: (1) enable employees to recognize the hazards of falling [specific to their jobsite], and (2) train employees in the procedures to be followed to minimize those hazards. (§1926.503(a)(1)) This is currently the 11th most cited construction regulation.
4. **Roofing work on low-slope roofs**
    a. Except as otherwise provided in .501(b), employees on low-slope roofs, with unprotected sides and edges 6 feet or more above lower levels, must be protected from falling by a guardrail, safety net, or personal fall arrest system. (§1926.501(b)(10)) You can also use a combination of a warning line and: (1) guardrail, (2) safety net, (3) personal fall arrest, or (4) safety monitoring system. Or, on roofs 50-feet wide or less, you can use a safety monitoring system alone. This is currently the 14th most cited construction regulation.
5. **Working on steep roofs**
    a. Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by:
        i. Guardrail systems with toeboards,
        ii. Safety net systems, or
        iii. Personal fall arrest systems.
    b. This is currently the 32nd most cited construction regulation.

Studies have shown that the use of guardrails, fall arrest systems, safety nets, covers, and travel restriction systems can prevent many deaths and injuries from falls.

Toolbox Talk Attendance Record
Fall Protection for Construction - OSHA's Top 5 Fall Protection Violations

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction - Equipment and Systems

Guardrails
Guardrails are barriers put up to prevent falls to a lower level. They can be used to protect employees from falls from unprotected sides and edges; during leading edge work; through holes including skylights; from ramps, runways, or other walkways; and into or onto danger-ous equipment.

Safety nets
Safety nets are used as protection at unprotected sides, leading edges, working on the face of formwork or reinforcing steel, overhead or below surface bricklaying, work on roofs, precast concrete work, residential construction, and wall openings. Safety nets must be installed as close as practicable under the walking/working surface on which employees are working, but never more than 30-feet below that level.

Personal fall arrest equipment
Note: Effective January 1, 1998:

Body belts are not acceptable as part of a personal fall arrest system. Body belts are accept-able in positioning device systems.

Only locking type snaphooks can be used.

Fall restraint (Positioning device system) means a body belt or body harness used to pre-vent an employee from free falling more than two feet and where self-rescue can be assured. It consists of an anchorage, connectors, a body belt or harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.

Personal fall arrest equipment protects you from falling when working around unprotected sides and edges, leading edge work, hoist areas when loading or unloading materials, form and reinforcing steel work, overhead or below surface bricklaying, work on low-sloped or steep roofs, precast concrete work, residential construction, and wall openings.

Other fall protection systems
The fall protection rule lists other (secondary) systems and equipment you can use in certain situations. They are:

Safety monitoring system — Used when working on low-slope roofs only. It must be used with a warning line system.

Covers — required for holes, including skylights.

Warning lines — must be must be erected around all sides of the roof work area and shall consist of ropes, wires, or chains, and supporting stanchion.

Positioning devices — used on the face of formwork or reinforcing steel structures and other situations where hands must be free to work.

Controlled access zones — shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions. Each line must be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.

Protection from falling objects.

Fall protection plan — available only to employees doing leading edge, precast concrete erection, or residential construction.

Employee Training
Section 1926.503 sets certain criteria for your employees who are required to use fall protec-tion equipment and systems. The training requires you to provide a program for each employee exposed to fall hazards. You must train your employees to recognize the hazards of falling and the procedures they should follow in order to minimize the hazards.

Toolbox Talk Attendance Record
Fall Protection for Construction - Equipment and Systems

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction

Understanding the hazard
You may want to explain the difference between kinds of falls. This is important because some falls cause more severe injuries than others:

- Falls from the same level
    - Involve falling at the same level and result in a person falling to the floor or to the ground. Examples include slips and trips. Slips and trips have a high frequency rate but a low injury severity rate.
- Falls from an elevation—
- Involve falling from one level to another. Examples include falling from a scaffold to the ground below. These types of falls have a relatively low frequency rate but a high injury severity rate.

Fall protection methods
Start your fall protection training with the fall protection systems your company has put in place to prevent falls. These measures could include:

- Guardrail systems and toeboards—
    - A guardrail is a vertical barrier, normally consisting of an assembly of toprails, midrails, and posts, erected to prevent employees from falling to lower levels. A toeboard is a barrier placed to prevent the fall of materials to a lower level, or to keep employees' feet from slipping over an edge.
- Handrail and stair rail systems—
    - A handrail is used to assist employees going up or down stairways, ramps, or other walking/working surfaces by providing a handhold for support. A stair rail protects employees from falling over the edge of an open-sided stairway.
- Slip-resistant floors—
    - Slip-resistant flooring material such as textured, serrated, or punched surfaces and steel grating may increase slip-resistance. These types of floor surfaces should be installed in work areas that are generally slippery because of wet, oily, or dirty operations. Slip-resistant footwear may also be useful in reducing slipping hazards.
- Effective housekeeping can minimize fall hazards where slippery surfaces are due to temporary or intermittent conditions. Use absorbents to clean up a spill where oily materials or corrosive liquids are accidentally spilled.

Reporting fall hazards
Reporting fall hazards is part of any effective safety effort. But before employees will report hazards routinely, they need to know that they won't experience repercussions from such reports. Your training session is an ideal way to convey such information. Instruct employees to report unsafe equipment, conditions, or procedures. Let them know that equipment repair receives top priority. State that under no circumstances should defectively fall protection equipment be used.

Housekeeping
Housekeeping is an important component in preventing falls. Remind trainees that high work areas should be kept free from tools, materials, debris, or liquids that could create slippery surfaces. Falling objects may also be hazards.

Toolbox Talk Attendance Record
Fall Protection for Construction

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction – General Requirements

Overview of Topic
To prevent falls you have a duty to anticipate the need to work at heights and plan your employees work activities accordingly. Careful planning and preparation lay the groundwork for an accident-free worksite. Before your employees go to work "at heights" you need to look at a few issues. You need to:

- Understand the duty to provide fall protection.
- Assess the worksite for fall hazards.
- Select the correct protection system.

Employees are a valuable source for locating hazards. Involve them in the process; teach them how to do worksite assessments, recognize fall hazards, and select the proper fall equipment. Then ask them to help! Contributing employees are safer employees.

A duty to provide fall protection
When an employee is working six feet or more above lower levels, OSHA points out specific areas and operations where fall protection is required. Those areas/operations are: ramps, runways, walkways, excavations, hoist areas, holes, form and reinforcing steel work, leading edge work, unprotected sides and edges, overhand bricklaying and related work, roofing work, precast concrete erection, wall openings, and residential construction. The OSHA rules at 1926.501(b)(1)(xiv) point out the protection options you have to satisfy the requirements.
If the situation is not "listed" in the OSHA rules then 1926.501(b)(15) (walking/working surfaces not otherwise addressed), is appropriate. This reference says that if none of the other situations fit, you must still protect employees working six feet or more above lower levels by using a guardrail, safety net, or personal fall arrest system.

Worksite assessment
You are required to survey the worksite to determine if the walking/working surfaces on which employees are going to work have the strength and structural integrity to safely support them.
Once you have determined that the surface is safe, you must then select one of the fall protection options for the particular work operation when the walking/working surface is six feet or more above a lower level. You must make a reasonable effort to anticipate the particular hazards to which your employees may be exposed to during their work. Specifically, you must: (1) inspect the area to determine what hazards exist or may arise, (2) identify hazards correctly and select the appropriate measures and equipment, (3) give specific and appropriate instructions to prevent exposure to unsafe conditions, (4) ensure employees follow the procedures given and understand the training provided.

Select correct protection system
All fall protection systems must conform to the criteria in 1926.502 (Fall protection systems criteria and practices). The systems and equipment must be provided and installed, and all pertinent requirements of the rules met before your employees begin any work on or from the surface on which they will be protected. Most situations provide several choices for providing fall protection, but some limit the choices. For example, only guardrail systems are permitted to be used to protect employees on ramps and runways and other walkways.

Toolbox Talk Attendance Record
Fall Protection for Construction – General Requirements

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fall Protection for Construction - An Overview

Overview of Topic
In construction work, falls are the leading cause of worker fatalities. Each year, between 150 and 200 workers die, and more than 100,000 are injured as a result of falls at construction sites. The fall protection rule deals with both employee and equipment issues in protecting workers from falls. Employers need to:

- Select systems and equipment appropriate for the situation
- Properly construct and install safety systems.
- Train workers in the proper selection, use, and maintenance of fall protection systems.

Employees need to:

- Use safe work practices.
- Use fall protection equipment properly.
- Always wear provided fall protection equipment.

Who does the rule apply to?
Note: Fall protection requirements for scaffolds (including aerial lifts), cranes and derricks, steel erection, tunneling operations, electric transmission and distribution lines and equipment work, and stairways and ladders are found in other subparts in the construction regulations. The general construction fall protection rule (29 CFR 1926, Subpart M) covers most construction workers except those inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all work is done. The rule identifies areas or activities where fall protection is needed. These include: (1) ramps, runways, and other walkways, (2) excavations, (3) hoist areas, (4) holes, (5) formwork and reinforcing steel, (6) leading edge work, (7) unprotected sides and edges, (8) overhand bricklaying and related work, (9) roofing work, (10) precast concrete erection, (11) wall openings, (12) residential construction, and (13) other walking/working surfaces.

What is the threshold height?
The rule sets a uniform threshold height of six (6) feet. This means you must protect your employees from fall hazards whenever an employee is working six feet or more above a lower level. Protection must also be provided for construction workers who are exposed to the hazard of falling into dangerous equipment. Each employee less than six feet above dangerous equipment must be protected from falling by a guardrail system or equipment guard. If the employee is six feet or more above the equipment, the protection must be guardrail, personal fall arrest, or a safety net system.

Selection of equipment
Employers can select fall protection measures and equipment compatible with the type of work being performed. Fall protection can generally be provided through the use of guardrail, safety net, personal fall arrest, positioning device, and warning line systems.

Toolbox Talk Attendance Record
Fall Protection for Construction - An Overview

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Falls

Overview

With predictable regularity, falls are a leading cause of accidents and deaths on the job. Falls include those on the same level (floor, ground), as well as from one level to another (stairs, ladders, roof, etcetera). They can be caused by a variety of reasons - an unsafe action of an individual (hurrying, overreaching, improper use of equipment, etc.) or unsafe condition of the situation (poor housekeeping, unguarded opening, surface condition, etc.).

Prevention

Good footing is the best way to avoid falls and good housekeeping is the best way to ensure good footing. Trash, wires, and slippery areas caused by water, grease, or oil can cause falls. Watch footing when working on slick flooring and poorly lit areas; where floors are uneven from room to room; and where surfaces are uneven from broken concrete, cracked asphalt or curled rugs. Always look in the direction you are walking. Avoid carrying large objects that may block your view of a safe walking path. Walk slowly on stairs and use handrails to secure your step.

Cover, guard, or mark spills, potholes, and floor openings. Protect them with warning cones, guardrails, or toe boards. Except for normal doorways, protect wall openings and stairways through which someone could fall. The protection should be sufficiently strong and secured to prevent it from being removed.

Ladders

Makeshift or damaged ladders or incorrect ladder selection can cause falls. Choose the right ladder for the job. Complete a pre-use inspection, securely position the ladder and ensure spreaders or other locking devices are in place. Face the ladder and keep three points of contact at all times.

Toolbox Talk Attendance Record
Falls

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk

Fall Protection for Construction - Inspecting Your Harness & Lanyards for Construction

Overview of Topic

Personal fall arrest systems, as the name implies, are used to keep a worker from falling from a working level. The fall arrest system consists of an anchorage, connectors, body harness, and may include a lanyard, deceleration device, lifeline or a combination. Employees need to know that when using fall protection equipment:

- the fall protection is something they cannot take for granted.
- that they must wear it for it to work.
- that the fall protection must be inspected each and every time before it is used.
- when any defects are noted, the fall protection must not be used until it has been repaired.

Employees trust their lives to the fall protection equipment, so it only makes sense for them to take the time to inspect it prior to use.

OSHA requirements

OSHA requires the pre-use inspection of fall protection equipment. Fall protection must be inspected for wear, damage, and other deterioration (29 CFR 1926.502(d)(21)). If the equipment is defective, it must be removed from service.

What to look for

There are some common causes of wear and damage. As with all equipment, read and follow the manufacturer's guidelines for inspections.

- **Excessive dirt**
  - can cause deterioration of the equipment. Contaminants can come into contact with the harness or lanyard, and get into the webbing. The dirt abrades the fibers of the webbing which weakens them. Certain chemicals can also eat into the fibers or negatively react with the material. Try to keep fall protection gear as clean as possible.
- **Fading**
  - caused by exposure ultraviolet (UV) rays can damage the fibers of the webbing. Inspect webbing for stiff, brittle, or discolored areas, and for webbing that looks faded.
- **Cuts, tears, and holes**
  - are caused by contact with or damage from tools, equipment, or materials. Check the edges of the webbing, and also check around stitching, connectors, and buckles.
- **Burns or areas that are eaten away**
  - are areas of damage caused by heat or by chemical contact. Fall protection used in hazardous environments (mixing chemicals, pouring molten metals, welding, and other hot work) need special attention. Webbing in these situations can be severely damaged in a very short period of time.

When used in these severe environments, employees may need to inspect their fall protection equipment several times during the course of a shift. If employees are not sure of the state of their fall protection equipment, or if there are questions as to the suitability of the equipment, take it out of service until it can be inspected by a competent person familiar with fall protection equipment.

Toolbox Talk Attendance Record

Fall Protection for Construction - Inspecting Your Harness & Lanyards for Construction

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Good Housekeeping

Overview

Good housekeeping is one of the surest ways to identify a safe workplace. You can tell how workers' feel about safety just by looking at their housekeeping practices. Good housekeeping isn't the result of cleaning up once a week or even once a day. It's the result of keeping cleaned-up all the time. It's an essential factor in a good safety program, promoting safety, health, production, and morale.

Whose responsibility is housekeeping? It's everyone's. Clean work areas and aisles help eliminate tripping hazards. Respecting "wet floor" signs and immediately cleaning up spills prevents slipping injuries. Keeping storage areas uncluttered reduces the chances of disease and fire as well as slips, trips, and falls. Accumulated debris can cause fires, and clutter slows movement of personnel and equipment during fires.

Other housekeeping practices include keeping tools and equipment clean and in good shape or keeping hoses and cables or wires bundled when not in use. Broken glass should be picked up immediately with a broom and dustpan, never with bare hands. Be aware of open cabinet drawers, electric wires, sharp corners or protruding nails. Either correct the unsafe condition if you are able and it is safe to do so, or notify the person responsible for overall maintenance that something should be done.

How a workplace looks makes an impression on employees and visitors alike. A visitor's first impression of a business is important because that image affects the amount of business it does. Good housekeeping goes hand-in-hand with good public relations. It projects order, care, and pride.

Besides preventing accidents and injuries, good housekeeping saves space, time, and materials. When a workplace is clean, orderly, and free of obstruction; work can get done safely and properly. Workers feel better, think better, do better work, and increase the quantity and quality of their work.

Toolbox Talk Attendance Record
Good Housekeeping

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Ground Fault Circuit Interrupters

Overview

Ground Fault Circuit Interrupters (GFCI) are devices designed to prevent accidental electric shock and electrocution by preventing ground faults. They also protect against electrical fires, tool/appliance overheating, and destruction of wire insulation. GFCI's are required by building code in "wet" locations like kitchens and bathrooms and by OSHA at construction sites.

Hazards

The most common electric shock hazard, ground faults can cause severe electrical shock or electrocution. In normal conditions, electricity runs in a closed circuit; electricity flows out on the "hot" wire and returns on the "neutral" wire, completing the circuit. A ground fault occurs when the electrical current does not complete its circuit and unintentionally flows to the ground. Ground faults can cause fires and are dangerous when they flow through a person to the ground.

Ground fault shocks can happen when a person comes into contact with the "hot" side of an electrical circuit with wet hands or while standing in water or on a wet floor. GFCI's protect against ground faults by measuring the current on the electrical circuit; current in the hot and neutral wires should be equal or close to equal. If a ground fault occurs, the GFCI outlet or GFCI circuit breaker senses the change in current and trips, breaking the circuit and stopping the flow of electricity. The GFCI does **not** protect workers from line contact hazards (i.e. a person holding two "hot" wires, a hot and a neutral wire in each hand, or contacting an overhead power line).

Types

Different GFCI types are available for a variety of situations. GFCI circuit breakers snap into the main electrical panel and provide ground fault protection on all outlets on that branch circuit. GFCI wall receptacle outlets provide ground fault protection at that outlet and downstream. Portable GFCI units such as receptacles, extension cords, and cord-connected devices contain GFCI circuitry. Portable GFCI devices should only be used on a temporary basis and should be tested prior to every use.

Inspections

GFCI's have test and reset buttons for a reason; they must be tested regularly. For general use, GFCI's should be tested and inspected monthly. For construction site GFCI's, a written inspection plan should be in place and a competent person should conduct periodic tests and visual inspections before each day's use. Records of the testing must be kept.

GFCI Inspections should look for external defects such as deformed or missing pins, insulation damage, and indications of internal damage. Damaged or defective equipment should not be used until repaired. Additional inspections are required if an outlet is returned to service following repairs and after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).

Toolbox Talk Attendance Record
Ground Fault Circuit Interrupters

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Guard Against Machine Injuries

Overview

Many injuries occur during equipment maintenance. Sometimes workers try to reach past the guards while trying to service equipment or get caught in power transmissions such as belts, pulleys, running rolls, chains or sprockets. Other injuries occur when equipment is unguarded or when machinery starts unexpectedly due to lack of an energy control program.

Prevention

If some basic precautions are taken, protecting workers from these injuries can be simple, and inexpensive. Inexpensive physical controls such as machine guards can prevent many injuries. The important thing is that the guards remain in place. Bright, contrasting colors painted on machine guards and points of operation give workers a visual warning and can make it easy to spot missing guards. Good lighting also helps spot dangerous conditions or unguarded machinery.

Regular maintenance by experienced workers can make a big difference in preventing equipment jams and in. Employee should follow safe work practices around machinery and other electrical equipment to reduce the risk of injury from being caught by or falling into machinery. The law requires equipment to be turned off and locked out during any maintenance to prevent someone from turning it on unexpectedly. Workers should recognize and understand the following when working around machinery:

- The location of machine guards and points of operation
- The purpose of color-coded machinery alerting workers to hazards and to help pinpoint missing guards
- The danger of pinch points and importance of guards on in-running rolls, belts, pulleys, chains, and sprockets
- Know and follow established lockout/tagout procedures
- Know when machines have been shut down for maintenance or to clear jams
- Assure that machines remain off while they are shut down for maintenance
- Know and observe electrical safety work practices developed by the company
- Understand the importance of keeping machinery clean to prevent equipment jams

The surest way to safeguard worker hands and fingers is for everyone to stay alert when working around machinery or moving equipment and to follow established company safety practices and use common sense.

Toolbox Talk Attendance Record
Guard Against Machine Injuries

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hand and Power Tools for Construction - Overview

Overview of Topic
From a simple screwdriver to a reciprocating cut-off saw, tools are the lifeblood of the construction industry. No matter how simple or sophisticated, they all can be dangerous if not used properly. The old saying, "the right tool for the job" hasn't changed. In this toolbox talk, we will take a quick overview of OSHA requirements for tool control and safe use.

Condition of tools
All hand and power tools and similar equipment, whether furnished by the employer or employee, must be safe.

Guarding
When power operated tools are designed to have guards, they must be equipped with the guards when in use.

Personal protective equipment (PPE)
Employees using hand or power tools must be provided with proper PPE for protection when exposed to:

- Falling, flying, abrasive, or splashing objects
- Harmful dusts, fumes, mists, vapors, or gases.

All PPE must meet the requirements of and be maintained according to Subparts D-Occupational Health and Environmental Controls, and E-Personal Protective and Life Saving Equipment.

Switches
Switch action on power tools is important. For some tools a positive “on-off" control is fine, others require momentary contact "on-off" control, and still others require a constant pressure switch. Some examples are:

- Positive "on-off" switch-hand-held platen sanders, grinders (2" dia. wheel or less), routers, planers, shears, and scroll saws.
- Momentary contact "on-off" control-hand-held drills, tappers, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools. The tool may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
- Constant pressure switch that will shut off the power when the pressure is released-all other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means.

Employee training
The OSHA rules require the following training for employees using hand and power tools:

- Only employees qualified by training or experience can operate equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards (1926.21(b)(2)).
- Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life must be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment must be instructed in the use and limitations of such equipment (1926.103(c)(1)).

Toolbox Talk Attendance Record
Hand and Power Tools for Construction - Overview

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hand Protection

Overview

Next to our eyes, our hands are probably the most important part of our body when it comes to doing our work. They're involved in almost everything we do. Yet many of the things we do with our hands are done without any deliberate thought. Your hands have no fear. They'll go anyplace they're sent and they only act as wisely as the person they belong to; so, before you use your hands think of their safekeeping.

The most common types of hand injuries and what you can do to prevent them are:

Traumatic injuries often occur from careless use of machinery or tools. Hands and fingers get caught, pinched or crushed in chains, wheels, rollers, or gears. They are punctured, torn or cut by spiked or jagged tools and edges that shear or chop. Safety precautions should include using shields, guards, gloves, or safety locks; handling knives or tools with care; and keeping hands, jewelry and clothing away from moving parts.

Contact injuries result from contact with solvents, acids, cleaning solutions, flammable liquids and other substances that can cause burns or injure tissue. To protect against these injuries, read the product labels, use the right glove or barrier cream, and wash hands frequently. result from contact with solvents, acids, cleaning solutions, flammable liquids and other substances that can cause burns or injure tissue. To protect against these injuries, read the product labels, use the right glove or barrier cream, and wash hands frequently.

Repetitive motion injuries happen when tasks require repeated, rapid hand movements for long periods of time. Manufacturing, assembling, or computer work may lead to these injuries. Change your grip, hand position, or motion. If possible, rotate tasks to give your hands a rest.

Prevention

The following basic safety rules can prevent many hand injuries:

- Recognize hazards.
- Think through each job before you begin.
- Follow safety rules.
- Avoid shortcuts.
- If an accident happens, seek prompt treatment.
- Report injuries to your supervisor.

Toolbox Talk Attendance Record
Hand Protection

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hand Tool Safety

Overview

Construction workers routinely use hand tools and don't think of them as dangerous, but accidents continue to occur. Hand tools include hammers, screwdrivers, saws, wrenches, cutters, tape measures, sledge hammers, chisels, punches, pipe wrenches, pliers, and planes, just to name a few. Each tool is designed to do a specific task. The greatest hazards posed by a hand tool are from their misuse or improper maintenance. It's up to you to select the right tool for the job and to use and care for it properly.

Hand tool safety begins by selecting the right tool for the task and using it the way it was designed. Using the wrong tool for a job is likely to result in an accident. Before you start a job, inspect the tool for defects. Check to be sure that the handle fits tightly into the head, especially with a cutting tool such as an axe. Replace cracked, splintered or broken handles and worn jaws on wrenches or pliers. Replace or repair broken tools and/or power cords. Keep tools clean, sharp and in good condition so they'll be ready for use the next time. When you've finished the job, return tools to their proper storage position protected from unintended contact.

Prevention

If possible, choose tools designed to keep your wrist straight not bent. Pull on wrenches or pliers don't push on them and avoid applying excessive force. When using a cutting tool, hold its handle firmly in the palm of your hand and cut away from your body never towards it. Carry sharp tools away from your body, never in your pocket. Keep pointed or sharp tools away from walkways where they could injure someone passing by.

Tools should never be tossed to another worker, surface or height; they should be handed securely to another worker or placed directly on another surface or level. If working on a ladder or scaffold, tools should be raised or lowered using a bucket and hand line. Never carry tools in a way that may interfere with your using both hands on a ladder or climbing on a structure.

Remember to wear the proper personal protective equipment (PPE) when using certain tools. Wear hearing protection when using power saws, drills or other noise-generating tools. If work could possibly generate flying objects or dust, protect your eyes by wearing safety glasses with side shields or safety goggles. When gloves are necessary, make sure they fit properly. Gloves that are too loose, tight or bulky could contribute to hand fatigue or injury.

As the tool handler, think of your safety first (wear personal protective equipment, follow manufactures safety recommendations, etc.), but also be aware of others around you when using tool, so you don't involve them in an accident.

Toolbox Talk Attendance Record
Hand Tool Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hearing Protection Devices

Overview

Excessive exposure to noise in the work place could cause permanent hearing loss. In order to protect our hearing, we should control noise exposures by wearing hearing protection in designated areas.

Hearing protection devices such as earmuffs and earplugs can be an effective measure to protect hearing in noisy work environments. However, hearing protection devices are only effective if they are properly sized and carefully fitted into or over the ear. The two common categories of hearing protection are earplugs and earmuffs.

Types

There are several common types of hearing protection devices:

- Disposable earplugs made of expandable foam. One size fit most.
- Pre-molded earplugs made from flexible plastics. Often sold in different sizes, they should be selected to provide best fit for each ear.
- Semi-aural devices, or canal caps, consisting of flexible tips on a lightweight headband. They provide less protection than earplugs or earmuffs but may be good for intermittent use.
- Earmuffs having rigid cups with soft plastic cushions that seal around the ears.

The formable foam earplug must be narrowed and compressed by rolling before it is inserted into the ear canal. Once inserted, the earplug expands to fill the ear canal and to reduce noise transmission further into the ear. If it is inserted incorrectly, the foam earplug will provide much less protection against noise.

To properly fit a formable foam earplug:

- With clean hands, slowly roll and compress a foam earplug into a very thin cylinder.
- Reach around the head with one hand to pull the top of the ear slightly outward and upward while inserting an earplug into the ear canal with the other hand.
- After insertion, hold foam earplugs in place with a fingertip for a few moments to ensure that the plug expands in the ear canal without moving out of the ear. In a noisy environment, the reduction in perceived sound level as the plug expands should be noticeable.

To properly fit an earmuff:

- Adjust the headband so that it sits comfortably on the head and so that the cushions exert even pressure around the ears.
- Pull hair back and out from beneath the cushions to ensure a proper seal.
- Muffs should fully enclose the ears.

Toolbox Talk Attendance Record
Hearing Protection Devices

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Preventing Heat Related Illnesses

Overview

When the body heats up faster than it can cool itself, heat related illnesses may develop. It's important to recognize the symptoms of heat-related illnesses and understand how to prevent, control and respond to their effects.

Prevention

Air temperature, humidity and clothing can increase the risk of developing heat-related illnesses. So can age, sex, weight, physical fitness, nutrition, alcohol or drug use, or pre-existing diseases like diabetes. The following tips can help prevent heat related illnesses.

- Drink water - Drink small amounts of water frequently, about a cup every 15-20 minutes.
- Limit exposure time and/or temperature - Try to schedule hot jobs for cooler times of the day or cooler seasons of the year. Take rest breaks in cool areas.
- Acclimatization - Gradually adapting to heat will reduce the severity of heat stress.
- Engineering controls - Mechanize heavy jobs or increase air movement with fans or coolers.
- Wearing loose, lightweight light-colored clothing - Clothing can affect heat buildup. DO NOT WORK WITH YOUR SHIRT OFF
- Salt tablets should not be used - Taking salt tablets can raise blood pressure, cause stomach ulcers, and seriously affect workers with heart disease.

Symptoms

Someone with a mild reaction to heat may have a rash called "prickly heat" or painful muscle spasms, called heat cramps, during or after activity. A mild reaction may also include fatigue or dizziness. You may notice a change in physical or mental performance and an increase in accidents. A person with a moderate reaction or heat exhaustion, will have some or all of the following symptoms: excessive sweating, cold, moist, pale or flushed skin, thirst, extreme weakness or fatigue, headache, nausea, lack of appetite, rapid weak pulse, or giddiness and if not properly treated, the victim may collapse.

Anyone with mild or moderate symptoms should be moved to a cool, shaded place with circulating air. They should lie down and, if conscious, be given small sips of cool water at frequent intervals. If symptoms continue, a doctor should be called.

In severe cases of heat illness, a heat stroke may result. The victim's face is flushed red and their skin is hot and dry with no sweating. They develop a severe headache with deep, rapid breathing. They have a very high fever and may become delirious. They may become unconscious, have convulsions, or lapse into a coma. This condition is fatal unless emergency medical treatment is obtained. Immediately call for medical help. In the meantime, get them out of the hot environment. Loosen clothing and pour water over the entire body. Get air to circulate around the body.

Recognizing the warning signs and symptoms of heat-related illnesses and using preventive and control measures can reduce the frequency and severity of heat illness while increasing worker productivity.

Toolbox Talk Attendance Record
Preventing Heat Related Illnesses

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hazardous Chemical Warning Labels

Overview

All hazardous chemicals must be labeled with specified elements including pictograms, signal words and hazard and precautionary statements.

Labels, as defined in the HCS, are an appropriate group of written, printed or graphic informational elements concerning a hazardous chemical that are affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

The label will the hazardous chemical will contain: Name, Address, Telephone Number, Product Identifier, Signal Word, Hazard Statement, Precautionary Statement, and Pictograms.

Precautionary statements tell you how to store and dispose of the material properly. The label may indicate precautions to take, such as how to clean up, what personal protective equipment to use, and how to handle a spill of the chemical. First aid instructions may include antidotes for poisons and what steps to take when someone is exposed to the chemical.

Always read the label before you begin a job using a potentially hazardous chemical. Although you may have used the same chemical many times, the manufacturer may have changed the formula or the concentration. Avoid identifying chemicals by the label's color or design. If the label raises any questions in your mind about the chemical, read the SDS or discuss it with your supervisor.

If you transfer a hazardous chemical from the original container to a second container, and you will not use the material by the end of the workday, you will need to label the secondary container. The minimum information required is the identity of the hazardous chemical and appropriate hazard warnings.

Toolbox Talk Attendance Record
Hazardous Chemical Warning Labels

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Ladder Safety

Overview

Ladders are handy, simple tools to use, but if they are not maintained properly, they can be unsafe. Falls are the third leading cause of worker deaths. Half of these injuries and deaths involved a ladder. Ladder accidents can occur if they are faulty, if they have been set up improperly, and if they are used improperly.

Workers must be familiar with the rules for safe ladder setup and uses, it is important to know how to inspect, maintain, and store ladders used in the workplace. The materials that go into ladders are designed and engineered to last indefinitely if they are cared for properly. Proper maintenance, care, and an inspection checklist can guard workers against using a faulty ladder.

Inspections

Neglected ladders can become unsafe ladders, so workers should inspect them frequently. Before using a ladder, make sure it is in good working condition. If an inspection shows defects in a ladder, it should be immediately tagged out of service. Broken or damaged ladders should be properly repaired by a qualified worker or they should be discarded and replaced.

A ladder inspection begins from the top down. Workers should look for loose steps and rungs. The rungs should be sturdy, clean, and not slippery from grease or oil. The upright ladder legs should be strong and free of cracks, splits, and bent edges. The ladder's braces should be solid. Nails, screws, bolts or other fasteners should be tight. Finally, the ladder feet should be examined and the non-slip base should be in good repair.

Different ladder types and materials have specific inspection points. Wood ladders should never be painted and should not have cracks or splits. Metal and fiberglass ladders should be checked for bends and breaks. Metal ladders should be inspected for signs of corrosion. Step ladders should not be wobbly, a possible indication of side strain, and the hinges should be firm and straight. Extension ladders should have wrought extension locks that seat properly. The extension rope should not be rotted or frayed.

Workers should try to prevent ladder damage during transport and use because this can weaken the ladder. When hauling a ladder, workers should tie it securely to the vehicle to prevent nicks, gouges, or chafing. Damaged bolts and joints can work loose and eventually cause the ladder to twist and become unstable. Straight ladders should be stored flat or on wall brackets to prevent sagging or warping. Step ladders should be stored upright and in the closed position. All ladders should be stored in covered, protected areas away from moisture sources.

Toolbox Talk Attendance Record
Ladder Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Lifting Techniques - Prevent Back Pain

Overview of topic

Although back problems are among the most common types of pain and disability, most of these problems are completely preventable through the use of proper lifting techniques.

There are a wide variety of injuries that can happen to the back. Some injuries are serious enough to require surgery. Some injuries lead to permanent disability. Any back injury can limit all of your activities, both on and off of the job. By using the correct lifting posture, you can avoid back injury.

The basic rules of good lifting are:

- Size up the load before you lift. Test by lifting one of the corners or pushing. If it's heavy or feels too clumsy, get a mechanical aid or help from another worker. When in doubt, don't lift alone.
- Bend the knees. Note that this item is the single, most important aspect of lifting.
- Place your feet close to the object and center yourself over the load.
- Get a good hand hold.
- Lift straight up, smoothly, and let your legs do the work, not your back.
- Do not twist or turn your body once you have made the lift.
- Make sure beforehand that you have a clear path to carry the load.
- Set the load down properly.
- Always push, not pull, the object when it's on a cart or dolly.
- If it's a long load, get some help.
- Split the load into several smaller ones when you can.

Discuss other factors that affect the back, including:

- Aging.
- Proper postures for sleeping, standing, and sitting. Sleep on your side with your knees bent or on your back. Sit with your knees slightly higher than your hips with your hips located near the rear of the chair. Stand with the shoulders back with the spine's "S curve" centered over the pelvis.
- Physical condition. Extra weight means extra strain on the back. Stress can also play a part in muscle spasms. It is important to take time to relax.
- Repetitive motion can contribute to back problems.

Employee training

OSHA has not developed any training requirements for proper lifting techniques.

Training tips

List the jobs or duties workers might perform at your company where lifting hazards exist.
You may want to go into your organization's policy on reporting back pain and your organization's treatment recommendations. If you have specific policy on back pain or injury, present it in detail to your employees.
If your organization has specific ergonomic practices or aids, explain and demonstrate their use.

Toolbox Talk Attendance Record
Lifting Techniques - Prevent Back Pain

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Machine Safety

Overview
Machines are one of the leading causes of occupational injury. These injuries typically result because of inadequate training or careless/ complacent operating. Therefore, only trained and authorized employees are permitted to operate machinery.

Prevention
Before you turn on any machine, know the hazards and make a safety check. Is everybody clear? Are the guards and safety devices in place and properly adjusted? Don't start the machine unless they are. Never tie down or block a guard or safety device. Safety features are there to protect you and always follow established lockout/tagout procedures.

Maintain good housekeeping at the machine center. If you have to clear an object from a running machine, follow established safety procedures. Never use your hands! Don't try to slow down a moving part with your hand or makeshift device, let the machine stop completely, by itself. And never walk off and leave a machine running and unattended.

Clothing
The right work clothes can help you stay safe and comfortable on the job. Wear tucked in short-sleeved shirts and cuffless pants. Long sleeves, neckties, scarves, gloves, or jewelry can get caught in moving parts. Wear eye protection where required and keep long hair covered (i.e.-tucked in to your shirt) and away from moving parts.

Machine safety requires a combination of proper training, safeguards, good judgment, and concentration. Machines have hazards which can't be completely eliminated. Even simple machines can pinch, cut, or crush. To avoid injury, follow procedures and be on your guard. Allowing yourself to become distracted, even for a second, can have serious consequences for you or the people you work with.

Toolbox Talk Attendance Record
Machine Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Safety Data Sheets

What is a Safety Data Sheet (SDS)?

Chemical manufacturers are required to produce Safety Data Sheets (SDS) for all chemicals produced. "Safety Data Sheets", previously referred to as "Material Safety Data Sheets" (MSDS), communicate important information regarding the hazards of chemical products. As of June 1, 2015, OSHA's Hazard Communication Standard requires new SDS to be in a uniform format, and include the section numbers, headings, and associated information addressed below

What is the purpose of an SDS?

The purpose of an SDS is to inform you of:

- The material's chemical make-up.
- The material's physical properties or fast acting health effects that make it dangerous to handle.
- The level of protective gear you need to wear to work safely with the material.
- The first aid treatment to be provided when someone is exposed to the material.
- The preplanning needed for safely handling spills, fires, and day-to-day operations.
- How to respond to accidents.

What information is on the SDS?

There are 16 categories of information that must be present on an SDS. These are:

Chemical Identification, Hazard Identification, Composition, First Aid, Fire Fighting Measures, Accidental Release Measures, Handling and Storage, Exposure controls/personal protection, Threshold Limit Values (TLVs), Physical and Chemical Properties, Stability and Reactivity, Toxicological Information, Ecological Information, Disposal Information, Transportation Information, Regulatory Information, and Other Information (dates of last revision)

Who uses SDSs?

Industrial hygienists, chemical engineers, safety professionals, employers, employees, emergency responders and anyone else requiring information on a material.

When would I use an SDS?

You should always know the hazards of a material before you start using it. For most people who work with a material, there are sections of the SDS that are more important than others. You should always read the name of the material, know the hazards, understand the safe handling and storage requirements, and understand what to do in an emergency.

Toolbox Talk Attendance Record
Safety Data Sheets

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Personal Protective Equipment

Overview

One way to prevent injury at work is to wear proper personal protective equipment (PPE). Some protective equipment is necessary for specific jobs, while other items are necessary for any work. Employee should know the hazards they face on the job, then provide the proper equipment to protect against those hazards. It's important that know how to use and care for the equipment so it will provide maximum protection.

Types of PPE

Hard hats should be worn by all workers where there is a danger of flying, falling, and moving objects or when bump hazards are present.

Work boots with toe caps to protect the feet of the worker who handles heavy loads or who works around moving equipment. Rubber boots with hard toes and puncture-proof inner soles protect the feet and legs of those who work with wet concrete. Kneepads protect cement finishers and others who work on their knees for long periods.

Eyes can be damaged from chemical splashes, dust or flying particles. Protect eyes by wearing approved goggles or face shields. The eye protection should indicate that it is ANSI Z 87 rated. Eye protection is required when working around chemicals, while cutting material, when using power equipment and when spraying or sanding.

Respirators are necessary for some jobs to prevent noise and throat irritation or to prevent ingesting dangerous chemicals or vapors. The type of respirator to use depends on the nature of the work. Respirators should be worn when there will be a lot of dust, vapors or gases emitted into the air.

Even if the job will only take a few minutes, that's all it would take for a chemical or fragment to fly into an unprotected eye or a heavy object to fall on an unprotected head or foot. Wearing appropriate personal protective gear will greatly lessen a worker's chance of injury on the job.

Toolbox Talk Attendance Record
Personal Protective Equipment

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Rigging Equipment Toolbox Talk

Inspection before use requirements

Your competent person must visually inspect all slings, fastenings, and attachments, for damage or defects:

- Prior to use on each shift.
- As necessary during operations to ensure continued integrity of the sling, especially if the sling is subjected to heavy stresses.

Damaged or defective slings must be immediately removed from service.

Use requirements

Rigging equipment must never be loaded in excess of its recommended safe working load. Safe working load charts are available in the construction regulations (1926.251, Tables H- 1 through H-20) for each type of sling. Slings, when not in use, should be removed from the immediate work area so as: (1) not to be a trip or swinging hazard, and (2) to protect the sling from jobsite hazards such as dirt, oil, grease, and not being walked on or run over by construction traffic. Custom lifting equipment (grabs, hooks, clamps, etc.) designed for specific functions such as lifting modular panels, prefabricated structures, and similar materials, must be marked to indicate its safe working loads. Such equipment must be proof-tested prior to use to 125 percent of its rated load.

General industry rules that apply to construction

OSHA has determined that the following general industry rules (1910.184) also apply to construction applications.

- Slings must not be shortened with knots or bolts or other makeshift devices.
- Sling legs that have been kinked must not be used.
- Slings used in a basket hitch must have the loads balanced to prevent slippage.
- Slings must be padded or protected from load sharp edges.
- Hands or fingers must not be placed between the sling and its load while the sling is being tightened around the load.

Other safety rules

- Suspended loads must be kept clear of all obstructions.
- Crane operators should avoid sudden starts and stops when moving suspended loads.
- Employees must remain clear of loads about to be lifted and suspended. Tag lines should be used when appropriate.
- All shock loading is prohibited.

Specific sling application

The rest of the applicable regulations for each sling type are found at 29 CFR 1926.251(b) for alloy steel chains; .251(c) for wire rope; .251(d) for natural rope, and synthetic fiber; .251(e) for synthetic webbing (nylon, polyester, and polypropylene); and .251(f) for shackles and hooks.

Toolbox Talk Attendance Record
Rigging Equipment Toolbox Talk

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Roofing Safety

Overview

Worker safety is important on any construction job. Working on roofs is no exception. Falls account for more serious injuries and deaths in construction than other type of injury. Accidents occur not only to those building roofs, but also people maintaining, cleaning, demolishing and inspecting roofs. Any work on a roof is a risk. The nature of the precautions needed to work safe may vary from one job to another, but not providing safeguards is not acceptable.

The following are items that increase the likelihood of falls during roof work.

- Pitch of the roof – the steeper the pitch, the more difficult it is to maintain your footing.
- Moisture – rain, snow or frost may cause slippery conditions on the roof.
- Dirt or Sawdust – may cause slippery conditions on the roof.
- Footwear – the traction of shoes/boots varies, always wear good traction shoes/boots.
- Tripping hazards – tools, electric cords, etc. can create a tripping hazard.

Considerations for roof work

- Perform a risk assessment – identify the risks that will be encountered before performing the specific tasks required for the job.
- Getting on and off the roof – this is a major risk point, a secure way to enter and exit the roof is essential.
- Fall arrest system – a fall arrest system is required if a worker may fall from an elevated position. As a general rule, the fall arrest system should be used if the working height is greater than six feet.
- Falling Material – maintain good housekeeping on the roof to stop material that could fall.
- Training – all workers should receive training on fall hazards and prevention.
- Weather conditions – work should not occur during icy, rainy, or windy conditions. You can easily be blown off a roof when carrying roofing materials.
- Ladders and scaffolding – make sure they are structurally sound and installed properly.

Safe Work Practices

- Keep your center of gravity low and over your feet.
- Keep your knees bent and be aware of things around you.
- Don’t carry too much or have your hands too full.
- Don’t drop things or let them roll off the roof.
- Go up and down ladders facing the ladder.

Toolbox Talk Attendance Record
Roofing Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Reducing Exposure to Silica

Overview

More than 1 million U.S. workers are exposed to crystalline silica (free silica). Overexposure to crystalline silica can cause silicosis, a disabling lung disease. Sand, rock, and soil are the most common materials that contain silica. The most common form of crystalline silica is known as quartz. Inhalation of airborne dusts that contain crystalline silica can occur in a wide variety of settings: mining, quarrying, and stone cutting; foundry operations; paint-blasting and sand-blasting; glass manufacturing and etching; and in some types of construction work. When might you expect silica exposure?

- During work with dry sand, quartz, or clay that contains silica
- During demolition of concrete, brick, and mortar
- During drilling of quartz-containing rock, clay, or sandy soil
- During dry sweeping of concrete, rock, clay, or sand dust

Exposure

Inhalation of crystalline silica can lead to chronic or accelerated silicosis. Chronic silicosis, the most common form of the disease, usually occurs after 10 or more years of overexposure. As silicosis progresses, symptoms appear such as severe cough and shortness of breath following physical exertion. Without adequate dust controls, workers may develop accelerated silicosis, which results from very high silica exposures and develops over a period of only 5-10 years.

Prevention

There are many things that employers and workers can do to help prevent silicosis, including:

- Control overall dust exposures by minimizing the dust around work areas.
- Substitute less hazardous abrasive-blasting materials for those containing crystalline silica.
- Install engineering controls (local exhaust ventilation) and containment methods (blast-cleaning machines and cabinets) to prevent dust from being released into the air.
- Train workers about health effects of silica dust and good work practices that reduce dust.
- Wet down surfaces before clean-up.
- Use vacuums with high-efficiency particulate air filters or wet-sweeping for clean-up.
- Never dry sweep or blow dust with compressed air.
- Wear respirators, where necessary, to avoid breathing dusts.
- Be aware that the highest silica concentrations may occur inside enclosed areas during tasks such as concrete or masonry sawing or abrasive blasting. Wear air-supplied respirators under high dust conditions.
- Shower or wash up and change into clean clothes before leaving the worksite.

The keys to preventing silicosis are to minimize the amount of silica-containing dust in the air and to avoid breathing silica-containing dust. There is no cure for the disease once it develops, but it is 100 percent preventable if employers and workers work together to minimize exposures.

Toolbox Talk Attendance Record
Reducing Exposure to Silica

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Saw Safety

Overview

Know your power saw; read the safety instructions and owner's manual carefully. Learn the applications and limitations, as well as the specific potential hazards peculiar to the tool. Tools must be either grounded or double insulated. If the tool is equipped with a three-prong plug, it should be plug, into a three-hole receptacle. Never remove the third prong.

Keep guards in place and in working order. Avoid dangerous environments and don't use the saw in wet locations. Make sure you have adequate light to work-in. Safety and efficiency go hand in hand. A power saw in good condition, with a sharp blade, is not only safer but does a fast, and better job. Choose the right saw for the work you're doing -- if in doubt, check with your supervisor.

If you're using a table saw, make sure the saw and motor frame are properly grounded and guarded. Keep your body out of line with the lumber being sawed. Use a pusher stick when feeding lumber near the blade. Use a brush to remove scrap from the table, not your hands. Shut off the power while adjusting the saw hood or gauge. Lock power controls in the off position (and where possible, unplug the electric cord) before changing saw blades. Be sure there is no play in the arbor.

As with any other operation, get help when sawing long material. Always keep the area around the saw free of loose material that can cause tripping. Wear proper apparel, no loose clothing or jewelry to get caught in moving parts. Wear suitable eye protection when using power saws. Safety glasses are a must -- a stray splinter or wood chip can cause injury or even the loss an eye.

Finally, never force a power saw always use the right size tool for the job. Don't abuse the cord never carry the saw by the cord or yank it to disconnect from the receptacle. Avoid accidental starting don't carry a plugged-in power saw with your finger on the switch.

Toolbox Talk Attendance Record
Saw Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Scaffolding Safety

Overview

Scaffolding allows workers to do their jobs at elevated heights. Scaffolding includes suspended systems from buildings, supported systems from the ground, and aerial systems on mobile equipment. If not properly trained, those who work on scaffolding systems are at risk for falls or falling objects which could cause serious or even fatal injuries.

Prevention

To prevent falls, scaffolding equipment should be properly installed and operated. A “qualified person” should study the load, bracing, and safety code requirements for each job site. Properly designed scaffolding systems have work levels that are decked with regulation-sized planks and have appropriate worker access. Depending on the height of the scaffold, fall protection can include safety harnesses, guardrails or toe boards.

A “competent person” as described by OSHA, should inspect the scaffolding before each use to see that it is in good condition and operable. Scaffolding should be plumb and level and in firm contact with a stable surface. The scaffolding should be sturdy with all nuts and bolts tightened. Damaged or improperly constructed equipment should not be used. To avoid electrocution hazards, power lines should be at least 12 feet away the scaffold.

Before a scaffold job begins, all workers should receive training on that particular scaffolding system. Workers should only climb the scaffolding from designated areas on the structure or on properly installed ladders. Workers should practice good climbing techniques including facing the rungs when climbing up or down; using tool belts or approved hoists to carry materials up to the jobsite and thus allow the use of both hands; and establishing solid footing and balance before climbing the structure.

Workers must practice safe behaviors on scaffolding at all times. Only one person should stand on an individual plank at a time. Materials should not be hoisted or placed on cantilevered platforms unless they are designed for it. Bridges between scaffold towers should not be constructed unless a “qualified person” designed them. Workers should also be aware of activities taking place overhead and try to keep tools away from the edges of the scaffold and platform openings so they don’t drop on workers below.

If workers have received proper training and education in scaffold systems, fall protection equipment, and proper scaffold work practices, they can work safely and feel safe at elevated heights.

Toolbox Talk Attendance Record
Scaffolding Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Slips, Trips and Falls

Overview

Slips and falls are a leading cause of workplace injuries. What do experts recommend as the single most important step to take in preventing slips and falls? Simple...keep floors clean, dry, and free of obstruction. When it comes to safeguards against slips and falls, nothing is more important than good housekeeping.

Prevention

When you walk through a work area, look for spills, grease spots or dust (i.e. -machine byproducts). Water spilled by drinking fountains or tracked in on wet or snowy days can create a major hazard. Look around and be aware of wet areas or objects on the floor. Then take the time to do something about it. Clean up the hazard or place cones or hazard signs nearby, warning of the danger. People can walk on extremely slippery surfaces by modifying their speed and stride, provided they know about the dangerous condition. It's the lack of warning that can cause problems.

Look for signs of flooring change. Changes in lighting and floor color can conceal a change in friction or angle between adjacent surfaces. Wherever possible, waxes and polishes should cover an entire area, extending to natural breaks in flooring. Choose footwear according to floor surface.

Consider slips and falls when you're doing a job. Some tasks, such as pushing loads, may require special attention to slip-resistant floor surfaces or carefully selected sole material and treads. For some jobs, better lighting or a stable brace is helpful. Carefully placed and mounted hand rails, poles or hip bars may help operators brace themselves. This reduces reliance on foot/floor friction, which thereby reduces the potential for slipping.

Slips can occur because of how you walk on a surface. Some simple things you can do to minimize your chance of slipping and falling would be to wear appropriate footwear; watch where you're going; take slow, short steps where slip potential is high; and use hand holds where possible.

Toolbox Talk Attendance Record
Slips, Trips and Falls

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Preventing Sprains and Strains

Overview

Lifting, pushing, and overreaching are common causes of strains and sprains. Any job that requires sitting, standing or awkward position for long periods of time can cause excess stress and strain on muscles. Most strains and sprains affect the back, arms, and shoulders. However, there are some very simple things you can do to prevent or minimize body strains and sprains.

Many strains and sprains occur because of poor material handling. Workers lift things that weigh too much or they lift incorrectly. Lift correctly by bending your knees, not your back. Carry loads close to your body. Injuries can occur when workers try to pull or lift a heavy or awkward object without help or lift an object while twisting from the waist. When carrying a load, avoid bending or lifting upward unnecessarily. Keep the load as close to the waist as possible.

Prevention

If necessary, get help with heavy loads. Don't try to move or lift an object you can't handle. Instead of lifting a 75-pound load, break it down into smaller parts if possible. If you can't break it down, get help from a mechanical device or lift it with another worker. Make sure moving equipment works properly or it will cause you to strain unnecessarily just trying to get it to work. If the wheels on a cart are not aligned, you could strain your arms, shoulders, and back trying to move it.

Periodically change your working positions. Chronic strain due to an unchanging work position can weaken your back, arms, and shoulders. Adjust working heights to prevent slumping or excessive reaching. When chronic strain occurs; muscles become weak and are more prone to injury of all kinds. Stretch during the day to increase your flexibility. Take body relaxation breaks by letting your shoulders and neck muscles go limp; swivel your head or arms or flex your hands and fingers.

Toolbox Talk Attendance Record
Preventing Sprains and Strains

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Avoiding Struck by Injuries (Moving Equipment)

Overview

Many workplace injuries and deaths involve vehicles and moving equipment, but sometimes this equipment is essential to the work operation. All vehicle and equipment operators should be trained, competent, and safety-minded to avoid costly accidents and injuries. Before operation, drivers should be familiar with the machine safety and operating feature, maintenance procedures, and manufactures safety instructions.

Vehicle Operation

Vehicle operation should be limited or avoided when drivers are ill or taking medications that can affect alertness. Operators should dress appropriately for the weather and work conditions, including head and eye protection. If the vehicle doesn't have a protective cab, dust respirator and acoustic earmuffs or plugs may be required. Before driving, seat belts should be securely fastened, even if the vehicle has roll over protection (ROPs). No one should ride on any part of a moving vehicle, except areas intended for transport. If there are no passenger seats, there should be no riders. Operators should see to it that everyone is at a safe distance from the equipment before moving. Only those with a driver's license should drive equipment on public roads.

Vehicle ground speed should match operating conditions. Speed should be cut in turns, when near ditches and obstacles, on rough, hilly or muddy ground, and when visibility is poor. All workers should be warned not be approach or get on equipment that is under power. When the vehicle is stopped, brakes should be set securely, using park lock, and remove keys to keep unauthorized persons from restarting the machinery. Operators should disengage the power take off, keeping shields and guards in place, and turn off the engine before unclogging, refueling or working on any power-driven machine.

Avoiding Danger

Other workers can avoid danger from moving equipment by staying alert, out of the way, and by never walking under, alongside moving equipment or near power take offs.

Toolbox Talk Attendance Record
Avoiding Struck by Injuries (Moving Equipment)

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Warehouse Safety

Overview

Warehouses work covers a wide variety of materials and products. Whether it is an industrial, commercial or retail facility, warehouse workers should follow safety guidelines for loading docks, conveyor systems, forklifts and pallet jacks, material storage and handling, and good housekeeping.

Hazards

One of the largest hazards in the warehouse are the loading docks. When loading and unloading materials, pay special attention to avoid falls from elevated docks and ramps. Trucks delivering goods should be treated cautiously while they are parked at the loading dock. The area between the dock and truck is hazardous because a rolling truck can cause a crush injury; truck wheels should be chocked while unloading.

In some warehouses, products may be placed on conveyor systems that distribute them to different areas in the facility. Avoid placing body parts or hair near conveyors because moving wheels and belts pose a pinch point hazard. Elevated conveyors should have safety nets to avoid dropping products on workers below. Workers need training on the location of on/off buttons and emergency stop buttons for conveyor systems and lock out/tag out procedures are required whenever servicing conveyors.

Forklifts and pallet jacks help move products from the shipping area into and around the warehouse. Only trained and authorized employees are permitted to operate forklifts. Loads should be properly lifted on forks and stabilized, then slowly and deliberately taken to their assigned location. Forklifts and pallet jacks should never be used as rides or man lifts (unless using an approved aerial lift basket.

When large, awkward, and/or heavy items are warehoused, they become a challenge to store in a safe manner. Storage shelving and rack systems should be sturdy, braced, and spacious enough to allow people and equipment to move freely. When goods are shelved, they require slow and careful placement to avoid disturbing or pushing products off on to coworkers below. Products should be stored flat and inside the shelving units with aisle ways kept clear.

Pallets used for stacking products should be sturdy and in good condition; damaged or unstable pallet items should be restacked on a new one. Where possible, products on pallets should be shrink-wrapped or banned for stability.

Workers can protect themselves on the job with personal protective equipment (PPE) such as steel-toed shoes, gloves, and hard hats or bump caps. Proper lifting techniques protect backs. Safe lifting also prevents loads from shifting, falling, and crushing fingers, hands and toes.

Good housekeeping in a warehouse requires keeping dirt, oil, and debris off the docks and floors. Floors should be non-slippery and free from pits and dents. Excess garbage, boxes, baling materials, and other recyclables should be removed and stored properly.

Training on the hazards and attention to procedures will make sure warehouse workers stay safe

Toolbox Talk Attendance Record
Warehouse Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
PPE — Working Near Water

Overview of Topic

Construction work over or near water is regulated under 29 CFR 1926.106. The purpose of the rule is to prevent drowning. The rule contains these requirements

- Provide employees working over or near water, where the danger of drowning exists, with a U.S. Coast Guard-approved life jacket or buoyant work vests.
- Ensure that, prior to and after each use, the buoyant work vests or life preservers are inspected for defects which would alter their strength or buoyancy.
- Ensure that defective life jackets and buoyant work vests are not used.
- Provide ring buoys with at least 90 feet of line.
- Ensure that ring buoys are readily available for emergency rescue operations.
- Do not place ring buoys more than 200 feet apart.
- Provide at least one life saving skiff "immediately available" at locations where employees are working over or adjacent to water.

    - Immediately available means the skiff: is in the water or capable of being quickly launched; is able to retrieve an employee from the water no more than three to four minutes from the time it enters the water; has at least one designated person present in the area to respond to water emergencies and operate the skiff when employees are above water; and is equipped with both a motor and oars. A communication system like a walkie- talkie must be used to inform the skiff operator of an emergency and to inform the operator where the skiff is needed.

Injured employees must be promptly (within three to four minutes after the injury occurred) treated by medical personnel or an employee certified in first aid.
If not only drowning hazards, but impact hazards, are involved, then fall protection, such as safety nets, safety harnesses, or guardrail systems, must be used to prevent employees from falling into the water. Employees working on or under bridges who are constantly protected by guardrail systems, nets, or body harness systems are deemed to be adequately protected from the danger of drowning and are not required to wear life jackets or buoyant work vests. Employees performing work on or under bridges who are not constantly protected from falling into the water are required to wear life jackets or buoyant work vests.

Employee Training

Lifesaving equipment, especially life jackets and buoyant work vests, is much like personal protective equipment (PPE), and the training elements recommended are similar to those of any PPE chapter. For the purposes of this chapter, the term life saves equipment means life jackets, buoyant work vests, ring buoys, and lifesaving skiffs. An effective lifesaving equipment training program should involve training employees so they know:

- When lifesaving equipment is necessary.
- What life saving equipment is necessary.
- The location and availability of life saving equipment.
- How to properly don, doff, adjust, and wear life jackets and buoyant work vests.
- How to properly use ring buoys and lifesaving skiffs.
- The limitations of the lifesaving equipment.
- The proper care, maintenance, useful life, and disposal of life saving equipment.

Toolbox Talk Attendance Record
PPE — Working Near Water

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Welding Safety

Welding hazards pose an unusual combination of safety and health risks. By its nature, welding produces fumes and noise, gives off radiation, involves electricity or gases, and has the potential for burns, shock, fire, and explosions.

Some hazards are common to both electric arc and oxygen-fuel gas welding. If you work with or near a welding operation, the following general precautions should help you to work more safely.

- Weld only in designated areas.
- Only operate welding equipment you have been trained to use.
- Know what the substance is that's being welded and any coating on it.
- Wear protective clothing to cover all exposed areas of the body for protection from sparks, hot spatter, and radiation.
- Protective clothing should be dry and free of holes, grease, oil, and other substances which may burn.
- Wear flameproof gauntlet gloves, a leather or asbestos apron, and high-top shoes to provide good protection against sparks and spatter.
- Wear specifically designed, leak-proof helmets equipped with filter plates to protect against ultraviolet, infrared, and visible radiation.
- Never look at a flash, even for an instant.
- Keep your head away from the plume by staying back and to the side of the work.
- Use your helmet and head position to minimize fume inhalation in your breathing zone.
- Make sure there is good local exhaust ventilation to keep the air in your breathing zone clear.
- Don't weld in a confined space without adequate ventilation and a NIOSH-approved respirator.
- Don't weld in wet areas, wear wet or damp clothing or weld with wet hands.
- Don't weld on containers which have held combustible materials or on drums, barrels or tanks until proper safety precautions have been taken to prevent explosions.
- If others are working in the area be sure they are warned and protected against arcs, fumes, sparks, and other welding hazards.
- Don't coil the electrode cable around your body.
- Ground both the frame of the welding equipment and metal being welded.
- Check for leaks in gas hoses using an inert gas.
- Check area around you before welding to be sure no flammable material or degreasing solvents are in the welding area.
- Keep a fire watch in the area during and after welding to be sure there are no smoldering materials, hot slag or live sparks which could start a fire.
- Locate the nearest fire extinguisher before welding.
- Deposit all scraps and electrode butts in proper waste container to avoid fire and toxic fumes.

Toolbox Talk Attendance Record
Welding Safety

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Floor Openings

Overview of Topic

Floor openings come in many different sizes and locations. OSHA defines a floor opening as, "An opening measuring 12 inches or more in its least dimension in any floor, roof, or platform through which persons may fall.'' What type of hazards are associated with floor opening? The biggest danger is a fall from an elevation. Such a fall could cause injuries as minor as a sprain or strain to as serious as broken bones or even result in death! Another hazard is being struck by objects failing through the floor hole.

Prevention

Several methods of protection for floor openings are acceptable. A standard guardrail with a toe board provides a good physical barrier. If you use wood, both posts and top rail must be of at least 2"x4" stock and the mid rail of 1"x6" stock. If you choose pipe railings, posts, top and intermediate railings must be of at 1 ½" nominal diameter pipe. For structural steel railings, posts, top and mid rails shall be of 2"x 2" x 3/8" angle or equivalent. In all cases posts must be spaced not to exceed 8' on center, and toe boards shall be a minimum of 4" in vertical height and securely fastened. All standard guard rails must be able to withstand 200 pounds of force with a minimum of deflection in any direction.

Smaller openings may be protected with a floor hole cover, capable of supporting the maximum intended load and must be installed so as to prevent accidental displacement. Covers and their supports located in roadways and vehicle aisle ways for conduits, trenches and manholes must be signed to carry the rear axle load of two times the maximum intended load.

Many deaths occur each year because floor hole covers are removed and not replaced, or they were constructed of materials that could not support the weight of the person or load. Toe boards prevent materials from falling through the opening and striking a worker below. For new construction, identify floor holes as they are created; for existing structures survey the site prior to starting work and continue to check all areas as renovation, repair and alteration proceeds. Install guardrail or hole covers immediately, as needed.

Toolbox Talk Attendance Record
Floor Openings

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hard Hats

Overview

The average hard hat weighs about 14 ounces. That's less than one pound. The average man's head weight is 14 pounds, so there's an ounce of protection for every pound of head -- provided that the head protection is worn. The brain is the control center of the body. The slightest damage to any part of the brain will cause malfunction of some area of the body. The skull, under normal circumstances, protects the brain, but when there is a possibility of injury from falling or flying objects, additional protection is needed -- that's why you have a hard hat! It provides an additional layer of protection for your brain, which could mean the difference between life and death or serious injury.

How it Works

As an object falls it picks up speed and force. It may be hard to believe but even an object as small as a washer or bolt can kill you or inflict massive damage to your brain if it strikes your unprotected head. Your hard hat is designed to deflect falling or flying objects and to absorb some of the shock of impact. Additional shock is absorbed by the suspension system, which distributes the force over a larger area of the head and neck.

Some workers complain about the weight of their hard hats and that they are uncomfortable to wear, especially in warm weather. These complaints are unacceptable. The average, modern hard hat weighs about 2 pounds less than the helmets worn in World War II, the Korean War & Vietnam. Regarding so-called discomfort from heat -- hard hats provide the head with a cover of shade, and air is able to circulate around the head between the suspension and the outer shell. Hard hats are a very important part of your protective equipment.

If you're working where there is the potential for electrical shock, make sure your hard hat is a die electric type. Metal hard hats make great electrical conductors and don't belong on the construction site.

Toolbox Talk Attendance Record
Hard Hats

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Powder Actuated Tools

Overview

Hilti, Ramset, and Red Head are just a few of the manufacturers of powder-actuated tools. These tools are designed to fire a special nail or fastening device into concrete, steel and masonry using a small caliber charge as a firing device. [See 1926.302(e)]

Use

Powder actuated tools make our work a lot easier and they increase productivity if used safely. Quite often this question comes up -- is this a tool or a gun? Technology has made these tools a combination of both. Each tool uses a special small explosive charge to operate the fastener and nail drivers. Reliable manufacturers provide training programs on how to use their tools safely. This is a must since OSHA Standards state that all operators must be trained prior to operating any powder actuated tool. Your tool supplier has the information you need to obtain instruction and certification.

As with any operation, safety equipment must be used. Safety glasses or goggles, hearing protection and your hard hat will provide you with protection. All tools should be tested before use to assure they are working properly and that all safety devices are functioning. Horseplay with these tools will cause an accident. NEVER point a powder actuated tool at anyone! Should it accidentally discharge, a co-worker can be injured. Special care should also be taken when shooting into a floor, wall, ceiling, etc. to make sure there is no one on the other side. Each year construction workers are killed or maimed from stray fasteners or metal fragments.

Should a tool jam, always follow the manufacturer's recommendations on how to clear such a jam. Treat all powder actuated tools as if they are loaded. NEVER leave a loaded tool unattended!

Precautions

The number one safety rule to remember is - only property trained and qualified operators should ever use powder-actuated tools. Users should possess 'Qualified Operations Cards' which, after thorough training, are issued by a particular manufacturer's authorized dealer or distributor or other competent source.

Protection

Personal protective equipment must be worn by the operator, and the face should be protected if there is any danger of spalling materials. Check with your supervisor on the type of safety goggles required. [See 1926.102 Table E-1 I

All powder-actuated tools must be tested daily - before use - and all defects discovered before or during use must be corrected. Tools must not be loaded until immediately before use. Loaded tools must not be left unattended. Keep hands clear of the muzzle end. Powder-actuated tools should never be stored or used in explosive atmospheres.

Toolbox Talk Attendance Record
Powder Actuated Tools

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Security and Theft

Overview

In the past, company security personnel were concerned with things like the theft or computer hackers. While these crimes are still a concern, employers have new safety risks to deal with:

- Assault and kidnapping.
- Chemical and biological terrorism.
- Theft of hazardous materials.
- Penetration of secure areas.
- Misuse of classified materials.

Prevention

A good approach is to use a checklist, to ensure that everything is checked for safety and security. The list can be customized to suit your own operation, and may include the following:

- Perimeter Fencing and Gates
- Vehicles and Machinery
- Roof Top Access
- Dumpsters and Recycle Bins
- Area Lighting
- Doors and Windows
- Fuel Tanks and Chemicals
- Tool Boxes
- Open Trenches and Pits
- Exposed Electrical Hazards
- Open Containers
- Elevated Platforms

The same effort that goes into protecting the safety and health of all employees during the work shift should be taken to discourage possible intruders after hours. Intruders can and will create a variety of problems, including theft, vandalism, sabotage, arson and burglary. Such activity can have direct effects on workers, customers and the public.

All employees should be aware of safety and security issues and do their best to help secure the premises before leaving for the night or the weekend. Kids hanging around can be tempted to enter a work area if it is left uncontrolled, and may hurt themselves or others. Intruders of any kind may leave the workplace in a dangerous condition. It is *your* jobsite that you return to each day. Stay alert and help keep it safe for everyone.

Toolbox Talk Attendance Record
Security and Theft

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Accident Factors

Overview

Accidents on construction projects cause too many painful injuries and claim far too many lives. Our primary concern when we discuss the factors or causes behind an accident is to find a way to prevent a recurrence. The cause of an accident can be found in two areas –

Unsafe Acts and Unsafe Conditions.

As a construction worker you control the first cause, Unsafe Acts. For example: a worker uses equipment that is defective or damaged, or they may use good equipment in a careless or other unsafe manner. Other examples of unsafe acts include disregarding posted warning signs, failure to wear a hard hat, smoking near flammables or explosives, working too close to power lines, handling chemicals or other hazardous materials improperly, putting your body or any part of it onto or into shafts or openings and lifting material incorrectly. (Just a short reminder -- always lift with your legs while keeping your back straight.)

The second accident factor or cause is Unsafe Conditions which can be found on many construction sites. Examples include inadequate or improperly installed guard rails or a lack of any guarding at all which most certainly will lead to an accident. Insufficient illumination, poor ventilation, electrical grounding requirements not observed, too few fire extinguishers available, containers that are not labeled, careless disposal of waste or excess material -- these are just a few of many unsafe conditions that may be caused by co-workers, subcontractors, or the general contractor.

You can make a difference by taking the time to perform your work safely and reporting any unsafe condition you discover to your supervisor immediately.

When the cause behind the accident is found, you'll find that safety on the job plays a major part in preventing that accident from occurring again. If everyone on the job cooperates, injury and death statistics will be reduced and it will be much safer for you to do your job.

Toolbox Talk Attendance Record
Accident Factors

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
CPR

OVERVIEW

Cardio pulmonary resuscitation, or CPR for short, is the best form of artificial resuscitation. In the old days we were taught to use the back pressure arm lift method when someone stopped breathing. We did not have a method to make the heart keep pumping blood. CPR has been around for over twenty years now, and yet we still find people who do not know how to use this life saving procedure.

BASICS

Let's talk about when to use CPR. If there is an accident on the job where a worker is injured, loses consciousness and stops breathing, or perhaps simply has a heart attack, the first thing that you need to do is call for help. That means someone needs to dial 911 or another posted number to obtain outside emergency medical help. Next you need to make sure the area around the victim is safe, so take a quick look. If the area is ok, then you can go ahead -- but if it's not safe -- don't attempt a rescue! We don't need any dead heroes.

When you first get to the victim you must see if the injured party responds. Tap them on the shoulder lightly and ask them, "Are you ok?" If they respond, tell them that you are there to help them. If there is no response then you must check the ABC'S. Check their Airway, check for Breathing, and then check for Circulation. If you find that there is no pulse present then need to start CPR. When administering CPR a rescuer maintains a steady flow of oxygen and circulates the blood for the victim. CPR should only be given by someone who has completed the training. Once you start this rescue method don't stop until relieved by a medical professional.

Many people around the world are alive today because someone took the time to learn how to give CPR. Training is available through the American Red Cross, the YMCA, various Rescue Squads and the National Safety Council, just to name a few. Are you qualified? If not, enroll in a course soon.

Toolbox Talk Attendance Record
CPR

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
AED

Overview

Automated external defibrillators (AEDs) are small, portable, battery-operated device capable of detecting life-threatening conditions of the heart that can be corrected with defibrillation. AEDs are widely available, safe, effective, portable, and easy to use. They provide the critical and necessary treatment for sudden cardiac arrest (SCA) caused by ventricular fibrillation, the uncoordinated beating of the heart leading to collapse and death. According to the American Heart Association, SCA leads to death resulting from the sudden, abrupt loss of heart function in a person who may or may not have diagnosed heart disease.

Brain death and permanent death start to occur in just four to six minutes after someone experiences a cardiac arrest. Immediate treatment of an SCA event can result in greater than a 90 percent survival rate. A victim's chances of survival decrease about 10 percent with each passing minute. A quick emergency response, including cardio-pulmonary resuscitation (CPR) and an AED, is essential for workplaces that are more than ten minutes away from the nearest medical help.

In the workplace, an AED is only one link in a chain of survival. The links in the chain of survival are as follows:

- Early access—To emergency medical services. This includes someone trained in emergency response to assess the scene, assess the victim's responsiveness, and activate an emergency plan.
- Early CPR—CPR is a holding action that buys time until more skilled or extensive medical services can be accessed.
- Early defibrillation—With an AED. This is the primary factor in successful resuscitation from sudden cardiac arrest.
- Early advanced cardiac care—This is the final critical link. This is where stabilizing care and transport are provided.

How **it Works**

An AED is a small, portable, battery-operated device capable of detecting life-threatening conditions of the heart that can be corrected with defibrillation. Once on the scene, the AED begins to prompt you through the required steps.

The unit comes with a set of pads that are applied to a victim's bare chest via the adhesive that is exposed by peeling off a covering of paper. There are graphics on the pads to help you with correct placement. After the pads are in place, the AED will analyze the victim to determine if a shock should be administered. If so, the unit will deliver the shock automatically or will prompt the operator to do so by pressing a button.

From there, the unit will analyze the victim's heart performance again and prompt you through more required steps, which may include continuing CPR.

The strength of the shock is automatic, so you do not have to guess how much to deliver. You don't even have to determine whether a shock is needed; the unit will tell you. If the unit does not detect a shockable condition, it cannot deliver a shock, so it cannot be used in an unsafe manner.

Toolbox Talk Attendance Record
AED

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Dress for the Job

Overview

Our clothes and footwear are our first line of defense when it comes to protecting our bodies. Each day we wear our work clothes for eight, ten and sometimes even more hours, and there is nothing worse than working in uncomfortable clothing and/or poor fitting footwear. Although your work clothes are very important to your safety and health, your comfort is also a consideration. You need to have clothes that are right for the job. They must be sturdy and durable, and capable of standing up to heavy wear and tear. You need clothes that will keep you warm in winter and cool in the summer, and that will keep you dry in wet and inclement weather. We all know that it's easier to take off a layer of clothing than not have enough on in cold weather. Wool works best in the cold while cotton is superior during the warm months. In other words, wear clothes that you can work in comfortably and that are designed for the kind of work you do and the weather in which you must do it.

FOOTWEAR

Proper footwear is another important part of construction attire. Wear the right shoe or boot for the job. A good sturdy leather boot will last a long time and also provide your feet with good support throughout the shift. Since you are on your feet most of the time, make sure the shoe or boot fits correctly. Tennis shoes have no place on a construction site -- one reason is that protruding nails and tennis shoe soles just don't mix.

BODY

If you wear jewelry, watches or rings remember that they can be very dangerous around machinery and electricity. Take them off and put them in your pocket, or better yet, just leave them at home! Many a construction worker has lost a finger or two from wearing rings on the job. Use common sense and dress for the job you do -- leave jewelry at home, where appropriate clothing and sturdy footwear, and your workday will be a safer and more comfortable one.

Toolbox Talk Attendance Record
Dress for the Job

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Permits

Overview

Permits are needed in construction because certain work conditions present hazards during particular activities. These activities must be evaluated and determined to be safe prior to any work taking place. There are various types of permits. A typical group that may be found in construction include -- excavation permits, hot work permits, confined space permits, personnel basket permits, lockout-tag out permits, electrical hot work permits, line break permits, crane permits, heavy/critical lift permits, and there may be others required on you r worksite.

General Use

There are some general rules to abide by when using permits. First, always inspect the area you are about to work in. Identify fire watches and fire extinguisher locations. Insist that all required signatures are obtained prior to starting work. Look for obvious hazards. Review emergency procedures with all crew members. Make sure all workers are wearing the required personal protective equipment. Inspect your hand tools and check other equipment you may need to use. Follow all visual signs and instructions. Be prepared for the unexpected. Don't take any chances. Your life and others that work in the area will depend on each member of the crew doing the job correctly. If your permit requires testing, be sure to have the testing done prior to entry.

Lock, tag, and try procedures are a must when preparing for a plant shutdown, equipment shutdown, equipment isolation, or release and control of stored energy. Watch for pinch points when you are blocking lines and closing valves. A permit is usually issued for a specific amount of time, typically one shift. At the end of the shift the permit becomes void or invalid and must be reissued. See your supervisor about who to contact to get a permit reissued. A permit is a document allowing you to do something that involves a hazard of some kind. Follow it to the letter. Permits enable us to have safer working environments. Misuse may cause an accident and possibly a death. No one wants that!

Toolbox Talk Attendance Record
Permits

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Disaster Recovery

Overview

Disaster recovery is the ability to respond to an interruption in services by implementing a plan to restore an organization's critical business functions. These disasters could be anything from floods, tornadoes, fire, and computer hackers. To ease the recovery process, plans need to be made well in advance. Plans for backup systems, locations, and equipment should be in place to minimize down time.

After Disaster Steps

- Gather staff off-site to assign tasks and review salvage priorities. Create a team big enough for the work.
- Establish a "Command Center" with office equipment (computers, photocopier) and communications tools (walkie-talkies, cellular phones).
- Create a secure salvage area with locks, fans, tables, shelves, plastic sheeting, drying materials and clean water.
- Notify emergency officials of the extent of damage. Contact peer or professional groups for help.
- Appoint a media liaison to report conditions and need for help/volunteers.
- Verify financial resources: amount and terms of insurance, government assistance, potential outside funding.
- Contact service providers for generator, freezer, and drying or freeze-drying services.
- Arrange for repairs to security system
- Stabilize
- Document
- Assess the damage
- Establish Priorities

You should have emergency telephone numbers nearby for easy access. Include telephone numbers for the police, fire department, ambulance, poison control center, and the nearest hospital.

You may also want to have non-emergency telephone numbers on hand for facilities such as the local emergency management office, local American Red Cross chapter, insurance representative or risk manager, and staff emergency office.

Toolbox Talk Attendance Record
Disaster Recovery

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Hurricane Preparedness

Overview

Hurricanes may bring a multitude of different hazards: Heavy rainfall, flooding, high winds, tornadoes, etc.… It is important to be prepared at all times to prevent excessive health hazards. The National Weather Service is responsible for notifying the pubic of this danger.

Pre-Planning:

- Obtain information on flood zones and evacuation shelters. In some areas, these can be found in your telephone book.
- Plan an evacuation route to the nearest shelter or "safe" area and keep a map handy. During emergencies, shelter locations may also be announced on the radio.
- Replenish emergency kits and supplies.
- Secure important documents from possible damage or move them to a safe location.
- Develop a list of important phone numbers.
- Develop a plan to secure loose objects around the house; trim branches and trees if possible.
- Ensure that your pets have collars and identification tags.

Prior to the Hurricane:

- Secure all loose objects outdoors.
- Secure all windows using plywood.
- Fill your vehicle with fuel.
- Charge all batteries (i.e., phone, lamps, flashlights, radios, etc.).
- Listen to the emergency broadcasts of the storm.
- Be prepared to evacuate and transport emergency supplies, kits and clothing to a predetermined location.

During a Hurricane

- Stay indoors and away from windows. Keep to the center of the building on the ground level.
- Listen to the emergency broadcast on the radio or television.
- Turn off all electrical devices and appliances that are not needed.
- Stay away from coastal waters, rivers, streams and other areas where flooding may occur.
- Do not try to cross flooded areas with your vehicle.
- Listen for instructions from emergency officials when the storm is over.

Toolbox Talk Attendance Record
Hurricane Preparedness

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
OSHA Inspections

Overview

Under the Occupational Safety and Health Act of 1970 (the Act), the Occupational Safety and Health Administration (OSHA) is authorized to conduct workplace inspections to determine whether employers are complying with standards issued by the Agency for safe and healthful workplaces. OSHA also enforces Section 5(a)(1) of the Act, known as the General Duty Clause, which requires that every working man and woman must be provided with a safe and healthful workplace

Inspections

Inspections, either programmed or un-programmed, fall into one of two categories depending on the scope of the inspection:

- Comprehensive: A substantially complete inspection of the potentially high hazard areas of the establishment. An inspection may be deemed comprehensive even though, as a result of the exercise of professional judgment, not all potentially hazardous conditions, operations and practices within those areas are inspected.
- Partial: An inspection whose focus is limited to certain potentially hazardous areas, operations, conditions or practices at the establishment. A partial inspection may be expanded based on information gathered by the Officer (CSHO) during the inspection process. Consistent with the provisions of the Act, and Area Office priorities, the CSHO shall use professional judgment to determine the necessity for expansion of the inspection scope, based on information gathered during records or program review and walk around inspection.

Inspection Process

- Opening conference
- Inspection
    - Observe safety and health conditions and practices,
    - Consult with employees,
    - Take photos and instrument readings,
    - Examine records,
    - Collect air samples,
    - Measure noise levels,
    - Survey existing engineering controls, and
    - Monitor employee exposure to toxic fumes, gases and dusts.
    - Recordkeeping
    - Unsafe work conditions
- Closing Conference

Toolbox Talk Attendance Record
OSHA Inspections

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Welding Cutting and Brazing

Overview

Welding, cutting, and brazing are hazardous activities that pose a unique combination of both safety and health risks to more than 500,000 workers in a wide variety of industries. The risk from fatal injuries alone is more than four deaths per thousand workers over a working lifetime.

Health hazards from welding, cutting, and brazing operations include exposures to metal fumes and to ultraviolet (UV) radiation. Safety hazards from these operations include burns, eye damage, electrical shock, cuts, and crushed toes and fingers. Many of these can be controlled with proper work practices and personal protective equipment (PPE)

Chemicals Associated

The following list identifies chemicals commonly associated with welding, cutting, and brazing. The metals that may be present will depend on the material being worked on, and the makeup of welding rods, fluxes, etc. For this information see the appropriate Safety Data Sheets.

- Aluminum
- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Molybdenum
- Nickel
- Silver
- Tin
- Titanium
- Vanadium
- Zinc

Compressed Gases

Many welding and cutting operations require the use of compressed gases. General requirements for the handling, storage, and use of compressed gases are contained in Subpart H-Hazardous Materials, §1910.101-1910.105. Certain welding and cutting operations require the use of compressed gases other than those consumed in the welding process. For example, gas metal arc welding utilizes compressed gases for shielding. Handling, storage, and use of compressed gases in situations such as these require compliance with the requirements contained in Subpart H.

Toolbox Talk Attendance Record
Welding, Cutting, and Brazing

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Wellness

Overview
In the face of skyrocketing healthcare costs, many businesses are taking a proactive approach and targeting the problem at the source - by promoting wellness as a means of keeping their employees healthy to prevent problems from occurring down the road. Promoting wellness can:

- Reduce work place accidents
- Lower turnover
- Increase morale
- Reduce employee illness

Exercise
Exercise is important in maintaining your health and well-being. While it isn't necessary to build muscles the way bodybuilders do, daily exercise improves muscle tone, helps circulation, and strengthens the cardiovascular system.

Before beginning any extensive exercise program, consult a physician who can recommend how much activity—and of what sort—is best for you. That will take into account your age, your present physical condition, the level of your present activities and the kind of exercise you enjoy.

Remember to limit your session of exercise to a length that you are comfortable with. Be alert to signs that you may be over doing it, pain and shortness of breath can be "slow down" messages

Physical Condition
Anyone who is not physically prepared to perform the assigned tasks is more likely to suffer from strains, sprains, backaches, slips, trips, and falls. People who are not in good physical condition may be excessively overweight and may experience shortness of breath, fatigue, sore or tender muscles or joints, and backache.

It is important to keep up with fitness so you are mentally alert, and have the proper stamina throughout the work period.

Toolbox Talk Attendance Record
Wellness

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fire Extinguishers

Overview

Using portable fire extinguishers is one method that employees or fire brigade members can use to fight a fire in the workplace. However, because there are three options given to employers regarding employee evacuations, OSHA allows certain exemptions based on the number of employees expected to use fire extinguishers.

Selection

If your company decides to use fire extinguishers, it is responsible for the proper selection and distribution of those extinguishers. You must also ensure that the extinguishers provide the necessary degree of protection for the hazards present in your workplace.

The selection and distribution of fire extinguishers must reflect the type and class of fire hazards associated with a particular workplace.

- **Class A**. Extinguishers for protecting Class A hazards may be selected from the following types: water, foam, loaded stream, or multipurpose dry chemical.
- **Class B.** Extinguishers for protecting Class B hazards may be selected from the following types: Halon 1301, Halon 1211, carbon dioxide, dry chemicals, foam, or loaded stream.
- **Class C.** Extinguishers for protecting Class C hazards may be selected from the following types: Halon 1301, Halon 1211, carbon dioxide, or dry chemical.
- **Class D.** Combustible metal fires are considered Class D hazards. These fires pose a different type of problem in the workplace. Extinguishers using water, gas, or certain dry chemicals cannot extinguish or control this type of fire.
- **Class K.** Combustible cooking media (vegetable or animal oils and fats) and cooking appliances are considered Class K hazards. Extinguishers for protecting Class K hazards include wet chemical extinguishers.

Maintenance

Your company may choose to use outside contractors to perform the actual inspection, maintenance, and testing of your extinguishing systems, either portable or standpipe. When contracting for such work, you must ensure that the contractor is capable of performing the work.

If the company decides to perform the inspection, maintenance, and testing requirements in-house, you must ensure that those persons doing the work have been appropriately trained and will recognize problem areas that could cause an extinguisher or system to be inoperable.

Toolbox Talk Attendance Record
Fire Extinguishers

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Drugs and Alcohol

Overview

MBD has a responsibility to provide a safe and productive work environment, free from all recognized hazards to all of its employees. MBD has a particular concern about drug and alcohol abuse since both can have a serious effect on an employee's productivity and job performance and which may also jeopardize the safety of our employees. Therefore, we have prepared a substance abuse policy to promote the safety of all employees. NOTE: In this policy, the term "substance abuse" will be used to mean: (1) the use of illegal drugs, legal drugs (by prescription, over-the-counter, or through illegal possession), or alcohol, in the amounts hazardous toward an individual's health or the safety of the community; (2) the use of such substances on one's own initiative and without medical supervision, especially in large does that may lead to psychological dependency, tolerance, and/or abnormal behavior; (3) the use of a drug(s) for reasons other than therapeutic purposes.

Testing

- All Job Classifications
- Post-Offer Employment
- Reasonable Suspicion
- Post-Accident
- Request of Proof
- Random

Expectations

Employee is expected to arrive at work fit for duty. Arrival at work with performance altering drugs and/or alcohol in employee's system is prohibited.

Employee taking prescription medications that may affect work performance must report this information to the Personnel Department prior to beginning their work day.

Employee is expected to perform their jobs in a safe manner. This use of a chemical substance that would interfere with personal safety or the safety of others is prohibited.

All employees are expected to conduct themselves in a legal and lawful manner while on company property or on company business. Sale, possession, providing, distributing, or use of an illegal substance on company property or while on company business is prohibited.

Employees are expected to cooperate with the Personnel Department in the diagnosis of a substance abuse problem, including participation in a substance abuse urinalysis. Counseling and/or rehabilitation may be a condition of continued employment in the event of a diagnosis of a substance abuse problem.

Page

Toolbox Talk Attendance Record
Drug and Alcohol

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Rigging Material Handling

Overview

Rigging equipment must never be loaded in excess of its recommended safe working load. Safe working load charts are available in the construction regulations (1926.251, Tables H- 1 through H-20) for each type of sling.

When not in use, rigging equipment should be removed from the immediate work area so as to not prevent a hazard to employees, to protect the sling from jobsite hazards such as dirt, oil, grease, and not being walked on or run over by construction traffic.

Custom lifting equipment (grabs, hooks, clamps, etc.) designed for specific functions such as lifting modular panels, prefabricated structures, and similar materials, must be marked to indicate its safe working loads. Such equipment must be proof-tested prior to use to 125 percent of its rated load.

Your competent person must visually inspect all slings, fastenings, and attachments for damage or defects at the following frequencies. Damaged or defective equipment shall not be used and must be immediately removed from service

- Prior to use on each shift.
- As necessary during operations to ensure continued integrity of the sling, especially if the sling is subjected to heavy stresses.

General Industry Rules That Apply To Construction

OSHA has determined that the following general industry rules (1910.184) also apply to construction applications.

- Slings must not be shortened with knots or bolts or other makeshift devices.
- Sling legs that have been kinked must not be used.
- Slings used in a basket hitch must have the loads balanced to prevent slippage.
- Slings must be padded or protected from load sharp edges.
- Hands or fingers must not be placed between the sling and its load while the sling is being tightened around the load.

Other Safety Rules

- Suspended loads must be kept clear of all obstructions.
- Crane operators should avoid sudden starts and stops when moving suspended loads.
- Employees must remain clear of loads about to be lifted and suspended.
- Tag lines should be used unless their use creates an unsafe condition.
- All shock loading is prohibited.
- Latches must be in place on all hooks, thus eliminating the hook throat opening.
- All employees shall be kept clear of loads about to be lifted and of suspended loads

Toolbox Talk Attendance Record
Rigging Material Handling

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Manlifts

Overview
A manlift is a device consisting of a power-driven endless belt moving in one direction only, and provided with steps or platforms and handholds attached to it for the transportation of personnel from floor to floor.

Operating Rules
There should be no freight, packaged goods, pipe, lumber, or construction materials to be handled on any manlift.

Inspections
All manlifts shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until properly repaired.
Inspections should include:

- Steps
- Stops Fastenings
- Rails
- Rail supports and fastenings
- Rollers and slides
- Belt and belt tensions
- Handholds and fastenings
- Floor landings
- Guardrails
- Lubrication
- Limit switches
- Warning signs and lights
- Illumination
- Drive pulleys
- Bottom pulley and clearance
- Pulley supports
- Motor
- Driving mechanism
- Brake
- Electrical switches
- Vibration and misalignment

There should be a record of all inspections that are conducted. They should include (dates, signatures of personnel who conducted the inspection, serial number or identifier of the manlift inspected.) These should all be kept in a safe location.

Toolbox Talk Attendance Record
Manlifts

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Construction – Overhead Power Lines

Overview

Electrocutions from contact with overhead power lines result in 128 work-related fatalities on average per year. Recently, news outlets reported on the deaths of four adult Boy Scout leaders, and injuries to three other adults, when a tent pole apparently struck an overhead power line at the Boy Scouts' national gathering.

The underlying cause of electrical accidents while working around overhead power lines is a combination of three possible factors:

- Work involving unsafe equipment and installations
- Workplaces made unsafe by the environment
- Unsafe work performance (unsafe acts)

Portable Metal Ladders

Ladders are essential equipment at facilities and jobsites. However, contact between portable metal ladders and overhead power lines causes serious and often fatal injuries to employees. Data from the National Institute for Occupational Safety and Health (NIOSH) shows that contact of metal ladders with overhead power lines accounted for approximately four percent of all work-related electrocutions in the United States.

Cranes

Contact between cranes and overhead power lines are a major cause of fatal occupational injuries in the United States. NIOSH believes that this type of event is the most common cause of fatalities associated with mobile crane operations and is responsible for approximately 1.5 percent of all fatal work-related injuries each year.

Not only is it dangerous for the crane operators but workers on the ground can also be in danger from the current can pass from the crane to the ground.

Trimming Trees

Tree trimming is a necessary but dangerous task. The two leading causes of death among tree trimmers are electrocutions and falls. However, unlike fatalities related to the use of scaffolds or cranes around overhead power lines, tree trimming accidents usually result in a single fatality.

No matter what type of work is being performed, electrocutions from unintentional contact with overhead power lines can be prevented through awareness of the hazard and proper precautions.

Toolbox Talk Attendance Record
Construction – Overhead Power Lines

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Fatigue

Overview

Poor job performance can be related to something that may have little to do with work: Fatigue. According to the National Sleep Foundation (NSF), sleep deprivation is a widespread problem in America.

When workers have not had enough sleep, fatigue takes over. According to the 2002 NSF Sleep in America poll, over 80 percent of American adults link inadequate sleep with impaired daytime performance and behavior. More than 60 percent associate difficulty doing daily activities such as producing quality work, making carefully thought-out decisions, and listening carefully to others with not getting enough sleep. Most adults also believe that inadequate sleep can lead to making mistakes, being impatient, not getting along with others and can make a person more prone to unsafe behavior. Employers can confront the problem by letting their workers know about the hazards of sleep deprivation and what they can do to prevent it.

Hazards

A good night's sleep can be seen as fuel for the brain, and sleep is an important as proper nutrition and regular exercise. Those who have trouble getting enough sleep can also see trouble on concentrating, accomplishing required tasks, and handling minor irritations.

- Insomnia can lead to increased risk of depression; problems with memory, family/social relationships, and mood; poorer quality of life; increased health care costs; increased absenteeism; and increased risk for coronary disease.
- Insufficient sleep can lead to excessive sleepiness, negative mood changes, reduced performance on standardized tasks, increased accident risk, and acute negative effects on glucose metabolism and immune function.

The National Highway Transportation Safety Administration estimates that 100,000 car crashes each year are caused by drowsy drivers, resulting in at least 1,550 deaths and 40,000 injuries.

Sleeping Tips

- Keep a regular sleep schedule — go to bed and get up at the same time each day, even on weekends.
- Create a sleep-friendly environment — make the bedroom cool, quiet, and dark.
- Engage in a relaxing, non-alerting activity at bedtime — read, listen to music, or soak in a hot tub.
- Limit eating and drinking before bedtime — avoid caffeine, nicotine, and alcohol, but have a light snack to ease hunger pains.
- Exercise regularly — preferably in the afternoon, but not too close to bedtime.
- Take a nap — a short 20–30-minute nap can help promote short-term alertness, but don't substitute a daytime nap for a good night's sleep.
- Get in bed only when you're tired — if you can't fall asleep within 15 minutes, go into another room to relax until you're sleepy.

Toolbox Talk Attendance Record
Fatigue

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Flammable Liquids

Overview
There are hundreds of thousands of chemicals used in the workplace. The number one hazard related to these substances is flammability. OSHA has developed a very detailed set of regulations focused on storage and use of flammable liquids. These help to protect workers from fire and explosions from these stored in the workplace.

These regulations determine the capacity that is allowed in each form of storage, construction requirement, and what an industrial facility must do opposed to a service station or bulk plant.

Capacity
The quantity of flammable liquids that may be located outside of an inside storage room or cabinet is detailed in OSHA STD 1-5.15

Handling
Flammable liquids give off ignitable vapors, and in workplaces there can be multiple ignition sources. Most all liquid vapors are heavier than air and will accumulate, making it dangerous at that point when they accumulate sufficiently. As they migrate they can come into contact with open flames such as smoking, hand tools that spark, cutting torches, or an operating motor

Storage
The typical plant stores flammable liquids in two ways: reserve storage in buckets, drums, or totes, and operational storage in small quantities for use at work stations. For safe storage, drums should have one or more emergency venting devices installed in the top to prevent an internal pressure build-up if the drum is exposed to heat. Proper vents also incorporate emergency relief devices, which blow out under extreme pressure.

Drums should also be connected to a grounding system; this eliminates static electrical build-up when dispensing from the drum. If your plant does not have a drum storage room, drums should be stored in a safety cabinet; they are available in sizes to hold drums vertically or horizontally.

Disposal
Disposing of flammable or combustible liquid wastes requires as much caution in handling as do any of the other stages. Oily, solvent-soaked rags can easily start a fire through spontaneous combustion. To prevent this, specially designed oily waste cans should be used for temporary storage. These cans have spring-loaded lids and a raised bottom with vent holes to dispense heat. For removing flammable liquids from the work station for disposal, drain cans and liquid disposal cans offer the greatest degree of safety.

Toolbox Talk Attendance Record
Flammable Liquid

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

Toolbox Talk
Abrasive Wheel Grinders

Overview

Abrasive wheels and grinding machines come in many styles, sizes, and designs. Both bench-style and pedestal (stand) grinders are commonly found in many industries. These grinders often have either two abrasive wheels, or one abrasive wheel and one special-purpose wheel such as a wire brush, buffing wheel, or sandstone wheel.

These types of grinders normally come with the manufacturer's safety guard covering most of the wheel including the spindle end, nut, and flange projection. These guards must be strong enough to withstand the effects of a bursting wheel. In addition, a tool/work rest and transparent shields are often provided.

Hazards

Grinding machines are powerful and are designed to operate at very high speeds. If a grinding wheel shatters while in use, the fragments can travel at more than 300 miles per hour. In addition, the wheels found on these machines (abrasive, polishing, wire, etc.) often rotate at several thousand rpms. The potential for serious injury from shooting fragments and the rotating wheel assemblies (including the flange, spindle end, and nut) is great. To ensure that grinding wheels are safely used in your workplace, know the hazards and how to control them.

Solutions

Abrasive wheels used on bench and pedestal grinding machines must be equipped with safety guards. The safety guard encloses most of the wheel — covering the flange, spindle end, and nut projection — while allowing maximum exposure of the wheel periphery. The exposure of the wheel should not exceed 90 degrees or one-fourth of the periphery.

Because the safety guard is designed to restrain the pieces of a shattered grinding wheel, the distance between the safety guard and the top periphery of the wheel must not be more than 1⁄4-inch. If this distance is greater because of the decreased size of the abrasive wheel, then a "tongue guard" must be installed to protect workers from flying fragments in case of wheel breakage. This "tongue guard" should be adjustable to maintain the maximum 1⁄4-inch distance between it and the wheel.

An adjustable tool/work rest must also be installed and maintained at a maximum clearance of 1⁄8-inch between it and the face of the wheel. In addition to offering a stable working position, this small clearance must be maintained to prevent the operator's hands or the work from being jammed between the wheel and the rest, which may cause serious injury or wheel breakage.

All abrasive wheels must be closely inspected and ring-tested before mounting to ensure that they are free from cracks or other defects. Wheels should be tapped gently with a light, nonmetallic instrument .A stable and undamaged wheel will give a clear metallic tone or "ring." If a wheel sounds cracked (dead), do not use it. This is known as the "ring test."

Toolbox Talk Attendance Record
Abrasive Wheel Grinders

Date: _____ Presenter: _____

Print Name	Sign Name	Job Title

TAB 6: INJURY & ILLNESS REPORTING & PREVENTION

6.1 ACCIDENT & INCIDENT INVESTIGATION

Thorough accident investigations will help to determine why accidents occur, where they happen, and any trends that might be developing. Such identification is critical to preventing and controlling hazards and potential accidents. All incidents will be investigated to the appropriate level with regards to incident severity using a root cause analysis process or other similar method.

When an incident occurs, the following sequence of reporting events will be followed:

1. If medical attention is required, call 911 or alert the first responder
2. Alert the project supervisor on site
3. Alert all personnel necessary to control further loss
4. Report all fatalities to OSHA within 8 hours of the incident.
5. Report all work-related inpatient hospitalizations, amputations, or losses of an eye to OSHA within 24 hours of the incident.
6. If working at another company's location, report all incidents to the owner client within 24 hours of the incident.

After an incident has occurred, proper actions must be taken to prevent further loss. Proper equipment to assist in conducting an incident investigation will be available to persons responsible for conducting the investigation.

Individual responsibilities for incident investigation must be assigned prior to the occurrence of an incident. Personnel are trained in their roles and responsibilities for incident response and investigation techniques. Employees who are assigned the role of first responder must be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.

PROJECT SUPERVISORS

- Provide first aid, call for emergency medical care if required.
- If further medical treatment is required, arrange to have an employer representative accompany the injured employee to the medical facility.
- Secure area, equipment and personnel from injury and further damage.
- Contact Safety Coordinator.

SAFETY COORDINATOR

- Investigate, identify, and document all of the evidence involved with the incident. Collect, preserve, and secure all facts, employee and witness statements; take pictures and physical measurements of incident site and equipment involved.
- Complete an incident investigation report form (see following pages), a detailed narrative, and the necessary workers' compensation paperwork within 24 hours whenever possible.
- Ensure that corrective action to prevent a recurrence is taken, assign responsibilities for corrective actions, and track the corrective actions to closure.

- Discuss incident, where appropriate, in safety and other employee meetings with the intent to prevent a recurrence.
- Discuss incident with the project supervisor and other management.
- If the injury warrants time away from work, ensure that the absence is authorized by a physician and that you maintain contact with your employee while he/she remains off work.
- Monitor status of employee(s) off work, maintain contact with employee and encourage return to work even if restrictions are imposed by the physician.
- When injured employee(s) return to work they should not be allowed to return to work without "return to work" release forms from the physician. Review the release carefully and ensure that you can accommodate the restrictions, and that the employee follows the restrictions indicated by the physician.

Documentation of the incident is an important step in preventing future occurrences. Gathering facts, witness statements, and taking photos and sketches of the accident site provides a solid base to begin the review process. Once all documentation is gathered and the accident report has been written, management will assess the results, and place any necessary changes to processes into effect to prevent a reoccurrence of similar events. Any lessons learned and changes to processes will be communicated to employees.

6.2 NEAR-MISS REPORTING

A near miss is similar to an accident; however, a near miss does not result in an injury or property damage. No matter how trivial they are, near misses should be reported to the project supervisor in the same manner as accidents are reported. Reporting near misses in a timely manner can help to determine how to prevent a recurrence that could result in a serious injury.

Nothing is learned from unreported near misses. Hazards, causes and contributing factors are lost if not reported. Employees who don't take the time to report near misses they experience may not learn from them and neither will others who were not involved. The fact that many near misses come within inches of being disabling injury accidents makes failing to report them all the more serious.

Reasons that employees typically do not report near misses:

- Fear of project supervisor's disapproval
- Production time
- Desire to not have the near miss documented on the employee's records
- Embarrassment from coworkers' ridicule or sarcasm
- Failure to understand the importance of near miss reporting
- Inability to recognize the damage that could have resulted

Important questions to ask when investigating a near miss include:

- What are the circumstances surrounding the near miss?
- Is there a safety rule covering the situation?
- If so, did the person involved know the rule?
- Were any safety devices or PPE/clothing not used or used incorrectly?
- Have there been other near misses of the same type?
- Was the employee aware of the hazard?
- Did the employee know the safe and proper procedure?

Taking the opportunity to report near misses can mean a much safer and healthier work environment for you and your coworkers and can also mean going home as you came in, in one piece! Employees are required as part of their job duties to report all near misses to their project supervisor.

♦ ACCIDENT/INCIDENT/NEAR-MISS REPORT & INVESTIGATION FORM

1. This form must be used to report any accident, incident, or near miss that has occurred at the workplace. A separate form must be completed by each party involved.
2. The form should be completed by the person involved and immediately forwarded to the project supervisor for review and action.
3. The project supervisor will complete this form if the involved party is not able to do so.

Incident Details:			
Location:		**Date of Incident:**	
Reported By:		**Time of Incident:**	
Description of Incident:			
What was the activity at the time of incident? Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"			
Explain how the incident occurred and what object directly harmed the employee (if applicable). Examples: "When ladder slipped on wet floor, worker fell 20 feet to a concrete floor"; "Worker was sprayed with chlorine when gasket broke during replacement".			
Other Relevant Information (attach photos, sketch of incident scene, etc.)**:**			

****If no parties were injured, proceed to Page 3.****

Injured Person:			
Name:		**Title:**	
Address:		**Hire Date:**	
City, State:		**Length of Time in Current Position:**	
Phone:		**Supervisor:**	
Employee Classification:	❑ Full Time ❑ Part Time ❑ Contract ❑ Temporary		

Description of Injury:

Nature of Injury/Injured Part of Body:

❑ Bruising ❑ Dislocation ❑ Strain/Sprain ❑ Scratch/Abrasion ❑ Internal
❑ Fracture ❑Foreign Body ❑ Laceration/Cut ❑ Burn/Scald ❑ Chemical Reaction
❑ Amputation ❑ Death ❑ Other (describe): _____

Treatment Provided:

❑ First Aid - If First Aid was provided, please indicate the treatment performed:

- ○ non-prescription medications at nonprescription strength
- ○ tetanus immunizations
- ○ cleaning, flushing, or soaking wounds on the skin surface
- ○ wound coverings
- ○ hot or cold therapy
- ○ using totally non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.
- ○ using finger guards;
- ○ using massages;
- ○ using eye patches;
- ○ drinking fluids to relieve heat stress drilling a fingernail or toenail to relieve pressure, or draining fluids from blisters;
- ○ temporary immobilization devices while transporting an accident victim (splints, slings, neck collars, or back boards).
- ○ simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye;
- ○ irrigation, tweezers, cotton swab or other simple means to remove splinters or foreign material from areas other than the eye;

❑ Other treatment, please describe:

❑ Emergency Room ❑ Physician's Office ❑ Hospitalization	**Treating Physician/Facility:**	
	Address:	

Root Cause Analysis (Check All That Apply)		
Conditions: ☐ Unsafe Conditions ☐ Poor work area design or layout ☐ Congested work area ☐ Hazardous substances ☐ Fire or explosion hazard ☐ Inadequate ventilation ☐ Slippery conditions ☐ Excessive noise ☐ Improper material storage ☐ Improper loading or placement	**Work Practices:** ☐ Improper work technique ☐ Improper PPE or PPE not used ☐ Hazards not identified ☐ Guards not used ☐ Improper lifting ☐ Poor housekeeping ☐ Servicing machinery in motion ☐ Inadequate workplace inspection ☐ Improper tool or equipment ☐ Improper maintenance ☐ Defective tools/equipment	**Disciplinary Infraction:** ☐ Lack of written procedures or policies ☐ Operating without authority ☐ Safety rules not enforced ☐ Safety rule violation ☐ Operating at improper speeds ☐ Horseplay ☐ Drug or alcohol use ☐ Unsafe act of others ☐ By-passing safety devices ☐ Unsafe Acts
Planning & Training: ☐ PPE unavailable ☐ Failure to warn or secure ☐ Inadequate job planning ☐ Inadequate guarding of hazards ☐ Inadequate equipment ☐ Unsafe design or construction ☐ Insufficient lighting ☐ Inadequate fall protection	☐ Poor process design Insufficient worker training ☐ Insufficient foreman training ☐ Insufficient knowledge of job Management Deficiencies ☐ Inadequate supervision ☐ Inadequate hiring practices Unrealistic scheduling ☐ Unnecessary haste	Other: ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____

Corrective Actions

Contributing Factor	Corrective Action	Responsible Party	Completion Date

Lessons Learned	
Initial Report Completed by:	
Printed Name:	Date:
Signature:	Job Title:
Management Review:	
Printed Name:	Date:
Signature:	Job Title:
Final Review:	
I certify that all Corrective Actions have been completed.	
Printed Name:	Date:
Signature:	Job Title:

6.3 EMPLOYEE ACCESS TO MEDICAL RECORDS

The purpose of this program is to provide employees with information of their right to access relevant exposure records to toxic substances or harmful physical agents in their workplace. Under OSHA's standard, Access to Employee Exposure and Medical Records (1910.1020) all employees have the right to obtain these records to prevent or identify potential occupational illnesses. Employees have the right to obtain exposure records as follows:

- A current or former employee who is or may have been exposed to toxic substances or harmful physical agents.
- An employee who was assigned or transferred to work involving toxic substances or harmful physical agents.
- The legal representative of a deceased or legally incapacitated employee who was or may have been exposed to toxic substances or harmful physical agents.
- Designated employee representatives may access employee medical or exposure records and analyses created from those records only in very specific circumstances. Designated employee representatives include any individual or organization to whom an employee has given written authorization to exercise a right of access

TYPES OF EXPOSURES

- Metals and dusts, such as lead, cadmium, and silica.
- Biological agents, such as bacteria, viruses, and fungi.
- Physical stress, such as noise, heat, cold, vibration, repetitive motion, and ionizing and non-ionizing radiation.

DEFINITIONS

Access - The right and opportunity to examine and copy

Designated Representative - Any individual or organization to whom an employee gives written authorization to exercise a right of access. For the purposes of access to employee exposure records and analyses using exposure or medical records, a recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

Employee Exposure Record - May contain any of the following:

- Monitoring results of workplace air or measurements of toxic substances or harmful physical agents in the workplace, including personal, area, grab, wipe, or other forms of sampling results.
- Biological monitoring results, such as blood and urine test results.
- Material safety data sheets (MSDSs) containing information about a substance's hazards to human health.

Employee Medical Record:

- Medical and employment questionnaires or histories.
- Results of medical examinations and laboratory tests.
- Medical opinions, diagnoses, progress notes, and recommendations.
- Descriptions of treatments and prescriptions.
- Employee medical complaints.

EMPLOYER RESPONSIBILITIES

- Preserve and maintain accurate medical and exposure records for each employee.3
- Inform workers of the existence, location, and availability of those medical and exposure records.
- Provide information regarding the standard to all employees and where records are available
- Provide records to employees or designated representatives
- Maintain employee records for the duration of employment, plus 30 years
- Exemptions from keeping records:
    - Physical specimens, such as blood and urine samples
    - Records concerning health insurance claims if they are (1) maintained separately from your medical program and its records, and (2) not accessible by employee name or other personal identifier (e.g., social security number or home address).
    - Records created only for use in litigation that are privileged from discovery.
    - Records created as part of voluntary employee assistance programs, such as records for alcohol and drug abuse or personal counseling, if they are maintained separately from your medical program and its records.
    - Trade secret information involving manufacturing processes or a percentage of a chemical substance in a mixture, as long as you inform health professionals and employees and their designated representatives that you have deleted that information from medical and exposure records. If the exclusion of the trade secret information substantially impairs the evaluation of when and where the exposure occurred, however, you must provide alternative information to the employee consistent with the requirements of 29 CFR Part 1910.1020.

6.4 OSHA Reporting & Recordkeeping

OSHA Emergency Reporting

All incidents must be reported to an appointed company official immediately.

Company Official: _____

Office: _____ Cell: _____

Depending on the nature and severity of the incident, the company official will ensure that the necessary actions are taken (outlined below).

Type of Incident	Reporting/Recordkeeping	Time Frame
Fatality (On-the-Job Death)	Report to OSHA @ 1-800-321-OSHA (6742)	Within 8 hours of the incident.
Work-Related Inpatient Hospitalization Amputations Loss Of An Eye	Report to OSHA @ 1-800-321-OSHA (6742)	Within 24 hours of the incident.
All Incidents	Conduct an accident investigation.	Immediately.
OSHA-Recordable Injuries/Illnesses (As Outlined Below)	Complete OSHA 301 (or equivalent). Enter a log entry on OSHA Form 300.	Within 7 days of the injury or illness.

OSHA Recordkeeping

OSHA recordkeeping is required for any employer with 11 or more employees at any time within the year. If an injury or accident should ever occur, it must be reported to the supervisor as soon as possible. An OSHA 300 log entry and summary report (OSHA 301 form or equivalent) must be maintained for every recordable injury and illness. The entry should be completed within 7 days after the injury or illness has occurred.

An OSHA recordable injury or illness is defined as an injury resulting in loss of consciousness, days away from work, days of restricted work, or medical treatment beyond first aid. First Aid includes:

- Tetanus shots
- Applying Band-aids or butterfly bandages
- Cleaning, flushing or soaking wounds
- Applying Ace bandages and wraps
- Taking non-prescription drugs at non-prescription strength (aspirin, Tylenol, etc.)
- Drilling fingernails/toenails
- Eye patches, eye flushing and foreign body removal from eye with Q-tips
- Finger guards
- Hot or cold packs
- Drinking fluids for heat stress
- Removing of a splinter (other than from the eye)

An annual summary of recordable injuries and illnesses (OSHA 300A) must be posted at a conspicuous location in the workplace from February 1 to April 30 and contain the following information: calendar year, company name, establishment name, establishment address, certifying signature of the highest-ranking company official, title, and date. If no injury or illness occurred in the year, zeroes must be entered on the total line.

The OSHA logs should be evaluated by the employer to determine trends or patterns in injuries in order to appropriately address hazards and implement prevention strategies. OSHA recordkeeping forms must be maintained for a period of 5 years.

Note: The OSHA 300 and 301 logs must be kept confidential.

6.5 OSHA POSTER

OSHA
Occupational Safety and Health Administration

Job Safety and Health
IT'S THE LAW!

All workers have the right to:

- A safe workplace.
- Raise a safety or health concern with your employer or OSHA, or report a work-related injury or illness, without being retaliated against.
- Receive information and training on job hazards, including all hazardous substances in your workplace.
- Request an OSHA inspection of your workplace if you believe there are unsafe or unhealthy conditions. OSHA will keep your name confidential. You have the right to have a representative contact OSHA on your behalf.
- Participate (or have your representative participate) in an OSHA inspection and speak in private to the inspector.
- File a complaint with OSHA within 30 days (by phone, online or by mail) if you have been retaliated against for using your rights.
- See any OSHA citations issued to your employer.
- Request copies of your medical records, tests that measure hazards in the workplace, and the workplace injury and illness log.

This poster is available free from OSHA.

Employers must:

- Provide employees a workplace free from recognized hazards. It is illegal to retaliate against an employee for using any of their rights under the law, including raising a health and safety concern with you or with OSHA, or reporting a work-related injury or illness.
- Comply with all applicable OSHA standards.
- Report to OSHA all work-related fatalities within 8 hours, and all inpatient hospitalizations, amputations and losses of an eye within 24 hours.
- Provide required training to all workers in a language and vocabulary they can understand.
- Prominently display this poster in the workplace.
- Post OSHA citations at or near the place of the alleged violations.

FREE ASSISTANCE to identify and correct hazards is available to small and medium-sized employers, without citation or penalty, through OSHA-supported consultation programs in every state.

Contact OSHA. We can help.

1-800-321-OSHA (6742) • TTY 1-877-889-5627 • www.osha.gov

♦ OSHA RECORDKEEPING PACKET

TAB 7: DISCIPLINE & ENFORCEMENT

7.1 SAFETY RULES AND PROCEDURES

The following safety rules & procedures have been set forth by Dowdy as minimum guidelines. If a situation arises that there is not a pre-established rule, the employee is expected to take all precautions and measures available to them to act in a safe manner.

GENERAL:

- Follow all safety rules
- Always wear all prescribed personal protective equipment
- Utilize safety guards on power tools. Do not remove guards
- Enter confined spaces or trenches only when trained and when instructed to
- Do not use damaged cords.
- Stay 10 feet away from power lines
- Only qualified trained personnel are permitted to operate machinery or equipment.
- Report all accidents, incidents, and near misses immediately to the project supervisor
- Use chemicals properly and obey all hazard warnings
- All hand and power tools and similar equipment must be maintained in a safe condition; replace broken or damaged tools.
- Keep the workplace clean and orderly; promptly remove trash.
- Read and follow all warning signs
- Manufacturer's specifications, limitations, & instructions shall be followed.
- Do not remove or deface warning labels or signage

TRAINING & WORK PROCEDURES:

- Do not attempt to undertake a job until you have received training on all potential hazards associated with the job and the methods/procedures necessary to protect yourself
- Particular attention should be given to new employees and to employees moving to new jobs or doing non-routine tasks.
- No employee is required to work under conditions which are unsanitary, dangerous or hazardous to their health.
- All employees shall be trained on every potential hazard that they could be exposed to and how to protect themselves.

POSTINGS:

- All OSHA posters shall be posted in a visible location.
- Emergency numbers shall be posted and reviewed with employees

CONSTRUCTION EQUIPMENT:

- All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
- No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.
- A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.

HOUSEKEEPING:

- All places of employment shall be kept clean, the floor of every workroom shall be maintained, so far as practicable, in a dry condition; standing water shall be removed. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats or other dry standing places or appropriate waterproof footgear shall be provided.
- To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and holes and openings.
- All floor openings, open sided floor and wall openings shall be guarded by a standard railings and toe boards or cover.
- All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.

7.2 DISCIPLINARY POLICY

Dowdy's disciplinary policy is comprised of a corrective action process aimed to document and correct undesirable employee behavior, including violations of safety rules. The safety coordinator, project supervisors, and management are responsible for enforcement of this disciplinary policy.

Major elements of this policy include:

- Physical inspections by company officials indicating violations showing overall lack of commitment to company safety goals shall be under the same level of disciplinary actions.
- Constructive criticism/instruction by the project supervisor to educate and inform employees of appropriate safety performance and behavior.
- Correcting employee's negative behavior to the extent required.
- Informing the employee that continued violation of company safety policies may result in termination.
- Written documentation of disciplinary warnings and corrective action taken.

Safety violations include, but are not limited to:

- Not following safety procedures, guidelines or rules
- Horse play
- Failure to wear selected PPE
- Abuse of selected PPE

Depending on the facts and circumstances involved with each situation, the company may choose any corrective action including immediate termination. However, in most circumstances the following steps will be followed:

1. ***Verbal Warning*** informally documented (note to project or supervisor file), by a project supervisor or safety coordinator for minor infractions of company safety rules. A project supervisor or safety coordinator must inform the employee what safety rule or policy was violated and how to correct the problem.
2. ***Written Warning***, documented in employee's file. Repeated minor infractions or a more substantial safety infraction requires issuance of a written warning. Every attempt should be made to re-educate the employee on the desired performance. The employee should acknowledge the warning by signing the document before it is placed in their personnel file.
3. ***Suspension*** for three (3) working days. If employee fails to appropriately respond or management determines the infraction is sufficiently serious.
4. ***Termination*** for repeated or serious safety infractions.

♦ DISCIPLINARY ACTION FORM

Employee Name: _____ Employee Job Title: _____

Supervisor Name: _____ Today's Date: _____

Date/Time of Incident:		**Location:**	
Description of incident:			
Witnesses if any:			
Policy/Policies violated:			
Disciplinary action to be taken:			
Consequence(s) if employee repeats this offense:			
If the employee has offered an explanation of his/her conduct, detail explanation here:			

I have read the above, and I understand the consequences if I repeat my offense.

_____ _____

Signature of Employee Date

_____ _____

Signature of Supervisor Date

TAB 8: MISCELLANEOUS JOBSITE INFORMATION