

Systems of Safety

Applied to Focus-Four Hazard Categories

First Edition



University of Medicine & Dentistry of New Jersey (UMDNJ),

School of Public Health (SPH)

Office of Public Health Practice (OPHP)

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Training Program Additional Handouts

Falls

Electrical Safety

Struck-by

Caught-in-between

Federal Disclaimer

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Module One: Systems

Section One: Introduction: Systems of Safety

This systems approach to safety and health is a holistic way of looking at the construction processes we perform and determining how to apply means, methods and strategies to help make them flow more consistently. We start this discussion by examining what is meant by a system, and demonstrate how construction processes are systematic, consisting of many participants, materials and equipment. It is our goal to help all stakeholders realize that they must actively participate in the process in order for the system to work successfully. Knowing the respective roles within safety systems helps us work together to prevent and avoid incidents which are actually system malfunctions added to by the loss of life and great hardship. If participants, inside a given system, support each other, the system will stand successful and safely accomplish its collective goal, purpose or mission.

Everywhere we look there are systems. Systems can be as vast as galaxies, spanning billions of light-years or the size of a single atom; trillionths the size of the head of a pin. All systems have certain common threads. The parts of any system continually affect one another; either directly or indirectly and in a manner that strives to successfully maintain or advance a shared or common purpose. Rarely do systems exist in vacuums completely independent and isolated from external influences and other systems; rather, they are constantly interacting with other systems.

Most often smaller systems exist within larger systems; an example may be electricians working at a construction project. In addition to wiring a project, they may also provide electrical energy and adequate lighting for other trades. These electricians constitute a system that works inside a larger system and interacts with other smaller systems. Within the electrical company, there may often be smaller systems such as managers, estimators, or specialized workers defined by their relative functions. All of these smaller systems together form a greater whole coordinated by the controlling entity.

Inside of every company there should exist a system dedicated to the safety and health maintenance of its employees and subcontractors. In riskier industries these systems should be proportionately more recognizable, accessible and proactively managed. Construction is the most dangerous industry in the United States. You must keep in mind and be able to convince others, both above and under you, that there are clear and abiding obligations such as those mandated by law, economics and morality.

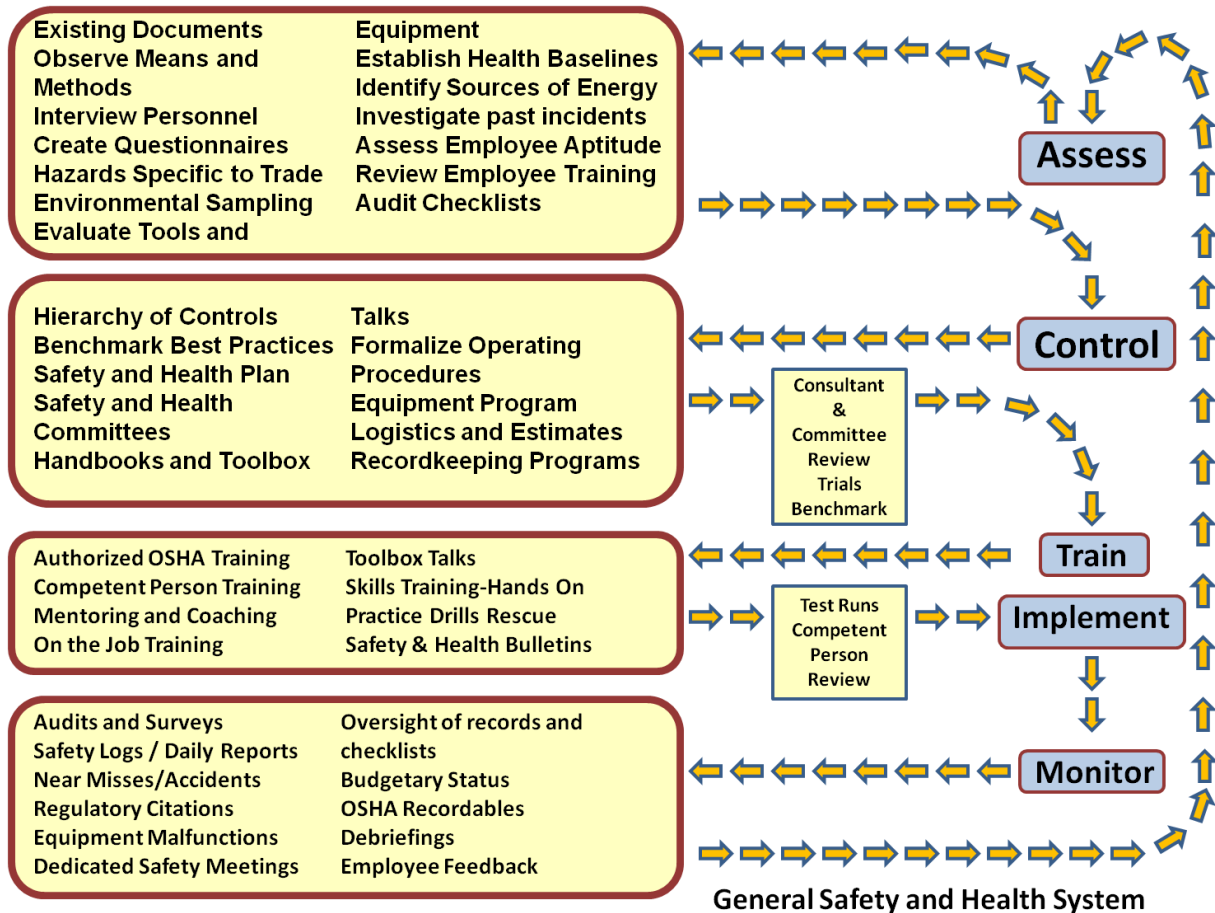
In advanced systems, such as the human body, a civil government or a successful construction business, you will find internal regulating mechanisms nested within the system that constitutes a system on its own. This mechanism's goal is to preserve safety and health, keeping the greater system from malfunctioning or maintaining, what scientists call, homeostasis. For a moment, just think of the human body as a system with all of its specialized functions working with a built-in regulating and healing system, constantly regulating and protecting the greater system from things that can go wrong.

The Occupational Safety and Health Administration requires that employers working in the United States assess the work environment, plan how to protect workers, train workers, and monitor their activities assuring the effectiveness of such safety and health measures. In many respects, this protective responsibility often extends to other entities such as the controlling contractor. Each employee engaged in construction activities should be able to recognize and avoid unsafe conditions and work with other participants to support the greater whole. This is best achieved, by implementing a system that clearly defines roles and responsibilities and encourages the active participation of all stakeholders.

This project first aims to teach all participants, regardless of their status or function, how the system works and their respective roles. The inclusion of the Focus-Four hazard categories serves as a logical starter-kit of sorts to create or better any hierarchical approach to safety and health management because together these hazard categories account for an overwhelming percentage of injuries and deaths.

This program will attempt to demonstrate how to implement and maintain a system of safety and apply models to the Focus-Four categories. We will delve into the legal and constitutional powers of OSHA along with the inherent rights of workers and employers as well as the more specific areas such as material handling, fall protection, safeguards from electricity, trench safety and other areas of concern in the construction industry. While the goal of this program is to acquaint its participants with a systems approach to safety and train them in the recognition and avoidance of our chosen hazard categories, it is this program's hope that this becomes the beginning of what you yourself can grow keeping America's workforce safe and free of health compromising hazards.

System of Safety Flow Chart – General Safety and Health System



Module One: Systems

Section Two: Employer Assessment Phase

It would be wise to start any undertaking with some reasonable anticipation of what obstacles you will likely encounter as it is indeed essential that on a jobsite the employer must provide the means of assessing and identifying potential hazards. In a sense, an assessment phase of the system of safety is an investigation phase, where we help determine what can go wrong. In our assessments we must keep in mind that we are evaluating people, materials, equipment and the environments to which all interact. There are many methods for gathering such information that a company or

organization can use to help fulfill its obligations.

The Williams-Steiger Occupational Safety and Health Act of 1970, can also be referred to as, "The Occupational Safety and Health Act of 1970" (OSH Act). The primary purpose of the OSH Act is to assure, so far as possible, safe and healthful working conditions for every working man and woman, but in various places the OSH Act or OSHA regulations clearly spells out the responsibility of an employer and employees:

Reference: 5. Duties

(a) Each employer

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

Reference: 29 CFR 1910.132

(d) Hazard assessment and equipment selection.

(1) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

(i) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(ii) Communicate selection decisions to each affected employee; and

(iii) Select PPE that properly fits each affected employee.

A. Review Existing Documents

Looking back at the past is often the best way of planning how we look forward to the future. Ideally, we study the painful events of history so we learn from history and avoid reliving history's often tragic consequences. In a very real sense, safety and health standards and regulations are negotiated from the consequences of painful events borne out of unsafe conditions and or unsafe acts in occupational history. Assessing your company's actual written record is a great way to start looking at the past. Begin by reviewing:

- Existing written safety and health plans and programs.*
- Top management endorsement of Health and Safety Plans (HASP).*
- Insurance claims.*
- OSHA citations.*
- State or local jurisdictional citations.*
- OSHA 300, 300-A and 301 forms.*
- Accident investigations.*
- Safety logs and inspection reports.*
- Job safety analysis.*

B. Observe Means and Methods

There is nothing better than seeing with your own eyes. Primary observation is the most direct means of collecting information to base your assessments of safety and health issues. You should observe typical processes to assess deficits that you see and make notations. If there are activities that would affect life and health, immediately comment and take corrective action. An inherent weakness to primary observation is the “snapshot” audit where at the time of the visit things are better than they usually are, providing the auditor with an unrealistic view. This unrealistic snapshot may be due to workers and managers anticipating the visit, so it is best to perform such observations with as little advanced notices as reasonable. Audits should be frequent and regular and you should take photographs and notes that describe findings for later evaluation. In addition you should:

- Take corrective action if you are able to.*
- Identify what can go wrong.*
- Identify possible consequences.*
- How likely is it that the hazard will cause harm.*

No matter what you observe you will find the issue falls into one of two categories; unsafe acts and unsafe conditions.

C. Interview Personnel

Interviewing participants whom perform or oversee various functions inside of the workplace adds incredible insight into possible deficits, deficiencies and vulnerabilities. Often auditors or managers possess limited views of processes because they do not perform them on a regular basis. It is important to remember that interviews can often be subjected to problems due to various interviewee apprehensions; they may feel as if they are incriminating someone or use their own defense mechanisms. It is important to make interviewees feel comfortable and clearly state the good faith purpose of your interview. The interviewer should seek cooperation and openness, which inevitably leads

employees to feel part of the “solution” to the problems.

- State your good-faith purpose is to improve the system.*
- Do not intimidate.*
- Allow open ended dialogue as if guiding a conversation.*
- Take notes but do so casually not writing every word, which can be intimidating and unnerving. Remember, these are interviews not legal “depositions.”*
- Keep an “open door” policy to encourage future employee input.*
- Ask for the interviewee’s suggestions and input.*
- Conclude the interview with a statement of appreciation for their contribution. Ask them to contact you if they think of anything else. If possible, advise those interviewed personally of the outcome of the investigation before it becomes public knowledge.*
- Create notes that create a more comprehensive summary of the interview.*

D. Create Questionnaires

Creating questionnaires about specific tasks and or general conditions inside the workplace is a good means of measuring the level of compliance. As with interviewing, you should try to keep questionnaires anonymous to avoid apprehension, which can lead to results skewed from reality or an undercounting of unsafe conditions or activities. An example of an abbreviated employee safety satisfaction survey is presented in Appendix C.

E. Hazards Specific to Trade or Industry

The concept of keeping the workplace safe and free from health hazards hinges on the avoidance of hazardous and recognizable conditions and activities. Unfortunately, a lot of what we know about occupational safety and health comes to us through human hardship and loss of life. Very often there are disproportioned hazards more common among specific trades or industries. With the accessibility of modern electronic information there are many Internet

resources available to us that allow us to collect data specific to our trade or industry.

- Bureau of Labor Statistics: <http://www.bls.gov/iif/>
- OSHA's Establishment Specific Injury and Illness Data:
http://www.osha.gov/pls/odi/establishment_search.html
- Fedstats: <http://www.fedstats.gov/>
- National Institute of Occupational Safety and Health Databases:
<http://www.cdc.gov/niosh/database.html>
- OSHA's directives often point to relevant areas of concern – do a search at <http://www.osha.gov>

F. The Environmental

There are many externalities that can affect how our system functions and hence any thorough assessment is obligated to consider the effects of the environment on the system. So it is important to realize, and account for, the likelihood that employees will perform various tasks under different environmental conditions. Environmental conditions can affect us in many ways some of which are obvious such as temperature or precipitation, but others are not so obvious such as those that involve the shape of a work space, the unseen presence of hazardous materials, or the possibility that our work activity can change or create an environmental hazard. The following are some environmental variables we may assess.

- Sampling for atmospheric conditions.*
- Sampling for hazardous chemicals.*
- Extreme temperatures hot and cold.*
- Illumination.*
- Sound levels.*
- Slippery conditions effects of snow and ice.*
- Atmospheric hazards, noxious, toxic, explosive.*
- Configuration hazards and means of emergency egress.*
- Engulfment hazards.*

G. Evaluate Tools and Equipment

Invariably equipment plays a large role in accidents in the workplace. Review maintenance programs and schedules that check for mechanical integrity and working conditions and check to see if changes in such equipment necessitate management of change procedures such as employee retraining and modifications of existing means and methods.

- Are employees using tools appropriate for the tasks?*
- Are employees properly trained to use such tools and equipment?*
- Are tools maintained in good condition?*
- Are tools ergonomically designed to reduce stress and fatigue?*
- Is there a maintenance record for inspection and repair of tools and equipment?*
- Is there a list that compiles and categorizes tools and equipment?*
- Is there a mechanical integrity program that includes a quality assurance program?*

H. Establish Health Baselines

Employees should be able to perform the tasks that an employer asks them to perform in a manner that will not adversely affect them or their fellow workers. Baseline testing and medical assessments allow the employer to safely issue respiratory protection and monitor the possibility of future risk exposures. Baseline testing should be provided to employees who have some of the following exposures:

- Working with hazardous chemicals.*
- Exposed to high levels of noise.*
- Required to wear a respirator.*

I. Identify Sources of Energy

In the construction industry, the release of energy can cause injury in one form or another. Training ourselves to recognize sources of energy allows us to better assess our workplaces.

The following are some energy sources we should try to identify in our assessments:

- Moving objects or objects that have the potential to move or fall.*
- Mechanical energy such as springs.*
- Noise.*
- Unprotected electrical devices and electrical panels.*
- Chemicals such as acids and bases.*
- Hydraulic (oil pressure).*
- Pneumatic (air pressure).*
- Radiation and thermal.*
- Flammables, combustibles and explosives.*
- Fall potentials and gravity.*

J. Investigate Past Incidents

We never want to wait for incidents to happen to correct what's wrong with our system. The failure of people, equipment, supplies or environment to behave or react as expected causes most of the incidents. Incident investigations determine how and why these failures occur. By using the information gained through an investigation, a similar or perhaps more serious incident may be prevented.

K. Assess Employee Aptitude

Very often there is a disconnect between the policies and procedures a company creates and the adherence to such policies. Sometimes this is due to the employer not assessing the learning aptitude of the workforce. Policies and procedures should be created in an easily understandable manner that encourages interaction, questions and feedback.

We should assess:

- General educational background.*
- Job duties and responsibilities.*
- History of training.*
- Length of employment.*
- Attitudes toward training.*
- Mastery of prerequisite skills/knowledge.*
- Environments to which we ordinarily train.*
- Readiness to learn.*

L. Review Employee Training

As with learning aptitude of policies and procedures it is also important that training modules be easily understood and retained and the people whom present such training are qualified. There are several types of training that typically occur in the workplace try to categorize and assess them accordingly and pay special attention to new employee training and jobsite orientations.

- Is there a training program?*
- Is training performed by qualified persons?*
- Is training on going?*
- Is it applicable to the tasks workers perform?*
- Is the training interesting and understandable?*
- Is training conducted in an environment that is conducive to learning?*
- Is there mentoring?*

M. Audit Checklists

No matter how much experience a practitioner of safety and health may possess, chances are, they will fail to see everything during an audit. The use of checklists helps keep the auditor to some path and often encourages further inspection. Checklists should not be static documents that never change and each checklist should have space for comments and explanations of findings. No matter whomever performs a checklist audit, competent persons, managers, safety and health professionals; items on checklists should be addressed one item at a time, preferably adding comments to each check hence adequately addressing to findings. We should avoid a rapid “check-off” style of filling out a checklist, where the auditor merely place checks as flipping switches. See an example of a Construction Checklist in Appendix A.

N. Create a List of Priorities

List jobs with hazards that present unacceptable risks, based on those most likely to occur and with the most severe consequences. These jobs should be your first priority for analysis.

Module One: Systems

Section Three: Applying Controls

Once an employer has observed, assessed, and identified hazardous vulnerabilities within a company or organization, they must seek to control unsafe conditions or practices by deliberate and methodical controls.

A. Hierarchy of Controls

Performing a Job Hazard/Safety Analysis JHA/JSA is fundamental to controlling events that could cause harm to employees or property. Since it is always best to work through some delineated structure to avoid haphazard and arbitrary guesswork, safety and health professionals have long used the Job Hazard Analysis (JHA), also commonly referred to as Job Safety Analysis (JSA) along with an applied hierarchy of controls. Just as a checklist may guide us through a walk-through audit on a worksite, so does the structure of a JHA/JSA and a hierarchy of controls guide us when applying controls to our workplaces. Keep in mind that you always want to start to select controls first from the most protective choices and work your way downward, only discounting more protective controls because of infeasibility. Nearly every job can be broken down into smaller job tasks or steps. When beginning a job hazard analysis, watch the employee perform the job and list each step as the worker takes it. Be sure to record enough information to describe each job action without getting overly detailed. Avoid making the breakdown of steps so detailed that it becomes unnecessarily long or so broad that it does not include basic steps. You may find it valuable to get input from other workers who have performed the same job. Later, review the job steps with the employee to make sure you have not omitted something. Point out that you are evaluating the job itself, not the employee's job performance. Always keep in mind that employee involvement is critical to ultimate success of our venture, so include the employee in all phases of the analysis—from reviewing the job steps and procedures to discussing uncontrolled hazards and recommended solutions.

Job Hazard/Safety Analysis Matrix

Task	Hazard	Control	Means of Implementation
Break tasks down to smaller sub-tasks.	List all possible associated hazards preferably in an order of severity	Use the Hierarchy of Controls 1. Elimination 2. Engineering 3. Mitigation	Should set out procedures that are easy to understand and accomplish in the field. Include the use equipment and requisite training and administrative

A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, the work environment and the necessary steps to control a hazard.

B. Benchmarking Best Practices

Best practices are means and methods that have proven themselves in the marketplace, business or government to achieve some beneficial end. Best Practices often bring about higher levels of compliance than codes or minimal standards prescribe. In business there exists a technique referred to as benchmarking where companies look around at other more successful companies and strive to follow the more successful models. Sometimes groups of companies form trade or business associations that collectively try to create best practices for their members. Since it is extremely rare that safety and health strategies and techniques are tightly guarded trade secrets, it is relatively easy to benchmark your company against other companies and industry associations in order to find and implement best practices. Belonging to builders associations, trade organizations, union affiliations or monitoring the results borne out of OSHA's Voluntary Protection Program (VPP) itself are ways of obtaining such best practices modeling. This is a cornerstone to business because all advantages one company has over another translates to a greater market share. Some methods of benchmarking could include:

- Trade Organizations.*
- Outside Consultants.*
- OSHA Voluntary Protection Programs.*

C. Write Health and Safety Plan (HASP)

Committing a plan to writing formalizes and makes the plan easier to follow with less misunderstandings and interpretations. Imagine how distorted and convoluted the study of history or science might be if we learned everything solely by word of mouth; orally passed down from generation to generation. A written HASP helps us formalize: the hazards we assess at our worksites, the controls we choose, and a clear means of implementation. An effective HASP should be:

- Current.*
- All-encompassing.*
- Understandable.*
- Open for expansion and refinement.*
- Easy to follow in the field.*

D. Safety and Health Committees

Safety and health committees are the backbone of a solid plan to improve working conditions and prevent injuries and illnesses. Since there are typically many problems to solve, the committee will need to see its work as an ongoing process. A well-run safety and health committee should have a balance of labor and management representatives. The committee will work best if management representatives have real decision-making power and the committee itself has the firm, full and sincere support of the top management. Here are some of the characteristics, roles and traits a committee should possess:

- Create a process to identify hazardous conditions.*
- Initiate a policy for frequent and regular inspections.*
- Investigate and keep track of all injuries and accidents.*
- Initiate and plan training and education programs for managers and workers at all job titles.*
- Create a means of distributing information, i.e.: newsletters, emails.*
- Review and approve new equipment before it is bought.*
- Keep an open line of communication between managers and workers.*
- Meet on a regular basis, at least monthly and have a plan to meet in case an emergency.*
- Work from an agenda.*
- Keep minutes and check them carefully.*
- Union representatives should talk to all local officers, chapter chairpersons, shop stewards, and all workers about the ongoing work of the committee.*

E. Write Handbooks and Toolbox talks

Handbooks and toolbox talks should be skewed to the actual work of the targeted group of workers to an extent they proceed from the general to the more specific. Toolbox talks should assure full saturation of information and be presented by a competent or qualified presenter. There are many sources for toolbox talks and handbooks you can go to the links below or to OSHA's publication page.

- OSHA Brochures/Booklets

<http://www.osha.gov/pls/publications/publication.AthruZ?pType=AthruZ>


- OSHA Quicktakes Quicktips

<http://www.osha.gov/as/opa/quicktakes/index.html>




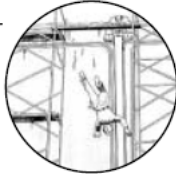
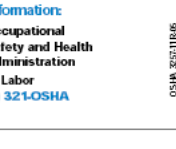



- OSHA Quick Cards

<http://www.osha.gov/OshDoc/quickcards.html>


Sample: OSHA Quick Card



Fall Protection Tips

- Identify all potential tripping and fall hazards before work starts. 
- Look for fall hazards such as unprotected floor openings/edges, shafts, skylights, stairwells, and roof openings/edges. 
- Inspect fall protection equipment for defects before use. 
- Select, wear, and use fall protection equipment appropriate for the task. 
- Secure and stabilize all ladders before climbing them. 
- Never stand on the top rung/step of a ladder. 
- Use handrails when you go up or down stairs. 
- Practice good housekeeping. Keep cords, welding leads and air hoses out of walkways or adjacent work areas. 

For more complete information:



Occupational
Safety and Health
Administration
U.S. Department of Labor
www.osha.gov (800) 321-OSHA

OSHA 3021106

F. Formalize Operating Procedures

A great deal of system management concerns itself with knowing the roles and responsibilities of all personnel at every level and every function within an organization. Formalizing a scope of operational procedures allows for better accountability. Roles and responsibilities should be broken down going from the general to the specific requirements.

G. Equipment Program

Establish an inventory and maintenance schedule for all tools and equipment assuring they are maintained in good working order (i.e.: no frayed or exposed wire or insulation). The program will create maintenance schedules for all vehicles and equipment abiding by manufacture's requirements with services performed by qualified persons. Keep in mind that inspections that come out of this program are in addition to daily inspections performed by operators or competent persons before using the vehicles and equipment. The equipment program should include:

- All power tools.*
- All portable or stationary equipment.*
- Compressors, generators, welding machines.*
- Fleet Program.*

The program should coordinate with the training program, it should ensure that all factory installed safety devices will remain intact. and that recordkeeping of maintenance logs be carried out as required by company policy.

H. Logistics and Estimates

In the "real world" of construction, very often money or the lack thereof, becomes an obstacle to fulfill regulatory compliance. A simple cost-to-benefit comparison (see below) clearly illustrates why, from a fiscal perspective, we must pay attention to the safety on the worksite. However, management and estimators

must address these issues in their bids. It is true that the cost of an accident is greater than the protections necessary to keep such accidents from happening. There still is, however, the actual cost of safety and health measures that must be factored into each job to prevent problems from occurring later, in the field. Those who make estimates from the plans must be trained to look at those plans from the perspective of a safety professional, hence avoiding cost overruns necessitated by adding safety equipment or programs later. It may be a good idea to affix a line item for safety to each subsection of your company's bid sheets and if necessary remind (or educate) potential clients of the necessity of safety and health considerations and their factoring in your bid. In this manner, safety compliance can provide your firm with a complete advantage in the marketplace.

To understand the real cost of an incident, OSHA provides an on-line calculator known as \$afety Pays. It can be found at

<http://www.osha.gov/dcsp/smallbusiness/safetypays/index.html>

Sample: Cost-to-Benefit Comparison

A simple cost-benefit analysis

A simple cost-benefit analysis assumes that there is a reasonable expectation that a disabling injury is likely in the foreseeable future (five years) when employees are exposed (place themselves within a danger zone) to a workplace hazard. The object is to contrast the relatively **high cost/low benefit** if the hazard is not eliminated, with the **low cost/high benefit** if the hazard is eliminated.

The analysis answers the following questions:

What are the potential costs to the company if the hazard is not eliminated?
What are the potential costs to the company if the hazard is eliminated?
What is our return on investment (ROI) if corrective actions are taken?

To be effective, recommendations should be supported by a bottom-line cost/benefit analysis that contrasts the relative high costs of accidents against the much lower costs associated with corrective actions. Doing a cost benefit analysis is even more important when recommending corrective actions before an accident occurs.

Listed below are average **direct costs** for selected types of disabling claims (adjusted for inflation to 2010) from one Midwestern state:

Struck by falling object:	\$12, 327
Fall to lower level:	\$17,320
Lifting objects:	\$11,433
Caught in equipment/objects	\$14,450

I. Recordkeeping Programs

A recordkeeping program provides the fundamental basis for accounting in any system of safety; without such a program it would be difficult to manage resources. From a regulatory perspective, the recordkeeping program also provides the base data to the Bureau of Labor Statistics Survey Of Occupational Injuries And Illnesses (300 Log, 300A Summary, and a 301 Incident Report), which helps OSHA direct its resources

Module One: Systems

Section Four: Training Managers and Workers

Training is part of the system of safety that links and delivers an employer's planned

strategies to managers and labor. It is in essence what makes or breaks a system because ultimately systems are about people. There are many types of training and many training techniques. Over 150 explicit OSHA regulatory references require one form of training or another and that would only skim the surface if you were to start to count numerous other implicit trainings. The employer must train and hence determine the most effective means of transferring knowledge that will affect behavior in a positive direction. All too often training is viewed and determined adequate by the number of hours inside of training rather than the effectiveness of the training. Training must be general and specific. Thankfully, there is a great deal of study and field experience to rely on when implementing training; OSHA's website (<http://www.OSHA.gov>) provides numerous sections on training, guided tutorials and outreach programs. (<http://www.osha.gov/SLTC/etools/construction/index.html>). A training program should be well planned and fit the needs of trainees, especially "at-risk" employees such as newly hired employees. Each program should have a means of evaluation, to gauge employee comprehension and performance measurements from the field. It is always best that trainers debrief what they learn by teaching, which is almost always the case. A trainer learning rather than teaching seems counterintuitive but good trainers whom are interactive with trainees often learn about deficits and vulnerabilities.

Training employees and employers is mandated and codified in Title 29 CFR 1926.21:

§1926.21 Safety training and education

(a) General requirements. The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the act.

(b) Employer responsibility.

(1) The employer should avail himself of the safety and health training programs the Secretary provides.

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

A. Authorized OSHA Trainers

The Occupational Safety and Health Administration authorizes trainers to fulfill the Secretary's above cited requirements and allows them to issue 10 and 30 hour Outreach training completion training cards for their students. To become an authorized trainer, you must complete a required OSHA trainer course (OSHA 500) and have prerequisite training (OSHA 510 Standards for the Construction Industry) and experience, which may include five years of construction safety experience, a college degree in occupational safety and health, a Certified Safety Professional (CSP), or Certified Industrial Hygienist (CIH) designation. It is important that employers interview authorized trainers for the ability to conduct trainings based on the aptitudes and experience of their employees.

Authorized trainers have their strengths and weakness and these attributes should be paired. Training:

- Must be relevant to the trainees day-to-day activities.*
- Needs to affect the trainee's behavior in the workplace.*
- Needs to stimulate the trainees.*
- Needs to be interesting.*
- Should teach principles and procedures.*
- Should demonstrate the whole picture or system and their context within.*
- Should allow ample time for adult trainees to practice.*

B. Competent Person Training

The single most important person on any construction field crew is the Competent Person. OSHA defines a Competent Person as *one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. Various sections of the regulations have slightly more specific meanings for a Competent Person. If you had to categorize the traits that such a person would possess it would be; knowledge of safety and health, experience at their trade, and authority to take corrective action. Ideally, Competent Persons, whom interact constantly with employees under their supervision, have the unique ability to mentor and coach in real time. Given the important role of the Competent Person in any construction system, one can easily see why it is vital to have especially well trained and experienced Competent Persons. In many respects, they are the eyes and ears of the employer and represent the employer in the field.*

Competent Persons:

- Create paperwork and documentation of training.*
- Make sure the environment for field training is conducive to learning.*
- Allows for questions and elaborations.*
- Gauge saturation of information.*
- Skews “general” advise to specific tasks at hand.*
- Reinforces the principles of such talks by example.*

C. Toolbox Talks

Workers need to training in the recognition and avoidance of unsafe conditions as part of company profitability and professional development. Using common sense is only part of the solution in preventing injuries or accidents. Bring short pertinent topical training into the field, often referred to as “tool box talks” or “tailgate talks,” is an effective means of reinforcing employee adherence and attention to an employee awareness to workplace hazards. Training can be specific or topical to work; for example, a toolbox talk may be useful to remind employees of safety zones created on your site upon the arrival of crane or you may want to perform a toolbox talk on “Dressing For Winter Work” as winter approaches and perhaps at the start of summer, “Heat Exhaustion/Sunstroke;” all appropriate to the season. Toolbox talks should be regular and abide by some of the following suggestions:

- Focus on what is important and or mandatory.*
- Should have a structured format including an introductory statement, a guide for discussion and space for additional discussion notes. Some toolbox talk forms have reminders for the instructor on subjects to research and discuss; others require knowing company policy.*
- Provide for follow up questions by employees, thus assuring comprehension.*
- Identify what poor work practices can cause injuries or accidents on the job. Plan for and schedule out so you have time to research and possibly modify your company policy.*

- *For tracking, recordkeeping purposes or perhaps disciplinary action, it is recommend employees sign an acknowledgement that they have received the training and the instructor (competent person or qualified person) also acknowledged that he/she has presented the toolbox talk.*

D. Structured Skills Training

Many accidents and fatalities occur due to employee lack of familiarity and experience with equipment, materials and sources of energy. Having a structured and guided path that allows employees to perform certain tasks or use certain equipment in certain conditions in a graduate progression based on training and experience, is a proven means of avoiding accidents and also assuring quality control. Such paths to occupational mentoring practices dates back perhaps millenniums and is well documented in systems as the European Guilds. As part of a system of safety, an employer should establish a clear delineated path consisting of any combination of training and experience that provides the required knowledge, skills, and abilities for workers to perform certain tasks and use certain equipment. For example, an employer may establish an apprenticeship training program, which prescribes specific requirements and limitation that workers clearly understand. Such a system allows for more control inside of worksites. A typical program will:

- *Established several task statements for each level of ability.*
- *Provide a graduated means of assessing ability level, i.e.: skills testing, performance based testing and time working alongside a mentor using certain materials, equipment or energy sources.*

E. Practice, Drills, Rescue

A plan of action is refined, improved and made easier to execute by practicing and drilling. It is best practice to perform exercises that simulate emergency plans such as fire drills, non-routine procedures for spills of hazardous chemicals and personal fall arrest rescues.

F. Safety & Health Bulletins

The posting of bulletins is an effective means of communicating to all employees the status of various safety and health related topics and initiatives. Bulletins can be especially effective when they are generated from top management and reinforce management's commitment. Such reinforcement often empowers employees and middle managers by placing policy in writing thereby backing corrective or proactive behavior. The media of choice should depend on practical methods of delivery i.e. email or hardcopy but bulletins should:

- Reinforce top management commitment.*
- Be readily accessible, perhaps inside of a payroll envelope.*
- Work in concert with established rules and policies.*

G. Adult Training

Any attempt to train adults in the workplace must start with a fundamental understanding that we must teach adults differently than we teach children, therefore those employees whom provide training must themselves understand how to effectively transfer knowledge to adult learners.

Adult learners need to “connect the dots” by cognitively putting key concepts together. They too must realize some appreciative benefit from the discourse. Adults, and many children, desire to answer the “why” question and internally make sense of why they need to perform certain tasks using certain controls. The explanation of the nature of a hazard or some common thread that runs through your training, allows the adult learner to cognitively “buy-in” to the policies and procedures that we seek to avoid. Appendix B Paying Attention to Angles of this program provides an example of such training techniques by demonstrating how the uses of angles apply to several different areas of concern in safety. In addition to proper content adult training should:

- Start with a briefing asking questions to identify what functions, duties or work will trainees perform. This briefing should help establish needs, deficits and vulnerabilities.*
- Guide the group:*
 - Rely on group experience, background and expertise.*
 - Stay focused on basic principles of lessons.*
 - Facilitate dialogue but rein when drifting.*
 - Encourage questions:*
 - Make discussion more interesting.*
 - Bring up important esoteric you might not have covered.*
 - Allows instructor to take break from speaking.*
 - Allows instructor to sense saturation.*
 - Engage the group by asking questions.*
 - Keeps it “alive” and moving by being interactive.*

Module One: Systems

Section Five: Monitoring the Workplace

Monitoring and evaluation of our plans are essential tools to any successful self-regulating system. We must establish that at varying periodic intervals, i.e.: throughout the day, daily, weekly, monthly, yearly, etc., we are able to see how our plan is working and be able to make changes accordingly if there are problems. When management readily addresses areas of concern brought about by someone speaking up and pointing out a deficit; the program becomes stronger and the system survives and thrives. Every worker on a jobsite should feel empowered to speak-up and contribute to the betterment of the system; this too will build a greater sense of teamwork. It is also extremely important that there be objective, external, periodical monitoring and evaluation since internal monitoring alone can often lead to a false sense of safety due to ownership interests. We can apply the same debriefing strategies that business and the military has long known with exit interviews and mission debriefings respectively. These are mechanism for learning about things we did wrong, which may be just as important as the things we did right on the next project. The following are some documentations and reviews that provide for oversight:

- Audits and surveys.*
- Safety logs / daily reports.*
- Near misses/accidents.*
- Regulatory citations.*
- Equipment malfunction lists and work orders.*
- Dedicated safety meetings.*
- Oversight of records and checklists.*
- Budgetary status.*
- OSHA recordables.*
- Debriefings.*
- Employee feedback.*

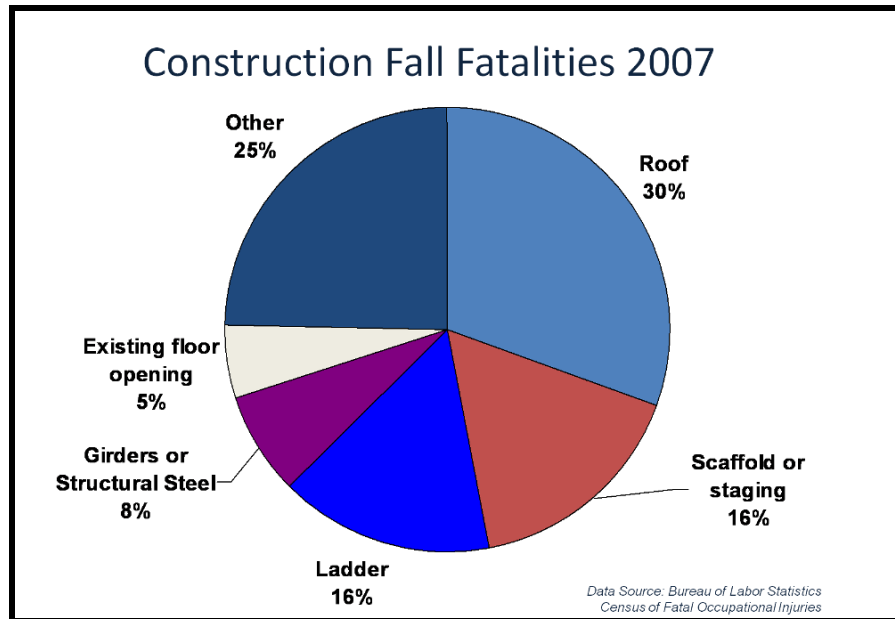
Module One: Systems

Section Six: Systems Exercises

Group Exercise: Create a basic system of safety and apply “real world” obstacles, which you encounter in the construction industry. Describe how these obstacles occur and how you may be able to overcome them. Work as a team, take notes and choose a team’s spokesperson.

Module Two: Falls

Section One: Systems of Safety Applied to Falls

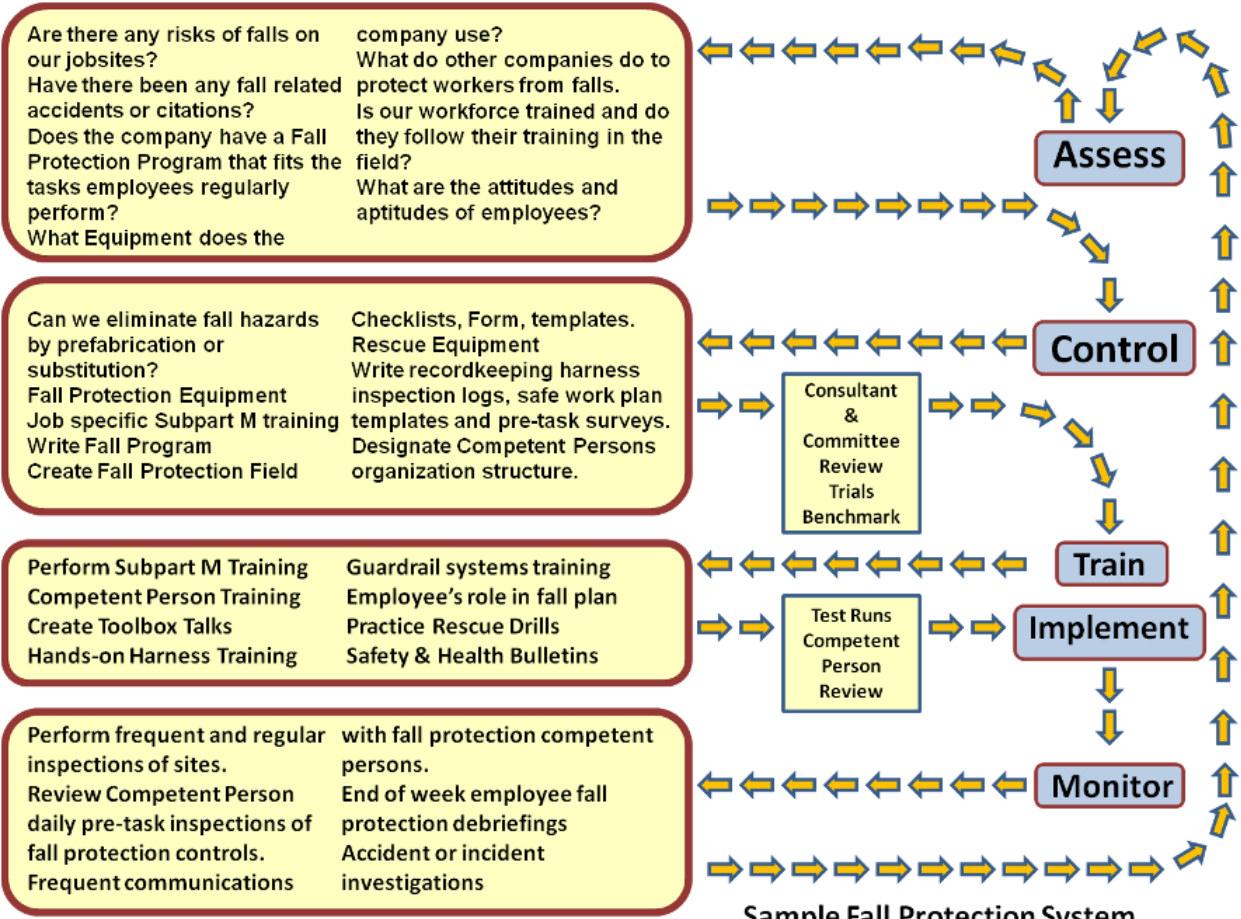


A. Leading Cause of Fatalities

Falls are the leading cause of fatalities in the construction industry. It is important that safety and health programs contain provisions to protect workers from falls on the job. The following hazards cause the most fall-related injuries:

- Unprotected sides, wall openings, roofs, floor holes,*
- Improper scaffold construction,*
- Unguarded or protruding steel rebar,*
- Misuse of portable ladders.*

B. Sample Fall Protection System of Safety



C. Sample Fall Protection Job Hazard Analysis

Fall Protection Assessment of Hazards

Task	Hazard	Control	Means of Implementation
Connecting Steel	Falls to a lower level	1. Personal Fall Arrest System 2. Retractable lifelines	1. Purchase PFAS equipment 2. Train Workers to use PFAS equipment 3. Subpart M Training
Installing wire rope perimeter protection	Falls to below	1. Prefabrication of perimeter wire rope before steel is hoisted into place	1. Contract with steel fabricator to deliver steel with wire rope perimeter protection in place or have iron workers install protections at ground level before hoisting into place.

PFAS – Personal Fall Arrest System

Module Two: Falls

Section Two: Fall Protection Training

A. Sample Training Module

The accompanied PowerPoint® presentation is provided as a sample training module applied to a system of safety for fall protection. In each fall protection training you should explain the nature of falls and how gravity pulls objects toward earth and how these objects get heavier and faster as they fall and hence the impact force also becomes greater. Explain for example that a 200 pound person jumping off a 3 foot desk onto a bathroom scale, would hit the scale with a force greater than twice their weight.

B. Questions You Should Ask When Developing a Training Program

- Where are employees subject to fall hazards at or above 6 feet?*
- Are workers subject to falls onto impalement hazards, dangerous equipment or sources of uncontrolled energy?*
- Are workers trained to recognize a properly built guardrail system or other fall protection systems?*
- Are workers trained how to wear full-body harnesses and use personal fall arrest systems?*
- Does the company have a fall protection program in its Health and Safety Plan (HASP)?*
- Is housekeeping maintained through all phases of work?*
- Do all workers have certified fall protection training?*
- Has anyone ever fallen on one of our sites?*
- Have there been any near misses on our sites?*
- Are there open holes on our sites?*

C. Certification of Fall Protection Training

Most contractors do not know that fall protection training is required for almost all workers on construction sites and that employers shall have a written certification record that will contain the:

- Name or other identity of the employee trained,*
- date of the training,*
- signature of the person who conducted the training or the signature of the employer. (If the employer relies on training conducted by another employer the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.*

D. Retraining of Fall Protection Training

Retraining: When the employer has reason to believe that an employee does not have the proper understanding and skill required by the fall protection training or

when there are changes in the workplace, changes in the types of fall protection systems or equipment to be used render previous training obsolete; or inadequacies in employee's knowledge or behavior around protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

E. Competent Person Responsibility

In your fall protection training, all trainees must be made aware of their respective designated competent persons. The competent person:

- Has the knowledge and experience needed to identify fall hazards.*
- Has authority to eliminate fall hazards.*
- Has authority to stop work if unsafe conditions exist.*
- Can evaluate fall hazards and protections.*
- Assesses workers who use fall protection systems.*
- Conducts safety inspections.*

See Training Program Attachment on Falls at the end of this handbook

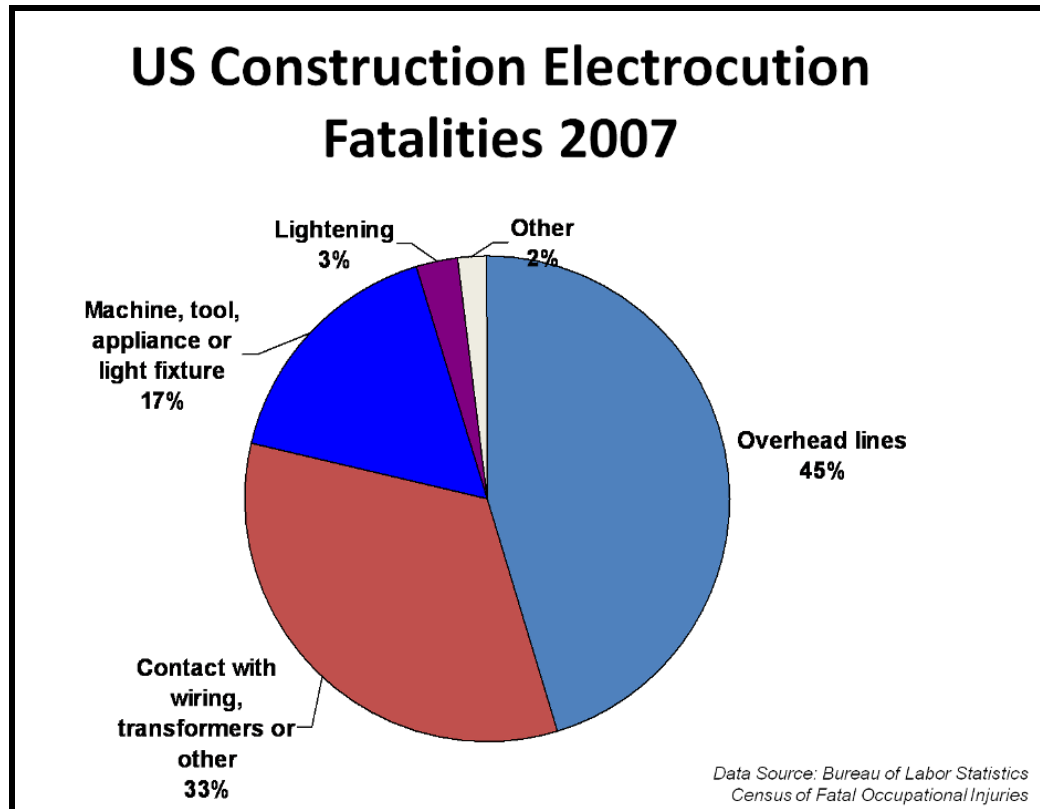
Module Two: Falls

Section Three: Fall Protection Group Exercise

Each group will create a simple fall protection system for a task on at a construction site. Be sure to describe the checks in the system and how they work, as well as the responsibilities of all participants and stakeholders. Also describe how you would explain the nature of ALL fall hazards.

Module Three: Electrical

Section One: Systems of Safety Applied to Electrical Hazards



A. Electrical Fatalities

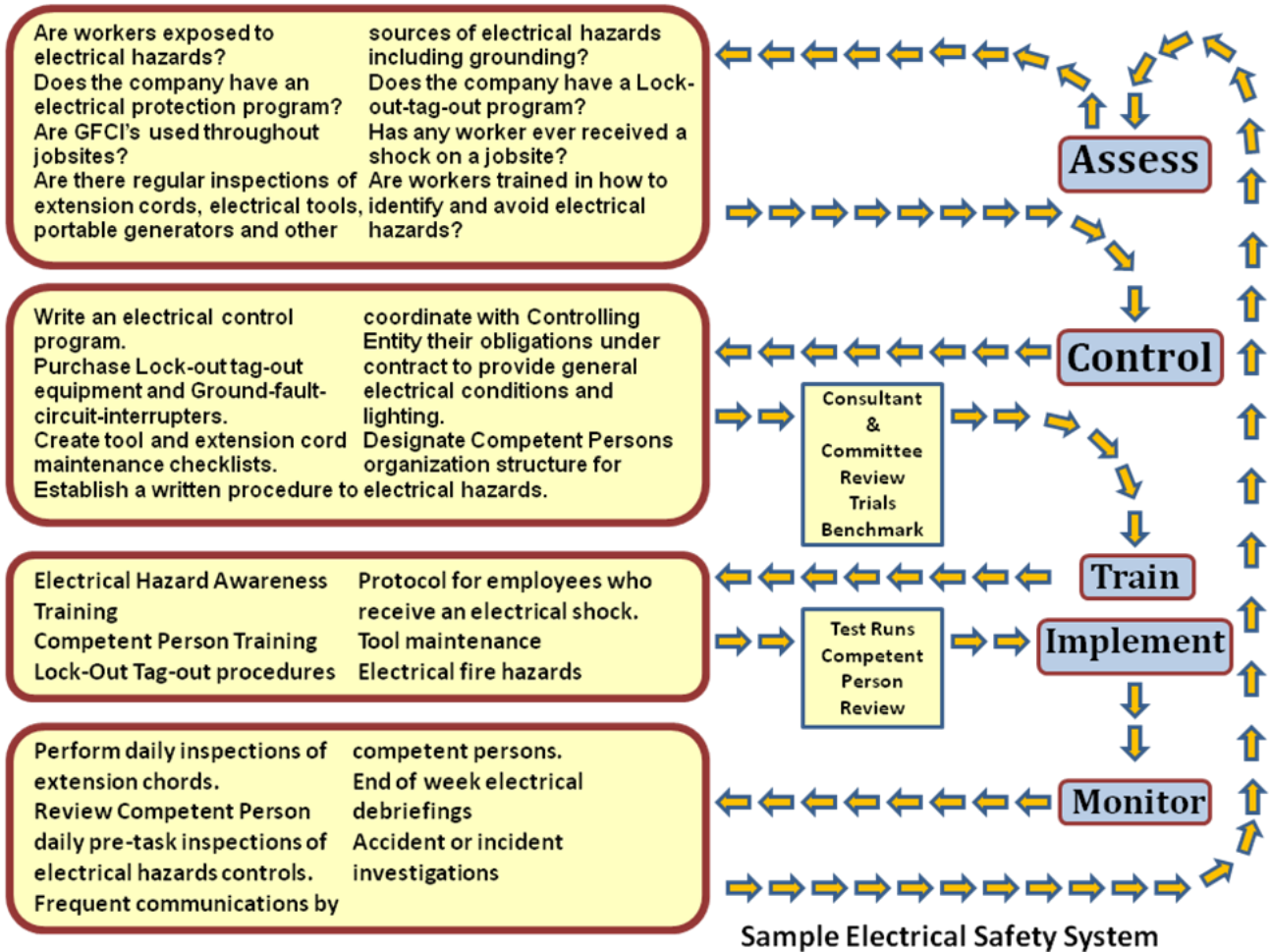
- On average, nearly one worker per day is electrocuted.*
- Electricity is dangerous and undetectable without instruments.*

B. Electrical Injuries

Electricity has become essential to modern life. Perhaps because it is such a familiar part of our surroundings, it often is not treated with the respect it deserves. 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.*
- Electrical equipment not used in a manner prescribed.*
- Inappropriate use of extension and flexible cords.*
- Working in and around water or damp conditions.*

C. Sample System of Safety Applied to Electrical Hazards



D. Sample Electrical Protection Job Hazard Analysis

Electrical : Assessment of Hazards

Task	Hazard	Control	Means of Implementation
Working with an electrical tool	Shock Electrocution Indirect falls Burns	1. Grounding 2. GFCI 3. Inspection of tools 4. Inspection of extension cords	1. Purchase GFCI 2. Have a daily electrical inspection by a competent person. 3. Train workers in the recognition of electrical hazards and how they can harm them.
	Fire	1. Correct sized conductors	1. Follow applicable electric code for wire gauge size to amperage of circuit .
Electrical work	Shock Electrocution Indirect falls Burns	1. Lock-out –Tag Out	1. Create a full Lock-out tag-out program for electrical work 2. Train electricians in how to use a lock-out-tag our program
	Fire	1. Correct sized conductors	1. Follow applicable electric code for wire gauge size to amperage of circuit .

GFCI – Ground Fault Circuit Interrupter

Module Three: Electrical

Section Two: Electrical Safety Training

A. Sample Training Module

The accompanied PowerPoint® presentation is provided as a sample training module applied to a system of safety for electrical hazards. In each electrical protection training you should explain the nature of electricity and how it can cause harm through electric shock, electrocution, burns, indirect fall and fires. Electricity is difficult to explain, but through analogy you can simplify how it works and how a GFCI works. The accompanied PowerPoint® presentation uses a water circuit as a

simple way of understanding an electrical circuit. It is a useful means of explaining a very complex phenomenon.

B. Competent Person Responsibility

Inside of your electrical protection training all trainees must be made aware of their respective designated competent persons and know that the controlling contractor or qualified electrical contractor, who provides for general conditions concerning electricity, also has authority and responsibilities at their sites. The competent person:

- Performs daily inspections of extension cords.*
- Reviews daily pre-task inspections of electrical controls.*
- Assists with incident investigations.*
- Develops an end of week electrical debriefing.*

See Training Program Attachment on Electrical Safety at the end of this handbook

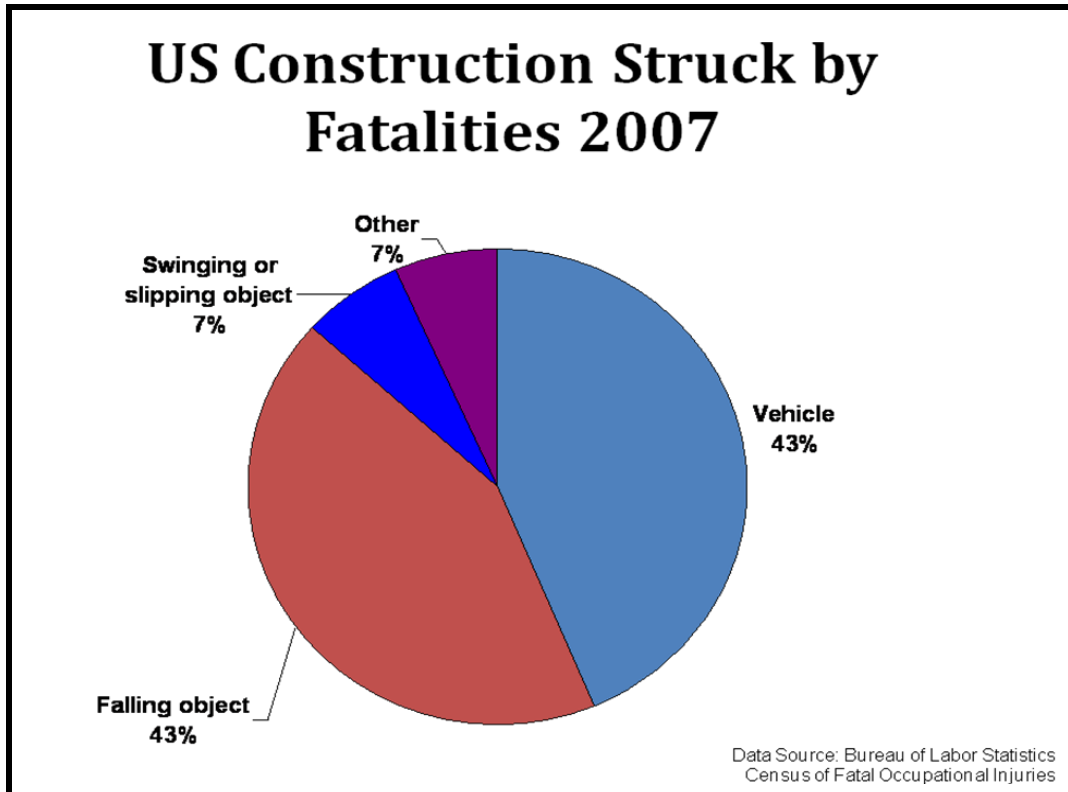
Module Three: Electrical

Section Three: Group Electrical Safety Exercise

Each group should make a list of various electrical controls and affix a label to them such as elimination, engineering, mitigation, then give each control a score accordingly: ten (10) points for types of elimination controls, seven points for an engineering control and (5) points for a mitigation control. Try and make the list as long as possible and be creative.

Module Four: Struck-by

Section One: Systems of Safety Applied to Struck-by Hazards



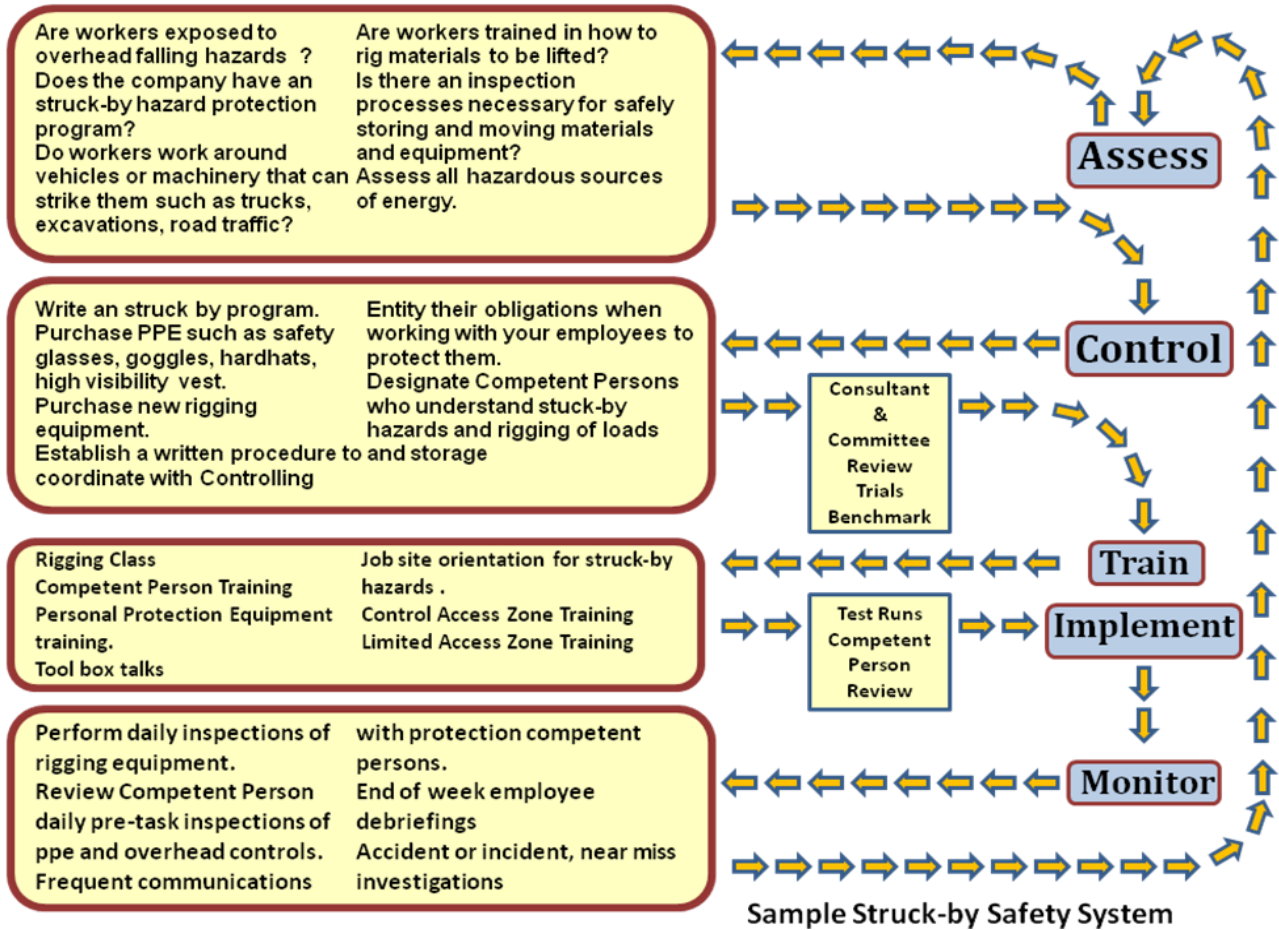
A. Struck-by Injuries and Fatalities

Struck-by objects are a leading cause of construction-related deaths. Approximately 75% of struck-by fatalities involve heavy equipment such as trucks or cranes. The number of workers fatally struck by a vehicle was at a seven-year high in 1998. Safety and health programs must take into account the many ways struck-by accidents can occur. One in every four struck-by vehicle deaths involves construction workers, more than any other occupation. In a very real sense, struck-by hazards represent sources of potential energy which can be quantified at our worksites when we perform an assessment. The following related hazards commonly cause struck-by injuries and fatalities:

- Falling objects.*

- Rigging failure.*
- Loose or shifting materials.*
- Tip over or malfunction.*
- Lack of overhead protection.*
- Vehicle and equipment strikes.*
- Backing incidents.*
- Workers on foot.*
- Flying objects.*
- Masonry walls tipping over.*

B. A Sample Struck-by System of Safety



C. Sample Struck-by Job Hazard Analysis

Struck-by Assessment of Hazards

Task	Hazard	Control	Means of Implementation
Walking around construction site	<ol style="list-style-type: none"> 1. Struck by falling and flying objects 2. Struck by machinery, vehicles, equipment 	<ol style="list-style-type: none"> 1. Safety glasses, goggles, hardhats. 2. High visibility vests. 3. Establish safety work zones for rigging loads, overhead hazards. 4. Establish Limited/ Controlled Access Zones 	<ol style="list-style-type: none"> 1. Purchase PPE and train workers when and how to wear and maintain them. 2. Coordinate various safety zones on site with controlling entity. 3. Train workers who rig or store materials on the proper means and methods.

Module Four: Struck-by

Section Two: Struck-by Training

A. Nature of Struck-by Training

The accompanied PowerPoint® presentation is provided as a sample training module applied to a system of safety for Struck-by hazards. The training involved with struck-by recognition, avoidance and prevention involves making the trainees aware of potential energy and its many forms. While potential energy could be a boulder sitting atop a cliff, it could also be the powder actuated projectile. Other struck by incidents could include:

- Falling objects.*
- Rigging failure.*
- Loose or shifting materials.*
- Tip over or malfunction.*
- Lack of overhead protection.*
- Vehicle and equipment strikes.*
- Backing incidents.*
- Workers on foot.*
- Flying objects.*
- Masonry walls tipping over.*

See Training Program Attachment on Struck-by at the end of this handbook

Module Four: Struck-by

Section Three: Struck-by Exercise

As a group exercise, we will choose three identical construction tasks, then in our groups, let's assess these tasks affixing numbers to various struck-by hazards based on the degree of potential energy, severity, and likelihood of occurrence with the greatest being ten (10) and the lowest being zero (0). Then apply controls to these struck-by hazards and see how many points your group can gain to make the site safer from these hazards. If time allows, compare the ratios from each group as a statistical test against our findings.

Module Five: Caught-in-between

Section One: Systems of Safety Applied to Caught-in-between

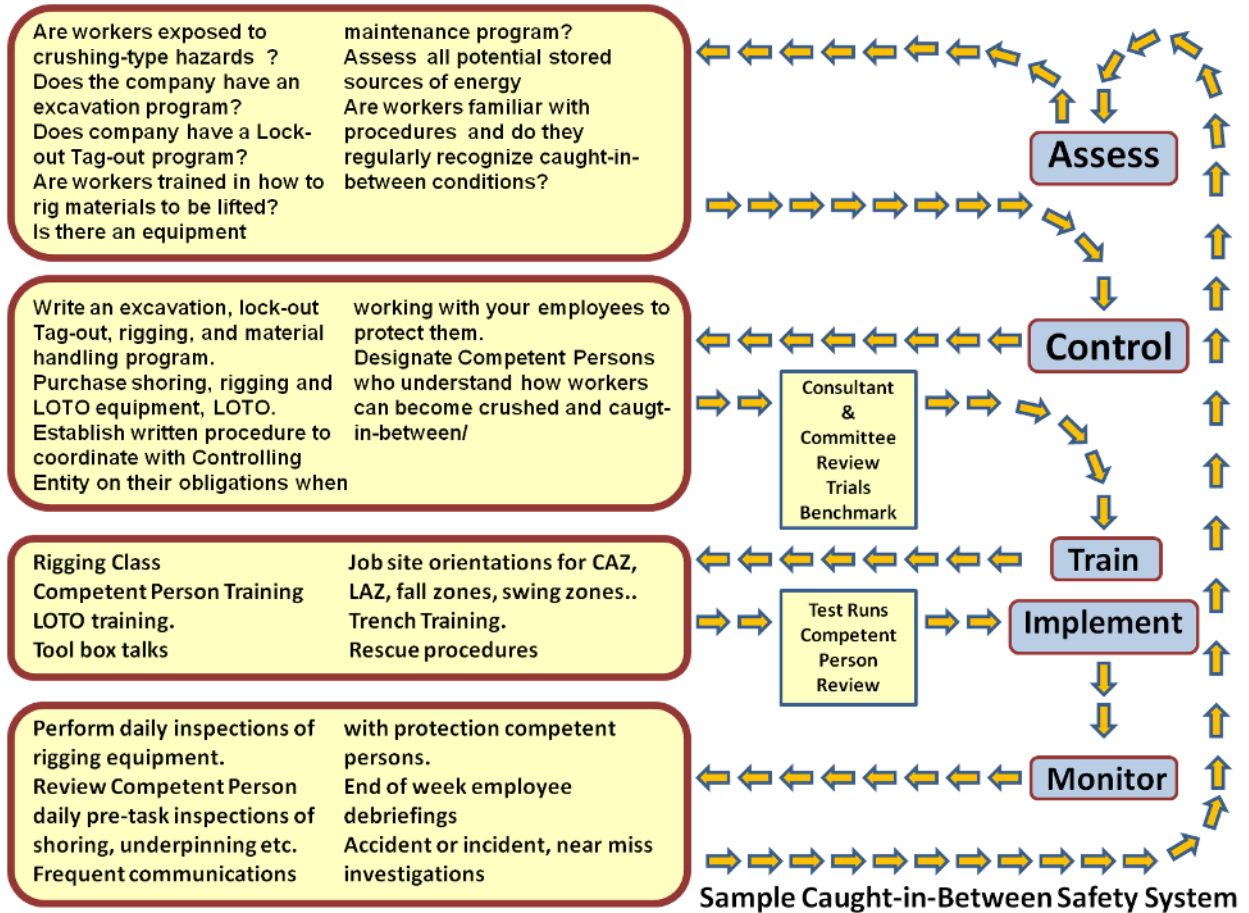
A. Caught-in-between Injuries and Fatalities

Caught-in-between hazards constitute the final focus hazard category of this program. Proportionately, excavations pose the most hazardous caught-in-between conditions and 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. Heavy equipment with moving swinging and crushing parts are also hazardous and part of this category.

The most common caught-in-between cause of injuries and fatalities are:

- Trench/excavation collapse.*
- Rotating equipment.*
- Unguarded parts.*
- Equipment rollovers.*
- Equipment maintenance.*
- Rigging accidents.*

B. Sample Caught-in-between System of Safety



C. Sample Caught-in-between Job Hazard Analysis

Caught-in-Between Assessment of Hazards

Task	Hazard	Control	Means of Implementation
Working in a trench	1. Trench collapse	1. Shoring, benching, sloping	1. Purchase PPE and train workers when and how to wear and maintain them.
Working with a jammed piece of equipment	1. Crushing	1. Lock-out Tag-out Procedures	1. Training for designated Authorized persons and workers affected by operations.
Working around a mobile crane	1. Crushing	1. Barricade swing radius. 2. Training for workers to recognize caught-in-between hazards	1. Training through toolbox talk to warn workers of danger of swing radius of mobile crane and fall zones. 2. Controlling Entity performs jobsite notification of Controlled Access Zones.

Module Five: Caught-in-between

Section Two: Caught-in-between Training

The accompanied PowerPoint® presentation is provided as a sample training module applied to a system of safety for caught-in-between hazards. The training involved should be in the recognition, avoidance and prevention of such conditions.

Very often caught-in-between hazards are conditional, based on environmental factors, so emphasis it the training how the environment can impact the occupational situation, emphasizing that improvising, though often ingenious can have tragic consequences.

See Training Program Attachment on Caught-in-between at the end of this handbook

Module Five: Caught-in-between

Section Three: Caught-in-between Exercise

Making use of Lock-out Tag-out controls create a system for working in an elevator pit under an elevator car during construction of a high-rise building. The work will be performed by two elevator mechanics, however one worker inadvertently leaves his lock in place and cannot be reached for two weeks since he has left for vacation and cannot be reached. Create a program that will address our predicament and build it into your system.

Appendices

Appendix A: Checklist

OSHA Checklist for the Construction Industry

	Question	Yes	No	Comments
*	General Safety and Health			
1	<i>Is each employee instructed in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury? 1926.21(b)(2)</i>			
2	<i>Are employees who are required to handle or use poisons, caustics, and other harmful substances instructed in their safe handling and use, and made aware of the potential hazards, personal hygiene, and personal protective measures? 1926.2 1(b)(3)</i>			
3	<i>Are employees who are required to enter confined or enclosed spaces instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment? 1926.21(b)(6)(i)</i>			
4	<i>Are form and scrap lumber with protruding nails and all other debris kept cleared from work areas, passageways, and stairs? 1926.25(a)</i>			

5	<i>Are employees required to wear appropriate personal protective equipment when there is an exposure to hazardous conditions? 1926.28(a)</i>			
*	Medical Services, First Aid, Sanitation			
1	<i>Is a facility for the treatment of injured employees located within three minutes of the job site? If not, is there an employee(s) trained in first aid at the site? 1926.50(c)</i>			
2	<i>Are first aid supplies that are approved by the consulting physician readily accessible? 1926.50(f)</i>			
3	<i>Are telephone numbers of physicians, hospitals, or ambulances conspicuously posted? 1926.50(f)</i>			
4	<i>Are potable (drinking) water and adequate toilet facilities available at the job site? 1926.51</i>			
5	<i>Are the regulations concerning protection of employees against the effects of noise exposure understood and complied with? 1926.52</i>			

*	<p>Asbestos*</p> <p><i>*For the purpose of this checklist, asbestos includes asbestos, tremolite, anthophyllite, and acrinolite.</i></p>			
1	<p><i>Does the employer assure that no employee is exposed to more than 0.2 fibers per cubic centimeter of air as an eight-hour time weighted average (TWA)? 1926.58(c)</i></p>			
2	<p><i>Does the employer assure that no employee is exposed to more than 1.0 fiber per cubic centimeter of air as averaged over a sampling period of thirty minutes? 1926.58(c)(2) (excursion limit)</i></p>			
3	<p><i>On multi-employer worksites, are all other employees informed of the existence and requirements, regulated areas, and of the work with asbestos? 1926.58(d)</i></p>			
4	<p><i>If TWA or excursion limit listed above is exceeded, are regulated work areas established and all requirements of this paragraph met? 1926.58(f)</i></p>			
5	<p><i>Is employee exposure monitoring meeting the requirements of this paragraph conducted? 1926.58(f)</i></p>			
6	<p><i>Are engineering controls used to meet TWA and excursion limits in paragraph (c)? 1926.58(g)</i></p>			
7	<p><i>Are respirators properly selected and used as required by this paragraph? 1926.58(h)</i></p>			

8	<i>If TWA or excursion limit is exceeded, is proper protective clothing selected and used? 1926.58(i)(1)</i>			
9	<i>Are laundering requirements, transportation of contaminated clothing requirements, and inspection requirements met? 1926.58(l)(2), (3), and (4)</i>			
10	<i>Are clean change areas with separate facilities for protective and street clothing provided? 1926.58(j)(1)(i) and (ii)</i>			
11	<i>Is a lunch area with exposure to asbestos below action level and/or the excursion limit provided? 1926.58(j)(1)(iii)</i>			
12	<i>Is a decontamination area meeting requirements of the paragraph provided? 1926.58(j)(2)</i>			
13	<i>Are warning signs and labels used as required by this paragraph? 1926.58(k)(1) and (2)</i>			
14	<i>Is employee training provided for all employees exposed to asbestos above the action level or excursion limit? 1926.58(k)(3) and (4)</i>			
15	<i>Is HEPA filtered vacuuming equipment used and is waste properly disposed of? 1926.58(l)</i>			

16	<i>Is a medical surveillance program meeting all requirements of this section provided? 1926.58(m)</i>			
17	<i>Are all required records kept, made available, and transferred as required? 1926.58(n)</i>			
*	Hazard Communication			
1	<i>Does employer have a written Hazard Communication Program? 1910.12001910.1200(e)(1)</i>			
2	<i>Does employer have a complete list of hazardous chemicals used on site? Does list reference appropriate MSDS? 1910.12001910.1200(e)(1)(i)</i>			
3	<i>Does employer either: A. Provide other employers who may have exposed employees with MSDS or B. Make MSDS available at a central worksite location? 1910.12001910.1200(e)(2)(i)</i>			
4	<i>Does employer inform other employers of any precautionary measures they may need to take? 1910.12001910.1200(e)(2)(ii)</i>			
5	<i>Does employer inform other employers of labeling system 1926.59(e)(2)(iii)</i>			

6	<p><i>Are containers of hazardous chemicals, labeled, tagged, or marked?</i> 1910.12001910.1200(f)(1)</p>			
7	<p><i>Does labeling include both:</i> a) <i>identity, and</i> b) <i>hazard warning?</i> 1910.1200(5)(i) and 1910.1200(f)(5)(ii)</p> <p><i>NOTE 1: Labels need not be used on portable containers that are to be immediately used by employee making transfer.</i></p> <p><i>NOTE 2: Ensure that State labeling requirements are also followed, for example: California's Proposition 65 or New Jersey's Universal Labeling requirements.</i></p>			
8	<p><i>Does employer have an MSDS for each hazardous chemical on site?</i> 1910.12001910.1200(g)(1)</p>			
9	<p><i>Are MSDSs available to employees?</i> 1910.12001910.1200(g)(8)</p>			
10	<p><i>Are employees trained in the hazards of chemical in their work area?</i> 1910.12001910.1200(h)</p>			

11	<p><i>Does training include:</i></p> <p>a) <i>Hazard communication standard requirements?</i> 1910.12001910.1200(h)(1)(i)</p> <p>b) <i>Any operation in employee's area where hazardous chemicals may be present?</i> 1910.12001910.1200(h)(1)(ii)</p> <p>c) <i>Location and availability of Hazard Communication Program?</i> 1910.12001910.1200(h)(1)(iii)</p> <p>d) <i>Methods that may be used to detect a chemical release?</i> 1910.12001910.1200(h)(2)(i)</p> <p>e) <i>Physical and chemical hazards of chemicals in the workplace?</i> 1910.12001910.1200(h)(2)(ii)</p> <p>f) <i>Measures employees can take to protect themselves?</i> 1910.12001910.1200(h)(2)(iii)</p> <p>g) <i>Details of employers Hazard Communication Programs? (labeling, MSDS, how to obtain and use information)</i> 1910.12001910.1200(h)(2)(iv)</p>			
12	<p><i>Does employer have a method of informing employees of the hazards of non-routine tasks, unlabeled pipes, etc.</i> 1910.1200(e)(1)(ii)</p>			
*	<p>Personal Protective Equipment</p>			
1	<p><i>Are protective helmets (hard hats) worn at all times where there is a possible danger of head injury from impact, falling or flying objects, or electrical shock and burns?</i> 1926.100</p>			

2	<i>Are employees provided with eye and face protection? 1926.102 Note: See Table E-1</i>			
3	<i>Are safety nets provided when work areas are more than twenty-five feet above ground or water surfaces and the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts in not practical? 1926.105(a) through (f)</i>			
*	Fire Protection and Prevention			
1	<i>Has a fire protection program been developed? 1926.150(a)(1)</i>			
2	<i>Is firefighting equipment conspicuously located? 1926.150(a)(3)</i>			
3	<i>Is firefighting equipment periodically inspected and maintained in operating condition? 1926.150(a)(4)</i>			
4	<i>Is firefighting equipment selected and provided according to the listed requirements? 1926.150(c)</i>			
5	<i>Are all flammable and combustible liquids stored and handled in approved containers and portable tanks? 1926.152(a)(1)</i>			

6	<i>If more than twenty-five gallons of flammable or combustible liquid is stored in a room, is it in an approved cabinet? 1926.152(b)(1)</i>			
7	<i>Is at least one portable fire extinguisher with a rating of not less than 20-B:C located within seventy-five feet of each pump, dispenser, underground file pipe opening, and lubrication or service area? 1926.152(g)(1)</i>			
*	Signs, Signals and Barricades			
1	<i>Are required signs, symbols and accident prevention tags in compliance with the following? 1926.200 Figures G- 1, G-2 and Table G-1</i>			
2	<i>Are flagmen equipped with flags (at least eighteen inches square), sign paddles, or lights? 1926.201(a)</i>			
3	<i>Are flagmen wearing red or orange warning garments? If working at night is warning garments reflectorized? 1926.201(a) and 1926.200(g)</i>			
*	Materials Storage, Handling, Disposal			

1	<i>Are materials which are stored in tiers stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse? 1926.250(a)(1)</i>			
2	<i>Are materials stored more than six feet from any hoistway or inside floor opening and more than ten feet from any exterior walls that do not extend above the top of the stored materials? 1926.250(b)(1)</i>			
3	<i>Are aisles and passageways kept clear and in good repair? 1926.250(a)(3)</i>			
4	<i>Are waste materials disposed of properly? 1926.252</i>			
5	<i>Do alloy steel chain slings have a permanently affixed durable identification stating size, grade, capacity, and manufacturer? 1926.251(b)(1)</i>			
6	<i>Do any hooks, rings, oblong links, pear shaped links, coupling links, and other attachments have a rated capacity at least that of the chain? 1926.251(b)(2) Note: Job or shop hooks and links or makeshift fasteners are not to be used. 1926.251(a)(1)</i>			
7	<i>Is all rigging equipment for material handling inspected prior to use on each shift? 1926.251(a)(1)</i>			
8	<i>When forming eyes in wire rope are U-bolt clips properly spaced and installed? 1926.251(c)(5) and (c)(5)(i)</i>			

*	Tools, Hand and Power			
1	<i>Are hand and power tools furnished by employer or employee maintained in a safe condition? 1926.300(a)</i>			
2	<i>Are power tools, belts, gears, shaft, pulleys, sprockets, spindles, drums, fly wheels, and chains properly guarded? 1926.300(b)(1) & (2)</i>			
3	<i>Do electric powered tools and equipment have proper grounding or double insulation? 1926.302(a)</i>			
4	<i>Have all employees who operated powder actuated tools trained in the use of the particular tool they use? 1926.304(d)</i>			
5	<i>Do all circular saws have an exhaust hood or a guard to prevent accidental contact with the saw blade if there is a possibility of contact either beneath or behind the table? 1926.304(f) ANSI 01.0-1926 Section 4.1.1</i>			
6	<i>Do all portable circular saws have a guard above the base plate and a guard below the base plate that will automatically and instantly return to the covering position when the saw is withdrawn from the work? 1926.304(d)</i>			
7	<i>Do hand fed circular rip saws have an upper blade guard? 1926.304(f) ANSI 01.0-1926 Section 4.1.2(a)</i>			

8	<i>Do hand fed circular rip saws have a spreader? 1926.304(f) ANSI 01.1-1926 Section 4.1.2(b)</i>			
9	<i>Do hand fed circular rip saws have non-kickback fingers or dogs? 1926.304(f) ANSI 01.1-1926 Section 4.1.2(c)</i>			
10	<i>Do all radial arm saws have upper and lower blade guards? 1926.304(f) ANSI 01.1-1926 Section 4.1.9(a)</i>			
11	<i>Are radial arm saws equipped with an adjustable stop or sufficiently wide table so that saw blade does not pass the edge of the table? 1926.304(f) ANSI 01.1-1926 Section 4.1.9(d)(1)</i>			
*	Welding and Cutting			
1	<i>When transporting or storing compressed gas cylinders, are cylinders secured and caps in place? 1926.350(a)(1)</i>			
2	<i>Are cylinders secured in a vertical position when transported by power vehicles? 1926.350(a)(4)</i>			
3	<i>Are all compressed gas cylinders secured in an upright position at all times? 1926.350(a)(9)</i>			
4	<i>Is it insured that cylinders, full or empty, are never used as rollers or supports? 1926.350(c)(1)</i>			

5	<i>Are employees instructed in the safe use of fuel gas? 1926.350(d)</i>			
6	<i>Are torches inspected for leaking shut off valves, hose couplings, and tip connections at the beginning of each shift? 1926.350(g)(2)</i>			
7	<i>Are oxygen cylinders and fittings kept away from oil and grease? 1926.350(i)</i>			
8	<i>Are oxygen and fuel gas regulators in proper working order? 1926.350(h)</i>			
9	<i>Are frames of all arc welding and cutting machines grounded? 1926.351(c)(5)</i>			
10	<i>Are employees instructed in the safe means of arc welding and cutting? 1926.351(d)</i>			
11	<i>Are welding and cutting operations shielded by noncombustible or flameproof screen whenever practicable? 1926.351(c)</i>			
12	<i>Are electrodes removed and electrode holders placed or protected so they cannot make electrical contact with employees when the holders are left unattended? 1926.351(d)(1)</i>			
13	<i>Are employees who are performing any type of welding, cutting, or heating protected by suitable eye protective equipment? 1926.353(e)(2)</i>			

14	<i>Is suitable fire extinguishing equipment immediately available in work area and ready for instant use? 1926.353(d)</i>			
15	<i>Are drums, containers, or hollow structures which have contained toxic or flammable substances filled with water or thoroughly cleaned of such substances, ventilated and tested before welding, cutting, or heating? 1926.352(i)</i>			
16	<i>Before heat is applied to a drum, container, or hollow structure is a vent or opening provided to release built up pressure? 1926.352(i)</i>			
17	<i>Is mechanical ventilation system of sufficient capacity and so arranged to remove fumes and smoke and keep the concentration within safe limits? 1926.353(a)(2) and (3)</i>			
18	<i>When employees are welding, cutting, or heating in confined space, is either general mechanical ventilation, local exhaust ventilation, or airline respirators provided? 1926.353 (b)(1)</i>			
*	Electrical			
1	<i>Is all electrical equipment free from recognized hazards that may cause death or serious harm? 1926.403(b)(1)</i>			

2	<i>Are disconnecting means legibly marked to indicate purpose unless located so that purpose is evident? 1926.403(h)</i>			
3	<i>Is sufficient working space provided to permit safe operation and maintenance of electrical equipment? 1926.403(i)(1)</i>			
4	<i>Are live electrical parts guarded against accidental contact? 1926.403(i)(2)</i>			
5	<i>Is polarity of conductors correct? 1926.404(a)(2)</i>			
6	<i>Are ground fault circuit interrupters (GFCI) used to protect employees? 1926.404(b)(1)(i)</i>			
7	<i>If not, is an assured equipment grounding program in place? 1926.404(b)(1)(iii)</i>			
8	<i>Are outlet devices correctly matched with load being served? 1926.404(b)(2) See Table K-4</i>			
9	<i>Is path to ground from circuits, equipment, and enclosures permanent and continuous? 1926.404(f)(6)</i>			
10	<i>Are exposed noncurrent carrying metal parts of cords and plug connected equipment rounded? 1926.404(f)(7)(iv)</i>			
11	<i>Are lamps for general illumination protected against breakage? 1926.405(a)(2)(ii)(E)</i>			

12	<i>Are flexible cords and cables protected from damage? 1926.405(a)(2)(ii)(i)</i>			
13	<i>Are electrical extension cords of the three wire type? 1926.405(a)(2)(ii)(J)</i>			
14	<i>Are unused openings in cabinets, boxes, and fittings closed? 1926.405(b)(1)</i>			
15	<i>Do all pull boxes, junction boxes and fittings have covers? 1926.405(b)(2)</i>			
16	<i>Are all cabinets, cut out boxes, fittings, boxes, panel board enclosures, switches, circuit breakers, through doorways or windows, attached to building surfaces, or concealed behind walls, ceilings, or floors? 1926.405(e)(1) and (2)</i>			
17	<i>Are flexible cords and cables not used where run through holes in walls, ceilings, and floors, through doorways or windows, attached to building surfaces, or concealed behind walls, ceilings, or floors? 1926.405(g)(1)(iii)</i>			
18	<i>Are fixtures and receptacles in wet or damp locations identified for that purpose and installed so that water cannot enter? 1926.405(j)(1)(v) and (j)(2)(ii)</i>			
19	<i>Is all electrical equipment used in hazardous locations either approved for the location or intrinsically safe? 1926.407(b)</i>			

20	Are electrical cords or cables taken out of service when worn or frayed? 1926.416(e)(1)			
*	Ladders and Scaffolding			
1	Are defective ladders -broken or missing rungs or steps, broken or split side rails - immediately withdrawn from service? 1926.1053(b)			
2	Are scaffolds, guardrails, and toeboards in compliance with tables in 29 CFR 1926 Subpart L?			
3	Is the footing or anchorage for scaffolds sound, rigid, and capable of supporting the maximum intended load without settling or displacement? 1926.451(c)(2)			
4	Are scaffold guardrails and toeboards installed on all open sides and ends of platforms more than ten feet above ground or floor? 1926.451(e)(4) & (e)(5)			
5	Do scaffolds four to ten feet in height, with a minimum horizontal dimension in either direction of less than forty-five inches; have standard guardrails on all open sides and ends of platform? 1926.451(e)(4)			
6	Are scaffolds capable of supporting at least four times their maximum intended load? 1926.451(a)			

7	<i>Are scaffold planks extended over their end supports not less than six inches, nor more than twelve inches 1926.451(a)(4)</i>			
8	<i>Are manually propelled mobile scaffolds erected so that their height is no more than four times the minimum base dimension? 1926.451(e)(1)</i>			
9	<i>Are casters or wheels on mobile scaffolds locked while in use by any person? 1926.451(e)(8)</i>			
10	<i>Are all two point suspended scaffolds suspended by wire, synthetic, or fiber ropes capable of supporting at least six times the related load? 1926.451(i)(5)</i>			
11	<i>Are all ropes (wire, fiber, and synthetic), slings, hangers, platforms, and other supporting parts of two point suspended scaffolds inspected before every installation? 1926.451(i)(7)</i>			
12	<i>Are all employees on two point suspended scaffolds protected by a lifeline and safety belt? 1926.451(i)(8)</i>			
*	Floor and Wall Openings			
1	<i>Are floor and wall openings properly guarded with standard railings and toeboards? 1926.500(b)(1)</i>			

2	<i>Are skylight openings guarded by fixed standard railings on all exposed, or are covers capable of supporting two hundred pounds installed? 1926.500(b)(4)</i>			
3	<i>Are wall openings four feet or more above ground properly guarded? 1926.500(c)(1)</i>			
4	<i>Are extension platforms outside a wall properly guarded with side rails or equivalent guards? 1926.500(c)(2)</i>			
5	<i>Are open sided floors platforms six feet or more above ground or floor levels guarded by standard railing? 1926.500(d)(1)</i>			
6	<i>Are runways higher than four feet and on which tools, machine parts, or material are likely to be used, guarded by a standard railing and toeboard? 1926.500(d)(2)</i>			
7	<i>Are flights of stairs with four or more risers equipped with standard stair railings or handrails? 1926.500(e)</i>			
8	<i>Are employees performing built up roofing work on low pitched roofs with a ground to eave height greater than sixteen feet protected from falling from the side edge of the roof? 1926.500(g)</i>			

9	<p><i>Where mechanical equipment is being used on the roof during built up roofing work and a warning line system is used to protect the workers from falling, is the warning line erected:</i></p> <p><i>a. around all sides of the work area?</i></p> <p><i>b. not less than six feet from edge which is parallel to the direction of mechanical equipment operation?</i></p> <p><i>c. Not less than ten feet from the roof edge which is perpendicular to the direction of mechanical equipment operation 1926.500(g)(3)</i></p>			
10	<p><i>Is the warning line flagged with a high-visibility material at not more than six foot intervals? 1926.500(g)(2)(ii)(a)</i></p>			
11	<p><i>Is the warning line supported so that its lowest point (including slack) is no closer than thirty-four inches nor higher than thirty-nine inches from the roof surface? 1926.500(g)(3)(iii)(b)</i></p>			
12	<p><i>Are employees working in a roof edge materials handling area or materials storage area protected from falling by guardrails, safety nets, or a safety belt system? 1926.500(g)(5)</i></p>			
13	<p><i>Are materials stored at least six feet away from the edge when guardrails are not erected at roof edge? 1926.500(g)(5)(vi)</i></p>			

14	<i>Is a training program designed to train employees in the recognition of hazards of falling that are associated with working near a roof perimeter provided for all employees? 1926.500(g)(6)</i>			
*	Cranes, Derricks, Hoists, Elevators, Conveyors			
1	<i>Are manufacture's specifications and limitations applicable to the operation of any and all cranes and derricks complied with? 1926.550(a)(1)</i>			
2	<i>Are rated load capacities, recommended operating speeds, and special hazard warnings posted on all equipment and visible from operator's station? 1926.550(a)(2)</i>			
3	<i>Is equipment inspected by a competent person before each use? 1926.550(a)(5)</i>			
4	<i>Are thorough annual inspections made on hoisting machinery and records of the dates and results of the inspection maintained by employer? 1926.550(a)(6)</i>			
5	<i>Are accessible areas within the swing radius of the rotating superstructure of the crane barricaded? 1926.550(a)(9)</i>			

6	<p><i>Before leaving crane unattended, is the boom lowered to the ground level or otherwise securely fastened?</i> 1926.550(b)(2) ANSI B30.5-1968 Chapter 5-3</p>			
7	<p><i>Are booms which are being assembled or disassembled on the ground, with or without support of the boom harness, securely blocked to prevent dropping of the boom and boom sections?</i> 1926.550(b)(2) ANSI b30.5-1968 Chapter 5-3</p>			
8	<p><i>Are cranes or derricks only used to hoist employees on a personal platform when conventional means are more hazardous or impossible?</i> 1926.550(g)(2)</p>			
9	<p><i>If a personal platform is being used, are all operation criteria required by this standard being followed?</i> 1926.550(g)(3)(i)</p>			
10	<p><i>Does the crane or derrick used with a personal platform have a boom angle indicator (if equipped with a variable angle boom), a device to indicate boom length (if equipped with telescoping boom), and an anti-two blocking device or two block damage prevention feature?</i> 1926.550(g)(3)(ii)</p>			
11	<p><i>Does the personnel platform meet all design criteria and platform specifications required by this standard?</i> 1926.550(g)(4)</p>			
12	<p><i>Has a trail lift, inspection, and proof testing been conducted?</i> 1926.550(g)(5)</p>			

13	<i>Are employees prohibited from riding on material hoist except for the purpose of inspection and maintenance? 1926.552(b)(1)(ii)</i>			
14	<i>Are hoistway entrances protected by substantial gates or bars? 1926.552(b)(c)</i>			
15	<i>Are hoistway doors or gates on personnel hoists at least six feet high? 1926.552(c)(4)</i>			
16	<i>Are hoistway doors or gates provided with mechanical locks which cannot be operated from landing side and are accessible only to persons in car? 1926.552(c)(4)</i>			
17	<i>Are overhead protective coverings provided on top of hoist cages or platforms? 1926.552(c)(7)</i>			
18	<i>Is the safe working load of the overhead hoist, as determined by the manufacturer, indicated on the hoist and is that safe working load not being exceeded? 1926.554(a)(1)</i>			
19	<i>Where conveyors pass over areas or aisles, have guards been provided to protect employees from falling materials? 1926.555(a)(5)</i>			
20	<i>Are conveyors equipped with audible warning signals and is that signal sounded immediately before starting the conveyor? 1926.555(a)(1)</i>			

21	<p><i>Are body belts worn and lanyards attached to the boom or basket when employees are working from an aerial lift?</i> 1926.556(b)(2)(v)</p>			
*	<p>Motor Vehicles, Mechanized Equipment</p>			
1	<p><i>Are all vehicles which are left unattended at night, adjacent to a highway in normal use or a construction site where work is in progress, equipped with lights, reflectors, or barricades to identify the location of the equipment?</i> 1926.600(a)(1)</p>			
2	<p><i>Are tire racks, cages, or equivalent protective devices provided and used when inflating, mounting, or dismounting tires installed on split rims or locking rings</i> 1926.600(a)(2)</p>			
3	<p><i>Are bulldozer and scraper blades, dump bodies, etc., fully lowered or blocked when being repaired or not in use?</i> 1926.600(a)(3)(i)</p>			
4	<p><i>Are parking brakes set on parked equipment, and are wheels chocked when parked on an incline?</i> 1926.600(a)(3)(ii)</p>			
5	<p><i>Are motor vehicles which operate within an off highway job site that is closed to public traffic being operated according to the requirements of this standard?</i> 1926.601</p>			

6	<i>Do these vehicles have a service brake system, emergency brake system, and parking brake system in operable condition? 1926.601(b)(1)</i>			
7	<i>Are all vehicles equipped with an audible warning device that is in operable condition at the operator's station 1926.601(b)(3)</i>			
8	<i>Do all vehicles with an obstructed view to the rear have a back up alarm or are always used with a observer? 1926.601(b)(4)</i>			
9	<i>Do all vehicles have seat belts and are they used? 1926.601(b)(9)</i>			
10	<i>Are tail gate handles on dump truck arranged to keep operator clear? 1926.601(b)(12)</i>			
11	<i>Are operating levers on dump truck equipped with latches? 1926.601(b)(1)</i>			
12	<i>Are vehicles in use inspected at the beginning of each shift to assure that all parts, equipment, and accessories affecting safety operation are free of defects? 1926.601(b)(14)</i>			
13	<i>Are seat belts provided on all earthmoving equipment except those not equipped with ROPS and those designed for stand up operation? 1926.602(a)(2)(i)</i>			

14	<i>Does all bi-directional earthmoving equipment have a horn in operable condition? 1926.602(a)(9)(i)</i>			
15	<i>Is all earthmoving or compacting equipment with obstructed rear view equipped with an operable backup alarm or used only with an observer? 1926.602(a)(9)(ii)</i>			
16	<i>Are all high lift rider industrial trucks equipped with overhead guards? 1926.602(c)(1)(v)</i>			
17	<i>Is all equipment used in site clearing operations equipped with proper rollover protection? 1926.604(a)(2)</i>			
18	<i>Unless employees can step safely to or from the wharf, float, or river towboat, is a ramp of adequate strength, with side boards, well maintained and properly secured or a safe walkway provided? 1926.605(b)(1) and (2)</i>			
19	<i>Are all powered industrial trucks equipped with inspected and working, brakes, steering mechanisms, control mechanism, warning devices, lights, governors, lift overhead devices, guards and safety devices? 1926.602(c)(1)(vi) ANSI B56.1-969 Section 702I</i>			
*	Excavations			

1	<i>Are all surface encumbrances that may create a hazard removed or supported? 1926.651(a)</i>			
2	<i>Have all underground utility installation been located? 1926.651(b)(2) & (3)</i>			
3	<i>In trenches more than four feet deep, are stairways, ladders, or ramps located so that travel to them is no more than twenty-five feet? 1926.651(c)(2)</i>			
4	<i>Are employees exposed to vehicular traffic wearing warning vests made of reflectorized or high visibility material? 1926.651(d)</i>			
5	<i>Is a warning system such as barricades, hand or mechanical signals or stop logs used when mobile equipment approaches the edge of the excavation? 1926.651(f)</i>			
6	<i>Are testing and controls used to prevent exposure to hazardous atmospheres? 1926.651(g)</i>			
7	<i>Are excavations or other materials kept at least two feet from the edge of excavations? 1926.651(j)(2)</i>			
8	<i>Is excavation inspected daily and after any hazard increasing occurrence? 1926.651(K)(1)</i>			

9	<p><i>Are employees in an excavation five feet deep or more, or with the potential for cave in, protected by an adequate protective system? 1926.652(a)(1)</i></p> <p><i>See appendices A, B, C, D, E and F to this section.</i></p>			
*	<p>Concrete, Concrete Forms and Shoring</p>			
1	<p><i>Is all protruding reinforced steel, onto or into which employee could fall, guarded to eliminate the hazard of impalement? 1926.701(b)</i></p>			
2	<p><i>Are employees prohibited from riding concrete buckets? 1926.701(b)</i></p>			
3	<p><i>Are employees protected by safety belts when placing or tying reinforcing steel more than six feet above adjacent working surfaces? 1926.701 (f)(2)</i></p>			
4	<p><i>Do powered, rotating-type concrete trowels, that are manually guided, have a control switch that automatically shuts if its operators hands are removed from handles? 1926.702(c)</i></p>			
5	<p><i>Is a lock out tag out procedure in use of any machinery where inadvertent operation could cause injury? 1926.702(j)(1)</i></p>			

6	<i>Is all formwork for cast-in-place concrete designed, fabricated, erected, supported, braced, and maintained so that it will support without failure all loads that may be anticipated? 1926.703(a)(1)</i>			
7	<i>Is erected shoring equipment inspected immediately prior to, during and immediately after concrete placement? 1926.703(b)(3)</i>			
8	<i>Are forms and shores left in place until employer determines that the concrete can support its weight and superimposed loads? 1926.703(e)(1)</i>			
9	<i>Are precast concrete wall units, structural framing and tilt-up wall panels supported to prevent overturning and collapse until permanent connections are made? 1926.704(a)</i>			
10	<i>Architect? Do designs and plans include prescribed methods of erection? 1926.705 Appendix A 11.2</i>			
11	<i>Does jacking equipment have a safety factor of 2.5? 1926.705 App A 11.3.1</i>			
12	<i>Is the maximum number of manually controlled jacks on one slab limited to fourteen? 1926.705 App A 11.3.4</i>			
13	<i>Are jacking operations synchronized to insure even and uniform lifting? 1926.705 App A 11.4</i>			

14	<i>Are only those employees required for jacking and to secure slab permitted under slab during jacking? 1926.705</i>			
15	<i>Is a limited access zone established when constructing a masonry wall? 1926.706(a)</i>			
16	<i>Are all masonry walls over eight feet in height braced or supported to prevent collapse? 1926.706(b)</i>			
*	Steel Erection			
1	<i>Are safety nets used when the work area is more than twenty-five feet above the ground, water surface or other surface where ladders, scaffolds, catch platforms, temporary floors, safety lines and safety belts are impractical? 1926.750(b)(1)(ii)</i>			
2	<i>Is permanent flooring installed as the erection progresses and is there a maximum of eight floors between the erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design? 1926.750(a)(1)</i>			
3	<i>Temporary flooring -skeleton steel construction in tiered buildings: Is the derrick or erection floor solidly planked except for access openings? Is the planking or decking of proper thickness to carry work load? Is planking two inches minimum full size undressed, laid tight, and secured? 1926.750(b)(1)(i)</i>			

4	<i>Is a safety railing of one half inch wire rope or equal installed approximately forty-two inches around the periphery of all temporary planked or temporary metal decked floors of tiered buildings and other multi-floored structures during structural steel assembly? 1926.750(b)(1)(iii)</i>			
5	<i>Where long span joints or trusses forty feet or longer are used, is a center row of bolted bridging installed? 1926.751(c)(2)</i>			
6	<i>Are tag lines used for controlling loads? 1926.751(d)</i>			
7	<i>Are locking devices provided to retain sockets on impact wrenches? 926.752(b)(2)</i>			
8	<i>When riveting in the vicinity of combustible material, are precautions taken to prevent fires? 1926.752(c)(1)</i>			
9	<i>On pneumatic riveting hammers, is the safety wire on snap not less than number fourteen wire and on handle not less than number nine wire? 1926.752(c)(3)</i>			
10	<i>Are turnbuckles secured to prevent unwinding under stress? 1926.752(d)(2)</i>			
11	<i>Are plumbing-up guys and related equipment placed so that employees can reach connection points? 1926.752(d)(3)</i>			

12	<i>In plumbing-up, do the planks overlap the bearing on each end by a minimum of twelve inches? 1926.752(g)</i>			
13	<i>Is wire mesh, exterior plywood, or the equivalent placed around columns where planks do not fit tightly? 1926.752(h)</i>			
14	<i>Are all unused openings in floor planked over or guarded? 1926.752(j)</i>			
15	<i>Are employees provided with safety belts when working on float scaffolds? 1926.752(k)</i>			
*	Tunnels and Shafts			
1	<i>Are safe means of access provided and maintained to all working places? 1926.800(a)(2)</i>			
2	<i>Is a check-in and check-out system used that will provide positive identification of every employee underground? Is an accurate record and location of the employees kept on the surface? 1926.800(a)(6)</i>			
3	<i>Are emergency evacuation plans and procedures developed and made known to employees? 1926.800(b)(1)</i>			

4	<i>Are NIOSH approved self-rescuers available to equip each employee near the advancing face and on haulage equipment and other areas where employees may be trapped by smoke or gas? 1926.800(g)(2)</i>			
5	<i>Is a maximum of one day's supply of diesel fuel stored underground? 1926.800(e)(1)(iv)</i>			
6	<i>Are gasoline and liquefied petroleum gases prohibited from being taken, stored, or used underground? 1926.800(e)(1)(v)</i>			
7	<i>Are enclosed metal cages used to raise and lower persons in the shaft? 1926.800(m)(8)</i>			
8	<i>At coffer dams, are warning signals for evacuation of employees in case of emergency developed and posted? 1926.802(b)</i>			
9	<i>Compresses air: Is a competent person present at all times who is designated and representing the employer, who is familiar with all requirements of the subpart and is responsible for all compliance with this and other applicable subparts? 1926.803(a)(1)</i>			
*	Demolition			
1	<i>If employees are exposed to the hazard of falling through wall openings, are the openings protected to a height of approximately forty-two inches? 1926.850(g)</i>			

2	<p><i>If debris is dropped through holes in the floor without cutes, is the area onto which the material is dropped completely enclosed with barricades at least forty-two inches high and at least six feet back from the projected edge of the opening above? 1926.850(h)</i></p>			
3	<p><i>Are all floor openings not used as material drops equipped with a properly secured cover that will support any load which may be imposed? 1926.850(i)</i></p>			
4	<p><i>Are all stairs, passageways, ladders, and incidental equipment covered by this section periodically inspected and maintained in a clean safe condition? 1926.851(b)</i></p>			
5	<p><i>is any area where material is dropped outside the exterior walls of the structure effectively protected? 1926.852(a)</i></p>			
6	<p><i>Are workers engaged in razing the steel after floor arches are removed protected by planking as required in 1926.855(b)? 1926.858(a)</i></p>			
7	<p><i>Are continuous inspections made by a competent person as work progresses to detect hazards from weakened or deteriorated floors or walls or loosened materials? 1926.859(g)</i></p>			
*	<p>Blasting and Explosives</p>			

1	<i>Are only authorized and qualified persons permitted to handle explosives? 1926.900(a)</i>			
2	<i>Are smoking, firearms, matches, open flame lamps and other fires, flame or heat producing devices, and sparks prohibited in or near explosive magazines and while explosives are being handled, transported, or used? 1926.900(d)</i>			
3	<i>Is an inventory and use record of all explosives maintained by the employer? 1926.900(d)</i>			
4	<i>Are explosives not in use kept in a locked magazine? 1926.900(d)</i>			
5	<i>Are precautions taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lighting, adjacent power lines, dust storms, and other sources of extraneous electricity? 1926.90(k)</i>			
6	<i>Do all blasters meet the requirements specified by this standard? 1926.90 1</i>			
7	<i>Is every vehicle or conveyance used for transporting explosives marked on both sides, front, and rear with placards reading "EXPLOSIVES" in red letters not less than four inches high on white background? 1926.902(a)</i>			
8	<i>Are motor vehicles transporting explosives always attended? 1926.902(k)</i>			

9	<i>Are explosives and related materials stored in approved facilities as required by the Internal Revenue Service Regulations 26 CFR 181, Commerce In Explosives? 1926.904(a)</i>			
10	<i>Are blasting caps, electric blasting caps, detonating primers, and primed cartridges stored in separate magazines from explosives or blasting agent? 1926.904(b)</i>			
11	<i>Is tamping done only with wood rods or plastic tamping poles without exposed metal parts except for non-sparking metal connections of jointed poles? 1926.905(c)</i>			
12	<i>Is the so-called "drop fuse" method of dropping or pushing a primer or any explosive with a lighted fuse prohibited? 1926.907(k)</i>			
13	<i>Is a loud warning signal given by the blaster in charge before that blast is fired? 1926.909(b)</i>			
*	Power Transmission and Distribution			
1	<i>Are electric equipment and lines considered energized until determined to be de-energized by test or other appropriate methods or means? 1926.950(2)</i>			

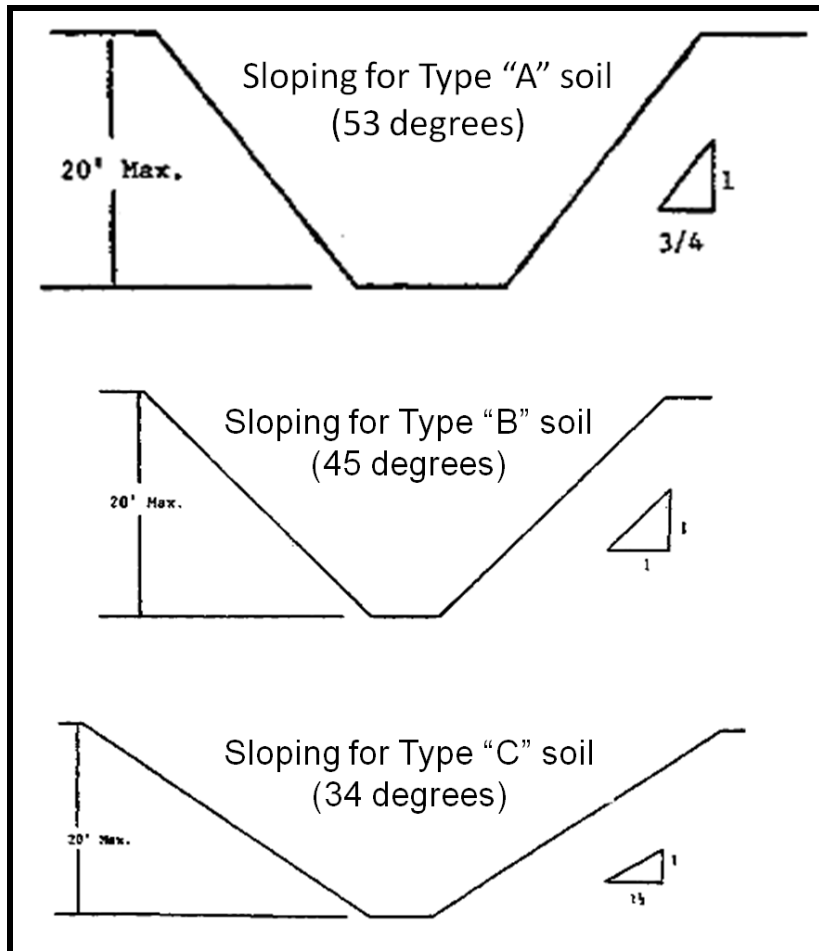
2	<i>Does the employer provide training or require that his employees are knowledgeable and proficient in procedures involving emergency situations and first aid fundamentals including resuscitation or comply with 1929.50(c)? 1926.950(e)(1)</i>			
3	<i>Does rubber protective equipment meet the requirements of ANSI J6 series? 1926.950(a)(1)(i)</i>			
4	<i>Are protective hats that meet the requirements of ANSI 284.2-1971-Industrial Protective Helmets for Electrical Workers, Class B provided and worn at job site? 1926.95 1(a)(2)</i>			
5	<i>Are aerial lift trucks working near energized lines or equipment grounded or barricaded and considered as energized equipment or the truck insulated for the work being performed? 1926.952(c)</i>			
6	<i>Are tag lines or other suitable devices used to control loads being handled by hoisting equipment where hazards to employees exist? 1926.953(d)</i>			
7	<i>When attaching grounds, is the ground end attached first and the end attached and removed using insulated tools or other suitable devices? 1926.954(e)(1)</i>			
8	<i>When working on buried cable or a cable in manholes, is metallic sheath continuity maintained by bonding across the opening or by equivalent means? 1926.95 6(c)(7)</i>			

9	<p><i>Are the requirements of paragraphs (a) and (b) of this section complied with for all lineman body belts, safety straps, and lanyards? 1926.959(a)</i></p>			
*	<p>Rollover Protective Structures (ROPS)</p>			
1	<p><i>Are all rubber tired, self-propelled scrapers, rubber-tired front end loaders, wheel type agricultural and industrial tractors, crawler tractors, crawler type loaders, and motor graders (with or without attachment) equipped with rollover protective structures? 1926.1000(a)(1)</i></p> <p><i>Note: Not required if the above equipment was manufactures before July 1969</i></p>			
2	<p><i>Do ROPS meet minimum performance criteria detailed in these standards? 1926.1001 and 1926.1002</i></p>			

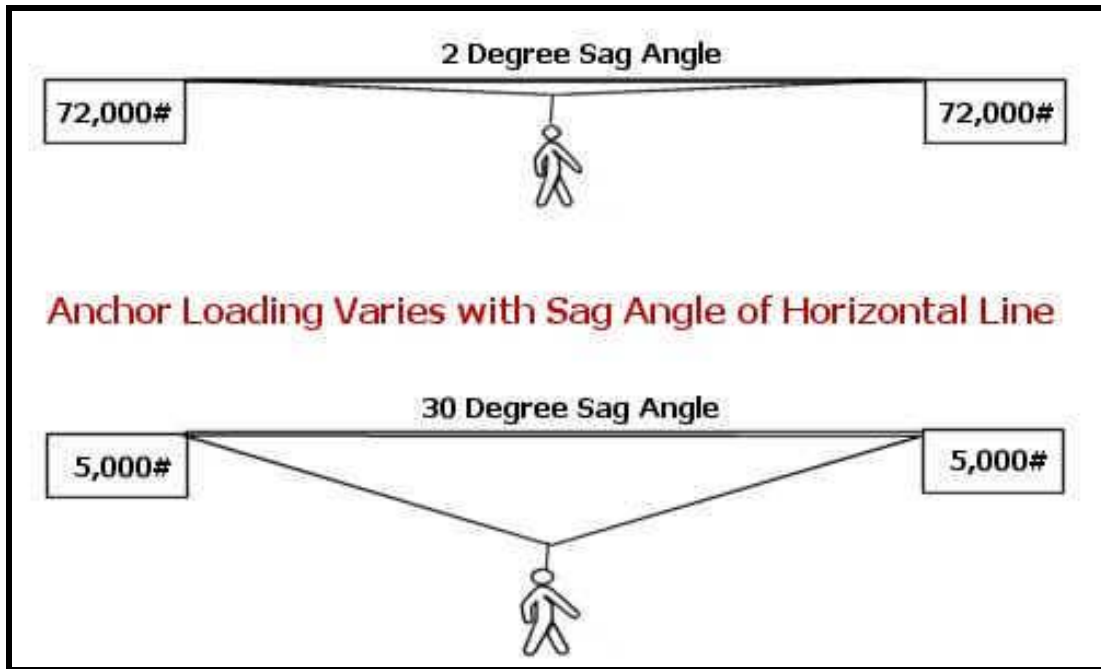
Appendix B: Paying Attention to Angles

Question: What do excavations, fall protection, rigging and cranes and derricks all have in common?

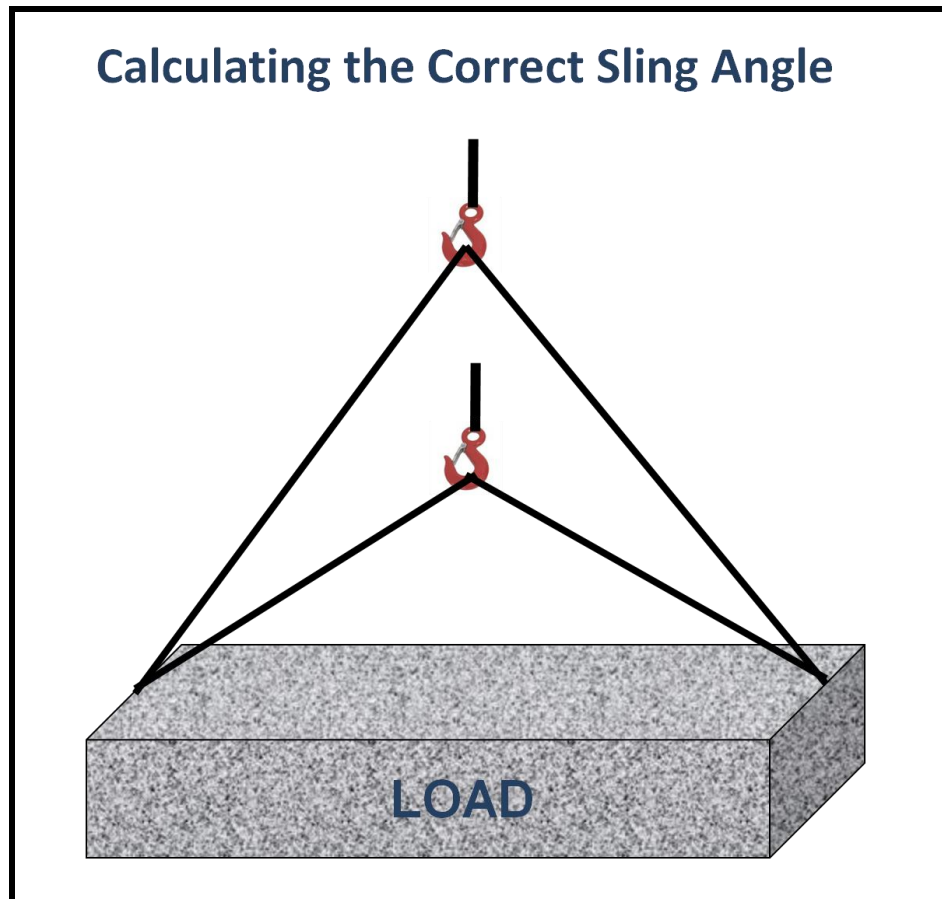
Angles in Excavations:



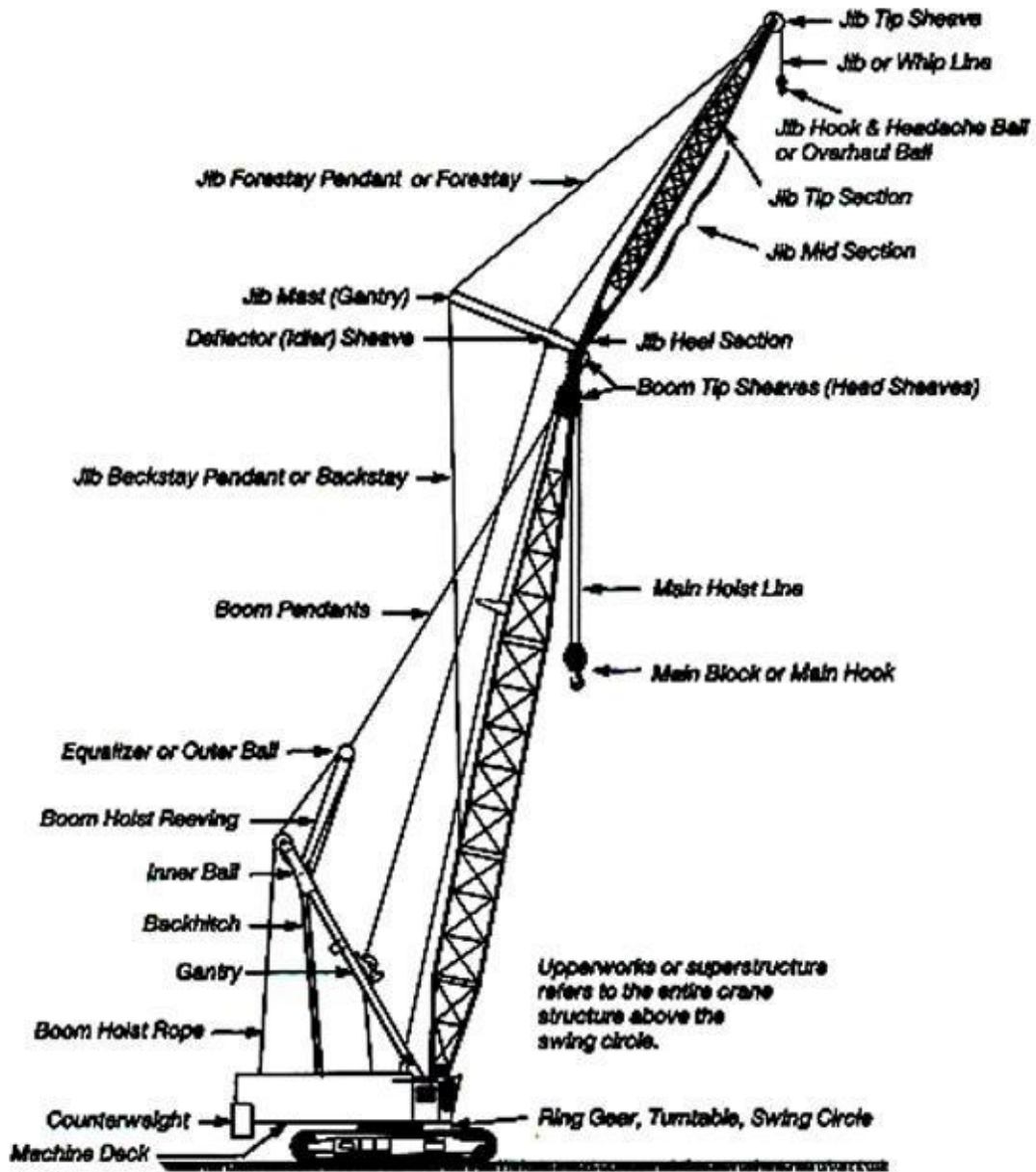
Angles in Fall Protection



Angles in Rigging:



Angles in Cranes and Derricks:



Appendix C: Questionnaire Example

Please take a few minutes to complete this survey. Your specific answers will be completely anonymous, but your views, in combination with those of others, are extremely important.

1. Overall, how satisfied are you with working here? (Please circle one number)

<u>Very</u> <u>Dissatisfied</u>					<u>Very</u> <u>Satisfied</u>
1	2	3	4	5	

2. Prevention (Please circle one number for each statement)

	Disagree Strongly	1	2	3	4
<i>I have received the proper safety training for my job</i>		1	2	3	4
<i>I understand all the safety rules and regulations related to my job</i>		1	2	3	4
<i>Employee safety is a top concern of company management</i>		1	2	3	4
<i>Unsafe conditions are fixed in a timely manner</i>		1	2	3	4

3. Reporting and Monitoring (Please circle one number for each statement)

<i>I feel confident any safety concerns I raise will be addressed</i>		1	2	3	4
<i>If I refused to work when I felt I would put myself in danger, I would not get into trouble</i>		1	2	3	4
<i>If I reported an unsafe condition to management, I would not get into trouble</i>		1	2	3	4

4. General Working Conditions (Please circle one number for each statement)

<i>The equipment I work with is in safe working order</i>		1	2	3	4
<i>There are no electrical hazards in my immediate work area</i>		1	2	3	4
<i>Other employees around me always act in a safe manner</i>		1	2	3	4

5. Company Location (Please circle one number for each statement)

I work in Department A B C D

I work on Day Shift Evening Shift Night Shift

Appendix D: Abbreviations

<i>ANSI</i>	<i>American National Standards Institute</i>
<i>CIH</i>	<i>Certified Industrial Hygienist (See http://www.abih.org for more information)</i>
<i>CSP</i>	<i>Certified Safety Professional (See http://www.bcsp.org for more information)</i>
<i>HASP</i>	<i>Health & Safety Plan</i>
<i>JHA</i>	<i>Job Hazard Analysis</i>
<i>JSA</i>	<i>Job Safety Analysis</i>
<i>MOC</i>	<i>Management of Change</i>
<i>OPHP</i>	<i>Office of Public Health Practice</i>
<i>OSHA</i>	<i>Occupational Safety & Health Act or Administration</i>
<i>PFAS</i>	<i>Personal Fall Arrest System</i>
<i>PPE</i>	<i>Personal Protective Equipment</i>
<i>PSM</i>	<i>Process Safety Management</i>
<i>ROPS</i>	<i>Roll-Over Protective Structures</i>
<i>SPH</i>	<i>School of Public Health</i>
<i>UMDNJ</i>	<i>University of Medicine & Dentistry of New Jersey</i>
<i>VPP</i>	<i>OSHA's Voluntary Protection Program</i>