There are many serious hazards in the construction industry, including falling or being struck by heavy construction equipment. The information, tools, and resources provided in this course are designed to introduce you to the basic concepts and principles of effective construction safety management. This course will help you, whether you're a worker or an employer, to identify, reduce, and eliminate construction-related hazards.
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OSHAcademy Course 800 Study Guide

Construction Safety Management

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Contact OSHAcademy to arrange for use as a training document.

This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 800.

Read each module, answer the quiz questions, and submit the quiz questions online through the course webpage. You can print the post-quiz response screen which will contain the correct answers to the questions.

The final exam will consist of questions developed from the course content and module quizzes.

We hope you enjoy the course and if you have any questions, feel free to email or call:

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Course Introduction

Construction is a high hazard industry that has a wide range of activities involving alteration, and/or repair. Examples include residential and commercial building construction, bridge erection, roadway paving, excavations, demolitions, and large-scale painting jobs.

Construction workers engage in many activities that may expose them to serious hazards, such as falling from rooftops, unguarded machinery, being struck by heavy construction equipment, electrocutions, silica dust, and asbestos.

This course is an introduction to Construction Safety and Health Management.

The information, tools, and resources provided in this course are designed to help you, whether you’re a worker or an employer, to identify, reduce, and eliminate construction-related hazards.

Like all constructions companies, you need to tailor your construction safety management system (CSMS) to your own specific work operations and work environments.

An effective CSMS has five primary elements:

- the safety culture
- involvement
- worksite analysis
- hazard prevention and control
- education and training

The standards apply to:

- All contractors who enter into contracts which are for construction, alteration, and/or repair, including painting and decorating [29 CFR 1926.10(a)].

- All subcontractors who agree to perform any part of the labor or material requirements of a contract [29 CFR 1926.13(c)].

- All suppliers who furnish any supplies or materials, if the work involved is performed on or near a construction site, or if the supplier fabricates the goods or materials specifically for the construction project, and the work can be said to be a construction activity [29 CFR 1926.13(c)].
Module 1: The Safety Culture

Before we get started, it is critical to understand that the only way your Construction Safety Management System (CSMS) will succeed is to make sure the underlying safety culture includes a real long-term serious commitment and tough-caring leadership by management.

This first module will briefly explore some of the important components that are necessary in an effective safety culture. By the way, if you are interested in developing your CSMS, be sure to take Course 833, Developing a Construction Safety Management System.

Safety Culture Definition

Believe it or not, OSHA has a pretty good definition for a safety culture. OSHA defines culture as “a combination of an organization's, attitudes, behaviors, beliefs, values, ways of doing things, and other shared characteristics of a particular group of people”.

It's important to understand that, from the employer's point of view, the company's corporate culture is something to be managed, but if you ask an employee to define culture, they will likely tell you it's just...

"...the way things are around here."

Quiz Instructions

After each section, there is a quiz question. Make sure to read the material in each section to discover the correct answer to these questions. Circle the correct answer. When you are finished go online to take the final exam. This exam is open book, so you can use this study guide.

1. From the employer's point of view, a safety culture is _____.
   a. something that is managed
   b. just the way things are
   c. hard to manage
   d. always unique and unmanageable

Commitment

The success of your company's CSMS depends on the willingness of top management to demonstrate a long term serious commitment to protect every employee from injury and illness on the job.
But how do you get top management commitment if you don't already have it? Real commitment doesn't just appear out of thin air.

Management commitment to safety will occur to the extent each manager clearly understands the positive benefits derived from their effort. Understanding the benefits will create a strong desire to do what it takes to improve the company's safety culture.

Managers will invest serious time and money into effective safety management by developing safety policies, programs, plans and procedures. They will also display leadership through effective accountability and recognition of behaviors and results.

**Bottom line:** Serious commitment requires serious time and money.

2. A successful CSMS must include a real long-term serious commitment by _____.
   - a. employees
   - b. safety staff
   - c. management
   - d. workers

**Leadership**

Every day, construction workers, supervisors and managers have many opportunities to communicate and act in ways that demonstrate safety leadership. Unfortunately, these opportunities go unanswered because they are just not seen as real leadership opportunities.

Employers and managers do not understand that the simple expression of tough-caring safety leadership – being tough about safety standards because you care about the employee - can result in enormous benefits. The ability to perceive leadership opportunities improves the company's potential to succeed.

Tough-caring leaders also assume their workers, at all levels of the organization, are good people trying to do the best they can with the skills they have.

Employees, on the other hand, do not always have the physical resources and psychosocial support needed to achieve the kind of results expected of them. This is because they are not being provided with adequate physical resources (tools, equipment, machinery, materials, etc.) or the education, training, time, and consequences.
Effective leadership can overcome these challenges by providing the resources and training needed for their workers to excel.

3. To ensure employees are able to excel, tough-caring leaders must provide _____.

   a. Bonuses  
   b. resources and training  
   c. a safety cop  
   d. punishment

Accountability

Accountability ranks right at the top with management commitment as a critical ingredient in a company's safety and health management system. Why do we behave the way we do in the workplace? Consequences. Why do we take the unsafe shortcut?

Accountability may be thought of as establishing the "obligation to fulfill a task to standard or else." When you are held accountable, your performance is measured against some specific criteria and consequences are applied appropriate to the level or quality of performance.

Example: If a builder has built a house for a man and his work is not strong, and if the house he has built falls in and kills the householder, that builder shall be slain. (King Hammurabi of Babylon, 18th Century B.C.)

“The ancient Romans had a tradition: whenever one of their engineers constructed an arch, as the capstone was hoisted into place, the engineer assumed accountability for his work in the most profound way possible: he stood under the arch.” (Michael Armstrong- Former CEO of AT&T, Hughes Electronics, and Comcast)

Management may impose all kinds of safety policies, programs, written plans, directives, rules, and training. However, if appropriate application of effective consequences within a culture of accountability does not exist, desired behaviors will not be sustained. If employees do not believe they are going to be held accountable for the decisions they make and the actions they take, you can be sure any safety effort is ultimately doomed to fail.

Six important elements should be present in an employer safety accountability system:

1. formal standards of performance
2. adequate resources and psychosocial support
3. a system of performance measurement
4. application of effective consequences
5. appropriate application of consequences
6. continuous evaluation of the accountability system

If you believe there are weaknesses in your employer's accountability system, make sure to document the behaviors and conditions you see in the workplace that may be pointing to accountability system policies, plans, processes, procedures and practices that are inadequate or missing. You can learn more about accountability systems in courses 700 and 712.

4. _____ is defined as the "obligation to fulfill a task to standard or else."
   a. Accountability
   b. Leadership
   c. Management
   d. Support

Goals and Objectives

An effective CSMS will include stated goals and objectives.

First, it's good to initially develop general goals or "wishes" for your construction safety program. Look at the following general goals that would be included in the CSMS:

- designate a qualified safety person to coordinate the program
- plan for safety using a written Job Safety Analysis
- make regular job site safety inspections and conduct health monitoring
- follow safety procedures and rules
- provide on-going safety training
- enforce safety rules and use appropriate discipline

Safety objectives are measurable and more specific in terms of results. Here are some examples of operational safety objectives:
• "Increase the number of safety suggestions submitted each month to at least 15 by July 31st."

• "Reduce the number of back injuries in the warehouse by 70% by the end of 1997."

• “Lower our workers compensation rate to .9 by the end of the calendar year.”

You can find out more on constructing safety goals and objectives in Course 833.

5. Crooked Branch Construction is updating its CSMS. The statement, "Our demolition crew will reduce the number of back injuries by 50% by the end of the year," is an example of ______.
   a. a goal
   b. a wish
   c. an objective
   d. a request

Safety and Health Policies

Safety policies help to set standards and guidelines for decision-making. They let managers, supervisors and employees make safety decisions with some degree of confidence without having to constantly check with “the boss.” Managers, supervisors and workers know they are making decisions that conform to corporate safety policies.

Below are many points that would be good to adopt in your company’s safety and health policy:

• No job or no task is more important than worker health and safety.

• If a job represents a potential safety or health threat, every effort will be made to plan a safe way to do the task.

• Every procedure must be a safe procedure. Shortcuts in safe procedures by either foremen or workers must not be tolerated.

• If a worker observes any unsafe condition, which may pose a potential threat to their health or safety, it should be expected that employees will immediately correct the situation when feasible or inform management. Management has the responsibility to take adequate precautions, comply with OSHA standards, and assure the safety and health of employees.
• If a job cannot be done safely it will not be done.

• Management should provide visible ongoing commitment, resources, and leadership to assure the implementation of the SHMS. All employees should be provided equally high quality safety and health protection.

• Leadership within a company should acknowledge the importance of creating a positive safety culture through employee involvement and effective policies and procedures.

6. Safety standards and guidelines for decision-making are set through ______.
   a. safety practices
   b. safety procedures
   c. safety programs
   d. safety policies

Safety Programs

A safety “program” may be thought of as a plan of action to accomplish a safety objective. An effective safety program is designed around the processes, procedures, and practices normally assigned to employees and integrate safety-related decisions and precautions into them. Construction contractors must initiate and maintain such programs as may be necessary to comply with CFR 1926.20. Ref: 1926.20(b) See Module 7 for more information on Programs.

Responsibilities

It’s important to understand who is responsible for safety on the construction worksite. According to OSHA, there are four employer roles or categories on a multi-employer worksite:

1. **Creating employer**: the employer who caused a hazardous condition which violates an OSHA standard

2. **Exposing employer**: This is an employer whose own employees are exposed to the hazard.

3. **Correcting employer**: This is an employer who is engaged in a common undertaking, on the same worksite as the exposing employer, and is responsible for correcting a hazard. This usually occurs where an employer is given the responsibility of installing and/or maintaining safety/health equipment or devices.
4. **Controlling employer:** This is an employer who has general supervisory authority over the worksite, including the power to correct safety and health violations itself or require others to correct them. Control can be established by contract or, in the absence of explicit contractual provisions, by the exercise of control in practice.

It's also important to remember that any one employer on a construction site may actually meet the criteria in more than one of the above categories.

7. **On a construction site, which category of employer causes a hazardous condition that violates an OSHA standard?**
   
   a. The exposing employer
   b. The creating employer
   c. The controlling employer
   d. The correcting employer

The controlling contractor assumes all obligations under the standards, whether or not he subcontracts any of the work [29 CFR 1926.16(b)].

To the extent that a subcontractor agrees to perform any part of the contract, he assumes responsibility for complying with the standards with respect to that part [29 CFR 1926.16(c)].

With respect to subcontracted work, the controlling contractor and any subcontractors are deemed to have joint responsibility [29 CFR 1926.16(d)].

Construction companies should designate a person to coordinate, implement, and administer the construction safety management system (CSMS). Responsibilities include:

1. understand potential job hazards and how to eliminate them
2. conduct or assist with Job Safety Analysis
3. assure compliance with OSHA construction safety and health standard requirements
4. conduct regular job site safety and health inspections
5. establish safety and health procedures
6. coordinate regular safety and health training
7. conduct or assist with Tailgate or Tool Box Talks
8. maintain documentation of training, inspections, injuries and illnesses, and other safety records

9. participate in accident investigations and implementation of corrective actions

10. involve employees in the implementation of the SHMS

11. create statistical reports that compare severity and frequency rates against prior records

8. Which employer category assumes all obligations under the standards, whether or not they subcontract any of the work?

   a. Exposing employer
   b. Creating employer
   c. Correcting employer
   d. Controlling employer

The Supervisor’s Safety Responsibilities

The supervisor’s attitude plays an important part in obtaining or preventing the acceptance of safe and healthful work practices, policies, and procedures. It is the supervisor’s responsibility to identify potential hazards, identify methods to control or eliminate worksite hazards, ensure workers use safe and healthful work practices, and make sure everyone receives safety and health training to do their work.

Immediate supervisors should review, investigate, and take any necessary and appropriate action on all employee reports of hazards or potential hazards.

OSHA Requirements

- provide employees with sanitary and safe working conditions [29 CFR 1926.20(a)]
- assign safety and health responsibilities [29 CFR 1926.20(b)]
- give safety and health designees authority to correct hazards [29 CFR 1926.32(f)]
- ensure employees that they may voice safety and health concerns without fear of reprisal [29 CFR 1903.11(d)]

• coordinate hazard communication with other employers on site [29 CFR 1926.59, 29 CFR 1926.65, 29 CFR 1926.652]

• post the OSHA State or Federal Poster [29 CFR 1903.2(a)]

9. What is most important in making sure employees willingly comply with safe and healthful work practices, policies, and procedures?
   a. Leadership skills
   b. Management ideas
   c. Enforcement history
   d. Supervisory experience
Module 2: Working with Contractors

Construction contractors are responsible for ensuring that all work under contract meets or exceeds the OSHA standards in addition to complying with the company’s safety and health standards. The contractor is responsible for ensuring safe work performance of employees and subcontractors.

Construction contractors provide a variety of construction services, including:

- building construction and maintenance activities
- utilities and infrastructure construction
- grounds maintenance
- training and consultation
- installation, testing, calibration, repair, and maintenance of equipment and instruments

All of these work activities must be performed safely and in accordance with the applicable safety codes, standards and regulations.

1. Construction contractors are responsible for ensuring that all work under contract meets or exceeds the OSHA standards in addition to complying with _____.
   
   a. the subcontractor’s policy
   b. the company’s safety and health standards
   c. NEBOSH standards
   d. EM-385-1-1

Involvement Begins Before the Project Starts

It's important that the employer communicates about safety in all phases of the construction project. From the time the project is first conceived until it is finished, safety must be an important part of the development and planning process.

During the Pre-Award phase, requirements are developed, solicitations are sought, contractors are selected, and contracts are awarded. Key safety related efforts during this phase include:

- consideration of a contractor’s past performance during the contractor selection process,
• establishment of appropriate safety and health requirements in contract specifications, and

• inclusion of applicable safety and health clauses.

2. **Requirements are developed, solicitations are sought, contractors are selected, and contracts are awarded during the _____.**
   
   a. post-award phase  
   b. construction phase  
   c. concept phase  
   d. pre-award phase

**The Pre-Bid Meeting**

In the pre-bid meeting, contract safety requirements should be discussed, including:

- site specific safety plan
- designated safety representative identification and requirements
- daily pre-work coordination meetings
- safety enforcement policies and procedures
- drug screening
- identification of potential hazards
- defining hazard control responsibilities

3. **Which of the following topics should be discussed in a pre-bid meeting?**
   
   - a. Designated safety representative identification and requirement  
   - b. Pre-phase work plan discussion  
   - c. Past safety performance  
   - d. Requirements for safety talks, worker, and supervisor training

**The Pre-Mobilization Meeting**

During the pre-mobilization meeting, the following should be discussed:
- contractual safety requirements
- site-specific safety plan
- pre-phase work plan discussion
- requirement for daily pre-task meetings
- requirements for safety talks, worker and supervisor training
- confirm assignment of safety responsibilities
- roles, responsibilities, accountability and authority of the owner, general contractor and all contractor personnel

4. Which of the following topics should be discussed in a pre-mobilization meeting?

   a. Designated safety representative identification and requirements
   b. Daily pre-work coordination meetings
   c. Roles, responsibilities, accountability, and authority
   d. Drug screening

Contractor Selection Criteria

It’s traditional to select construction contractors based on three criteria:

- low bidder
- lower bidder
- lowest bidder who can start now

However, in a world-class construction company that understands the importance of safety, they will not make a decision based solely on cost. They will use the following criteria:

- Total Days Away, Restricted, or Job Transferred Rate (DART) should be below national average
- Total Case Incidence Rate (TCIR) should be below the national average
- Experience Modification Rate (EMR) of less than 1.0 for past three years and improving.
• Past safety performance
• Site-specific safety plan development
• Key management and worker training and experience

5. World-class construction companies that understand the importance of safety, will not make a decision based solely on _____.
   a. costs
   b. DART
   c. TCIR
   d. EMR

DART Rate

The "DART" (Days Away, Restricted, or Job Transferred) is incident rate used in all industries. The DART Rate is the number of injury and illness cases that resulted in employee days away from work or job transfer or restrictions (cases on the OSHA 300 log with either column H or I checked) multiplied by 200,000 divided by total hours worked by all employees during the year. You can compute the DART using the following equation:

Calculating the TCIR

\[
TCIR = \frac{N \times 200,000}{EH}
\]

Where:  
\(N\) = Number of injuries and illnesses  
\(EH\) = Total hour worked by all employees during the calendar year.  
\(200,000\) = The number of hours for 100 full-time-equivalent workers (working 40 hours per week, 50 weeks per year.)
On construction sites, the total number of hours worked will include your own employees, temporary employees, contractor employees directly supervised by you, and all contractor/subcontractor employees. The 200,000 figure in the formula represents the number of hours 100 employees working 40 hours per week, 50 weeks per year would work and provides the standard base for calculating incidence rates.

For example, if an employer reported 10 work-related injuries and illnesses in 2021 that resulted in days away, restricted, or transfer, and all employees worked 1,000,000 hours that year, then the 2021 DART Rate for that employer would be \((10 \times 200,000) / 1,000,000 = 2\).

### 6. What is the DART Rate for a company that recorded 7 work-related cases and a total of 100,000 hours worked by employees during the year? DART=\((N \times 200,000) / EH)\)

- a. 3.5
- b. 14
- c. 11.2
- d. 8.25

**Total Case Incident Rate (TCIR)**

The Total Case Incident Rate, or "TCIR" is a common method used to report workplace injuries. It is different from the DART Rate only in the types of injuries measured. The DART Rate measures only DART cases, while the "TCIR" includes all of the work-related cases.

The Total Case Incident Rate (TCIR) is defined as the number of work-related cases per 100 full-time workers during a one year period. This number will be total annual injuries and illnesses (N) of your own employees plus all contractor/subcontractor employees times 200,000 divided by the total number of hours worked (EH).

Use of the TCIR to report workplace injuries allows comparison of accident and injury statistics across industries, among industry segments, and from one year to the next. You can calculate the TCIR using the following equation:
Calculating the TCIR

\[ \text{TCIR} = \frac{N \times 200,000}{EH} \]

Where:
- \( N \) = Number of injuries and illnesses
- \( EH \) = Total hour worked by all employees during the calendar year.
- 200,000 = The number of hours for 100 full-time-equivalent workers (working 40 hours per week, 50 weeks per year.)

For example, if an employer reported 10 work-related injury and illness cases in 2021, and they worked 1,000,000 hours that year, then the 2021 TCIR for that employer would be \((10 \times 200,000) / 1,000,000 = 2\).

7. What is the TCIR for a company that recorded 75 work-related cases and a total of 3,000,000 hours worked by employees during the year? TCIR=\(((N \times 200,000) / EH)\)

   a. 10
   b. 15
   c. 2.5
   d. 5

Experience Modification Rate (Mod Rate or EMR)

The Experience Modification Rate (EMR) has strong impact upon a business. It is a number used by insurance companies to gauge both past cost of injuries and future chances of risk. The lower the EMR of your business, the lower your worker compensation insurance premiums will be. An EMR of 1.0 is considered the industry average. (Source: Safety Management Group).

According to the Michigan Construction Users Council (MCUC), the following EMR chart indicates the relative effectiveness of a contractor’s CSMS.
0.30 - 0.71 = Superior – Distinguished results
0.72 - 0.81 = Effective – Impressive results – Obvious commitment
0.82 – 1.04 = Average – Within industry norm
1.05 – 1.29 = Inadequate – Conspicuous past problems
1.30 – 2.05 = Poor – Lack of safety involvement

As you can see, safety is a serious consideration when choosing contractors to work on the construction project. Using this criterion will not only result in selecting a higher level of contractor safety, it will also result in selecting a contractor that will be more professional in all aspects of the contracted work that will be performed.

8. Which Experience Modification Rate (EMR) is considered much better than an industry average?
   a. 2.50
   b. 1.50
   c. 0.50
   d. 1.00

Key Players

The contractor, the owner, general contractor, project manager, site superintendent, and safety manager, should all have:

- previous experience on similar type construction projects
- previous experience on projects of similar size
- a history of success on previous projects

All managers on the construction site should be competent in safety management. Workers should be competent in the work they are performing. Heavy equipment operators should all be able to show written documentation providing proof of competency. Also, a trained on-site healthcare provider or nurse should be present on large projects (more than $75 million).

Project Designers

Project designers that are involved in the construction phase should do the following:
• Identify the impact of changes in your design on the health and safety of those involved in the project.

• Provide sufficient information on health and safety associated with your design and planning to those who need it, so they can conduct the necessary training if needed.

• Cooperate and coordinate with the contracted parties, and, where appropriate, other designers/advisers involved in the project.

• Provide ongoing advice and information, if requested, regarding the head contractor’s health and safety plan (such as by advising of any changes to planned activities).

• Make sure other designers/advisers and contractors continue to carry out their duties and coordinate with others on the project (such as by asking for regular written activity reports or holding site meetings).

9. All managers on the construction site should be competent in _____.

   a. job hazard analysis
   b. risk supervision
   c. safety management
   d. the OSHA enforcement manual

Head Contractors

The general or head contractor on site should do the following:

• Develop and carry out a site-specific health and safety plan.

• Make sure any contractor engaged to carry out construction work is competent and has made suitable provisions for health and safety.

• Obtain and check site-specific safety plans from subcontractors.

• Make sure the coordination and cooperation of subcontractors regarding:
  
  o information and on-site activity (such as site meetings, site procedures)
  
  o appropriate communication arrangements between contractors on site for health and safety
o arrangements for discussing health and safety matters with people on site (such as setting regular toolbox/tailgate meeting times)

- incident and accident reporting

- Make sure training for health and safety is carried out.

- Make arrangements to monitor health and safety performance (such as reports, audits and inspections).

- Make arrangements to pass on information from the client or designer/adviser to other contractors and employees (such as activity reports).

- Make arrangements to control visitor access, including such things as delivery of materials.

10. Who is primarily responsible to make sure any contractor engaged to carry out construction work is competent?

  a. Subcontractor
  b. Head contractor
  c. Owner
  d. Project manager

Subcontractors

Subcontractors on site should do the following:

- Develop a site-specific safety plan for your work activity.

- Identify the hazards of your work, assess the risks arising from them, and tell the head contractor and client about how these risks will be controlled.

- Obtain evidence of the training and competence of your subcontractors and employees.

- Keep the head contractor informed of any dangerous incident or accident.

- Provide the head contractor with the information needed for health and safety management.

- Cooperate with the head contractor and other contractors on health and safety matters.
• Follow any directions of the client or head contractor so that they can meet their obligations.

• Provide information and training to your employees on site.

11. Who is responsible for developing a site-specific safety plan for activities on the worksite?

   a. Subcontractor
   b. Head contractor
   c. Owner
   d. Project manager
Module 3: Involvement in Safety

Management and Employees Must Be Involved

Employee involvement provides the means through which workers develop and express their own commitment to safety and health.

The best safety and health management systems involve employees at every level of the organization. Employees are often those closest to the hazard and have the most first-hand knowledge of workplace hazards. Clearly, the employer has ultimate responsibility for its workers; however, using employees’ knowledge and experience to help identify and resolve problems can make the system more effective.

It’s difficult to have an effective safety and health program without developing a corporate safety culture which encourages genuine employee involvement. When you mention involvement in safety, most people think only about “employee” involvement, but to do it right, management should be out front and involved.

Management needs to lead by example and that means communicating and following through with action. This module will discuss some of the components of employer and employee involvement in safety.

1. The best safety and health management systems involve employees _____.
   a. as necessary
   b. when it is in the best interest of the company
   c. when politically correct
   d. at every level of the organization

Responding to Safety and Health Issues

Management in your company should take prompt consistent action when responding to safety and health issues. Doing so will demonstrate their commitment to addressing safety and health concerns and encourage employee participation.

Management should respond to employees' reports of actual or potential hazards and any other safety concerns employees might have. There should be an effective process for employees to report such hazards.
The employee reporting a real or potential hazard should be notified by management of the outcome in a timely manner. Reporting hazards should be made **without fear of reprimand** or any safety reporting process is doomed to failure.

### 2. Reporting hazards should be _____ or any safety reporting process is doomed to failure.

- a. made without fear of reprimand
- b. only a management responsibility
- c. only an employee responsibility
- d. considered a planned activity

**Employee Participation**

The employees in your company should be given an opportunity to provide input regarding recommendations on safety and health products, procedures, and training as it pertains to daily work operations. For example, employees could be given some responsibility to test out products or conduct research to substantiate recommendations.

Employee input could be provided through the suggestion system, the reporting of hazards, or through actions the safety and health committee initiate. Employees could participate in a variety of ways such as; a trainer, inspector, or problem solver.

**Exercise Programs**

More than a third of all accepted disabling claims are sprains/strains and other musculoskeletal disorders. Although construction work will always include lifting, carrying, and pulling (among others), many contractors have made great strides in preventing these types of injuries through pre-task planning, employee involvement, medical management, and training their crews to recognize risk factors and best practices.

**Safety Inspections**

One of the best ways employees can participate in the company's safety program is to help conduct safety inspections. This gives employees a greater sense of ownership in safety and it can be a real educational experience too!

Depending on the hazardous nature of the construction on the worksite, weekly or daily inspections may be needed to effectively identify hazards and unsafe actions.
3. More than a third of all accepted disabling claims in construction is due to _____.
   a. sprains/strains and other musculoskeletal disorders
   b. slips, trips, and falls
   c. being struck by objects
   d. exposure to temperature extremes

Safety Recognition Programs

It's important to understand designing, developing and deploying safety "programs" is basically a management function requiring effective organizational skill. Many companies develop and implement formal safety recognition programs because that is what they've been told works best and that is what everyone else does.

There are many different types of safety recognition program strategies used and promoted these days. Of course, some are more effective than others, but there is certainly no one-fits-all program. To be successful, the recognition program should fit the unique culture of the organization.

For instance, you can't have a highly successful safety recognition program in an oppressively authoritarian corporate culture displaying tough-coercive leadership due to the lack of positive relationships between managers and employees.

A recognition program, within a controlling (typical) safety culture will usually think a “managed” program is necessary to be successful. The “suggestion box” is likely to be used to maintain anonymity which is a symptom of a lack of trust. It just won’t work.

On the other hand, a world-class safety culture may not have the need to develop a managed safety recognition program with formal procedures: why?

Because managers will likely perceive the process of recognition as their opportunity to demonstrate leadership through recognition so that ultimately, positive working relationships are established or reinforced. You can learn more about leadership styles and recognition systems in Course 700.
4. **What is a possible reason anonymity is required before employees will make suggestions?**

   a. There is a lack of trust in management  
   b. Employees don’t want to be recognized  
   c. Most suggestions are not appropriate  
   d. OSHA requires anonymity in reporting  

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**The Construction Safety Committee**

The purpose of a safety and health committee is to give employees the ability to participate in the implementation of the safety and health system that exists within your company.

The committee in your company should be comprised of management and employee representatives. The committee should meet at least monthly.

The committee should:

- have defined goals and objectives  
- address safety and health issues  
- record and post minutes of the meetings  
- involve employees in problem solving  
- document action taken and post on the bulletin boards for all employees to read and or comment  
- have a formal agenda

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5. **Who should be a member of the construction safety committee?**

   a. Employee representatives  
   b. Management representatives  
   c. Both employee and manager representative  
   d. Safety staff
**Suggestion Program**

The employees in your company should be encouraged to make safety and health suggestions to help improve a process, prevent an accident, or to make any improvement in the safety and health system.

The suggestion system should be implemented by a designated person, usually the safety director, who will be responsible for determining priority and the proper means of implementation. It’s important to remember that in effective safety cultures, it’s **not** necessary to have a policy that anonymity will be assured because a high level of trust exists between managers and employees.

Safety suggestions should be shared with the Safety and Health Committee for input. Suggestion forms may be placed in suggestion boxes or given directly to a designated person such as the immediate supervisor or safety committee chairperson.

6. In an effective CSMS, it is ____ to maintain anonymity when submitting safety suggestions.
   
   a. necessary  
   b. unnecessary  
   c. a good idea  
   d. required

**Employee Right to Communicate**

OSHA requires an employer make sure employees are able to voice safety and health concerns without fear of reprisal. Think about it- would a perception of reprisal for voicing a safety concern benefit the company? No way!

More specifically, no person will discharge or in any manner discriminate against any employee because the employee has:

1. filed any complaint or instituted or caused to be instituted any proceeding under or related to the OSH Act
2. testified or is about to testify in any such proceeding
3. has exercised any right afforded by the OSH Act behalf of himself or others
Prior to or during an OSHA inspection of a workplace, any employee or representative (usually a union person) may notify an OSHA Compliance Safety and Health Officer, in writing, of any violation of the Act which they have reason to believe exists in such workplace.

7. You are the safety manager of a large manufacturing company. You learn that a supervisor is planning to discharge an employee who complained to OSHA. What should you tell the supervisor?

   a. You must first talk with the employee about the matter
   b. You must first get approval from the HR department
   c. You may not discharge the employee for that reason
   d. You may discharge the employee at any time

Gaining Recognition

Your construction company is more likely to receive formal recognition within the construction industry, safety industry, and nationally if management makes a strong commitment to safety as a core value. On the other hand, if your company merely supports safety as a "priority," recognition is not as likely because the company will probably not achieve the same level of excellence in safety. Why is that? Core values do not change, priorities do.

Let’s take a closer look at an example from Opp Construction in Grand Forks, North Dakota:

Opp Construction was named the nation’s safest construction company in 2012 by the Associated General Contractors of America. Organizers of the top award say Opp Construction won the award because of its “exceptional leadership in safety.” The association’s president added this company was “dedicated to the development and implementation of premier safety and loss prevention programs.”

“Opp Construction also showed outstanding guidance in safety and occupation health management, risk control, safety training, work site hazard identification and control, and safety program innovation.”

Read Full Article
8. Construction companies are more likely to receive recognition for excellence in safety when they _____.

   a. know the right people in positions of power
   b. are fully compliant with OSHA standards
   c. make a commitment to safety as a core value
   d. support safety as a top priority
Module 4: CSMS and Worksite Analysis

Plan for Worksite Analysis

Worksite Analysis is a combination of systematic actions to provide you with the information you need to recognize and understand the hazards and potential hazards of your workplace.

When planning for a construction worksite analysis, be sure to conduct comprehensive worksite surveys to establish safety and health hazard inventories and update them periodically as changes occur. Analyze planned and new facilities, processes, materials, and equipment; and perform routine hazard analysis of jobs, processes and/or varied phases of work, as needed.

1. a comprehensive baseline survey
2. change analysis
3. job hazard analyses (JHAs)
4. periodic and daily safety inspections

Other important activities to perform when conducting worksite analysis include:

- Employee reports of hazards, accidents, and near-misses.
- Accident/incident investigations.
- Injury and illness trend analysis

1. When planning for a construction worksite analysis, why is it important to conduct a comprehensive worksite survey?

   a. To establish baseline statistics
   b. To assess previous analyses
   c. To evaluate job hazard analyses (JHAs)
   d. To establish safety and health hazard inventories
The Comprehensive Baseline Survey

A comprehensive baseline survey should include a review of previous accidents, injuries, and illnesses; complaints; previous studies; etc. Comprehensive surveys should be performed depending on the business size and nature of the hazards at least every three years by private consultants, an insurance company, and/or state-funded programs.

The baseline survey should include a review of the following:

1. copies of written inspections and surveys by the fire department, and in-house as required by safety and health standards (e.g., overhead crane inspections, powered industrial truck daily inspection, etc.)
2. employee report of hazards or potential hazards
3. accident and incident investigations with corrective actions and follow-up
4. injury and illness trend analysis
5. personal protective equipment assessment
6. ergonomic analysis
7. specific identification of confined spaces
8. identification of energy sources for specific machines

As part of the worksite analysis process, the employer/general contractor should also require subcontractors to perform a baseline analysis as necessary in accordance with OSHA and company requirements. The subcontractors should share pertinent information with the general contractor, and/or other subcontractors.

2. Comprehensive surveys should be performed, depending on the business size and nature of the hazards, at least every ______.
   a. three years
   b. five years
   c. time OSHA inspects
   d. three months
Change Analysis - Management of Change (MOC)

As you know, change is continuous on a construction worksite. Change analysis, also called management of change (MOC) is a best practice used to ensure that safety, health and environmental risks are controlled when a company makes changes to the worksite, documentation, personnel, or operations. It should be conducted by competent persons, to make sure it does not introduce new hazards or unsafe procedures in the work environment.

A designated person should analyze how changes on the worksite can affect equipment, processes, and materials for hazards and potential hazards. Findings should be documented and plans developed to minimize or design out the new hazards.

Changes in the following categories need to be reviewed:

1. worksite layout
2. materials
3. process technology
4. equipment

The following items should be included in the management of change procedures:

- the technical basis for the change;
- impact of the change on safety, health, and local environments;
- necessary time period to implement the change;
- management approval procedures for the change;
- changes should be documented and dated; and
- employees and contractors should be trained if their job tasks will be affected by a change. They should be trained prior to startup of the process or affected part of the operation.
3. **Employees and contractors should be trained on worksite changes _____**.
   
a. prior to startup of the changes  
b. at the pre-bid meeting  
c. if procedures have not been performed recently  
d. if OSHA is expected to visit the worksite

To more specifically analyze how changes worksite layout, materials, processes and equipment, affect the work being conducted, include the following examples in your analysis:

1. **worksite layout**
   
   o emergency routes - worksite layout and process design  
   o site entrance and traffic routes/surfaces- worksite layout  
   o danger areas  
   o working slopes for excavators, dump trucks etc.  
   o storage and personnel areas  
   o loading and unloading areas  
   o barriers and fences

2. **contractor/subcontractors**
   
   o site security  
   o protection of pedestrians  
   o safety signage

3. **tools, equipment, and materials**
   
   o hazardous materials/dangerous goods

4. **process design and technology**
4. Which change analysis category do danger areas, emergency routes, and loading and unloading areas belong?

   a. Worksite layout
   b. Tools, equipment, and materials
   c. Process design and technology
   d. Contractors/Subcontractors

Job Hazard Analysis (JHA)

A Job Hazard Analysis is a good technique that focuses on job tasks as a way to identify hazards and unsafe practices before they cause injuries or illnesses. It focuses on the relationship among the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

A JHA should be conducted for all hazardous jobs/procedures to determine potential hazards and identify methods to reduce exposure to those hazards at construction worksites. Here are the steps in a basic JHA:

1. List the steps in the job or procedure.
2. Describe the safety and health hazards in each step.
3. Develop preventive measures.
4. Write a safe job procedure.

Click here to see a sample JHA.

You can also learn more about conducting a JHA in course 706.
5. Which analysis process is used to identify hazards and unsafe practices before they cause injuries or illnesses?

   a. Root Cause Analysis  
   b. Phase Analysis  
   c. Job Hazard Analysis (JHA)  
   d. Change Analysis

**Safety Inspections and Reports**

Safety inspections are the best understood and most frequently used tool to assess the workplace for hazards. The term "inspection" means a general walk-around examination of every part of the worksite to locate conditions that do not comply with safety standards. Safety inspection reports of potential hazards can be an effective tool to trigger a closer look at how work is being performed.

There are many positive reasons for conducting safety inspections, including:

- helping ensure compliance with OSHA and meet other legal responsibility
- involving both management and employees
- identifying areas of high risk and controlling hazards
- developing positive attitudes - demonstrating leadership
- suggesting better methods of doing procedures safely

**Slow Down and Look Around**

Be careful you don't suffer from "tunnel vision" when conducting the safety inspection. When you have tunnel vision, you focus on identifying hazards, but miss unsafe work practices occurring around you. Since most accidents are primarily the result of unsafe behaviors, it makes sense to take the time needed to observe work being done as you conduct the inspection. You can read more about conducting effective safety inspections in [Course 704 Hazard Analysis and Control](#).
6. What is a weakness in the typical walk-around safety inspection?

   a. Lack of efficient discovery
   b. Asking too many questions
   c. Tunnel vision
   d. Too much accountability

OSHA Requirements

The following is a list of topics relevant to worksite analysis by identifying worksite hazards.

- evaluate operations, procedures, facilities, and equipment to identify hazards [29 CFR 1926.20(a), 29 CFR 1926.21(b)]
- conduct accident investigations [29 CFR 1904.4]
- determine if engineering or administrative controls or personnel protective equipment are to be used [29 CFR 1926.103, 29 CFR 1926.951]

Recognized and Foreseeable Hazards

When conducting the worksite analysis, it's important to look for hazards that are generally recognized within the construction industry. Recognized hazards are generally foreseeable on the worksite OSHA will require that these hazards are properly eliminated or controlled.

"Recognized: Hazards

As described in OSHA's Field Operations Manual, recognition of a hazard is established on the basis of industry recognition, employer recognition, or "common sense" recognition criteria.

- **Industry Recognition**: A hazard is recognized if the employer's industry recognizes it. Recognition by an industry, other than the industry to which the employer belongs, is generally insufficient to prove industry recognition. Although evidence of recognition by the employer's specific branch within an industry is preferred, evidence that the employer's industry recognizes the hazard may be sufficient.
• **Employer Recognition:** A recognized hazard can be established by evidence of actual employer knowledge. Evidence of such recognition may consist of written or oral statements made by the employer or other management or supervisory personnel.

• **Common Sense Recognition:** If industry or employer recognition of the hazard cannot be established, recognition can still be established if it is concluded that any reasonable person would have recognized the hazard. This argument is used by OSHA only in flagrant cases. Note: Throughout our courses we argue that "common sense" is a dangerous concept in safety. Employers should not assume that accidents in the worksite are the result of a lack of common sense.

7. Bob has informed his employer of a serious hazard. OSHA would likely consider the hazard as "recognized" based on _____.

   a. employer recognition
   b. employee recognition
   c. common sense recognition
   d. industry recognition
Module 5: Hazard Prevention and Control

Controlling Exposure - The Hierarchy of Controls

Controlling exposures to worksite hazards is the fundamental method of protecting workers on a construction site. Traditionally, the widely accepted hierarchy of controls has been used as a means of determining how to implement feasible and effective controls.

ANSI/AIHA Z10-2005 discusses the five control measures below:

1. elimination
2. substitution
3. engineering controls
4. administrative controls
5. personal protective equipment

The idea behind this hierarchy is that the control methods at the top of the list are potentially more effective and protective than those at the bottom. Following the hierarchy normally leads to the implementation of inherently safer systems. The risk of illness or injury should be substantially reduced. Let’s take a closer look at each of the control measures.

1. Which of the following is the fundamental method of protecting workers on a construction site?
   a. A cost-benefit analysis
   b. Controlling exposures to hazards
   c. OSHA inspections
   d. Employee interviews

Elimination

The next best control measure is to substitute something else in its place that would be non-hazardous or less hazardous to workers. For example, substituting a toxic chemical with a non-toxic (or less toxic) one.

If the construction project is still at the design or development stage, elimination and substitution of hazards may be inexpensive and simple to implement. For an existing process,
major changes in equipment and procedures may be required to eliminate or substitute for a hazard.

**Substitution**

The next best control measure is to substitute something else in its place that would be non-hazardous or less hazardous to workers. For example, a non-toxic (or less toxic) chemical could be substituted for a hazardous one.

2. Which hazard control strategy is the most effective at reducing hazards, yet also tends to be the most difficult to implement in an existing process?

   a. Elimination
   b. Engineering controls
   c. Administrative controls
   d. Personal protective equipment

**Engineering Controls**

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The initial cost of engineering controls can be higher than the cost of administrative controls or personal protective equipment, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process. Engineering controls should be designed to make it difficult for employees to defeat the controls.

Engineering controls include methods such as using noise dampening technology to reduce noise levels; enclosing a chemical process in a Plexiglas "glove box"; using mechanical lifting devices; or using local exhaust ventilation that captures and carries away the contaminants before they can get in the breathing zone of workers.
3. Engineering controls should be designed to make it _____ for employees to defeat the controls.
   a. simple
   b. easy
   c. difficult
   d. complicated

Administrative Controls

If engineering controls cannot be implemented, or cannot be implemented right away, administrative controls should be considered. These methods for protecting workers have also proven to be less effective than other measures, requiring significant effort by the affected workers. Administrative controls work only so long as employee behavior conforms to standards.

Administrative controls involve changes in workplace policies and procedures. They can include such things as:

- warning alarms
- labeling systems
- reducing the time workers are exposed to a hazard
- training

For example, workers could be rotated in and out of a hot area rather than having to spend eight hours per day in the heat. Back-up alarms on trucks that are backing up are an example of effective warning systems. However, warning signs used instead of correcting a hazard that can and should be corrected are not acceptable forms of hazard control.

4. Why are administrative controls less effective in creating a safe workplace than elimination, substitution, and engineering controls?
   a. They are not addressed well in OSHA regulations
   b. They are more costly and hard to implement
   c. They are hard to understand and implement
   d. They work only when employees comply with the controls
**Personal Protective Equipment (PPE)**

PPE is the last resort and least effective means of controlling exposure to hazards because of the high potential for damage to render PPE ineffective. Again, the success of this control measure depends not only on the quality of the PPE, but also the quality of human behavior.

PPE should be used only while other more effective controls are being developed or installed, or if there are no other more effective ways to control the hazard.

This is because:

- The hazard is not eliminated or changed.
- If the equipment is inadequate or fails, the worker is not protected.
- No personal protective equipment is fool proof (for example, respirators leak).
- Personal protective equipment is often uncomfortable and can place an additional physical burden on a worker.
- Personal protective equipment can actually create hazards. For example, the use of respirators for long periods of time can put a strain on the heart and lungs.
- While there are some jobs, such as removing asbestos, where wearing adequate personal protective equipment is absolutely essential, there are many jobs where employers hand out personal protective equipment when in fact, they should be using more effective hazard control methods.

5. As a hazard control measure, _____ is the last resort and least effective means of controlling exposure to hazards because of the high potential for damage to render it ineffective.

   a. use of barriers
   b. personal protective equipment
   c. engineering controls
   d. substitution
Other Methods to Prevent and Control Hazards

Let’s take a look at some of the programs and processes that will help the company prevent and control typical hazards on a construction worksite.

Worksite Inspections

As mentioned earlier, your company should conduct daily worksite inspections. Hazards should be documented, reviewed, and corrections should be made in a timely manner. More detailed, written inspections should be conducted by a designated person on a weekly or monthly basis.

Your company’s Safety Coordinator or other designated safety person should tour each job site and observe potential safety/health hazards and unsafe behaviors, and develop a plan for implementing corrective actions and system improvements such as:

1. removing the hazard
2. guarding against the hazard as required by OSHA
3. providing personal protective equipment and enforcing its use
4. training workers in safe work practices
5. coordinating protection of workers through other contractors

A record of all safety inspections and correctional steps should be kept.

6. A designated safety person should tour job sites, observe potential safety/health hazards and unsafe behaviors, and develop a plan for _____.
   a. estimating direct and indirect accident costs
   b. disciplining employee when caught working unsafe
   c. observing and reporting non-compliance to supervisors
   d. implementing corrective actions and system improvements

Analyze Past Accident Investigations

All accidents in your workplace resulting in injury or property damage should be investigated.
To get the best picture of past safety performance on worksites, gather and analyze data on all previous injury accidents, accident resulting in property damage, and near-miss incidents.

By using the information gained through analysis of incident/accident investigations occurring on previous projects, a similar, or perhaps more disastrous, accident may be prevented.

**Control of Hazardous Energy**

The control of hazardous energy through lockout/tagout procedures assures that you and other employees are protected from unintended machine motion or unintended release of energy which could cause injury. This includes electricity, water, steam, hydraulic, gravity, and many other sources of stored energy.

All sources of energy must be shut off, de-energized at the source, and locked-out prior to you or any other employee beginning work around or on the potential hazard.

7. **Which of the following safety procedures assures that employees are protected from unintended machine motion or unintended release of energy which could cause injury?**

   a. Personal Protective Equipment  
   b. Machine Guarding  
   c. Job Hazard Analysis (JHA)  
   d. Lockout/Tagout

**Confined Space Entry**

Analyze the project for the potential for confined spaces. Workers should not enter confined spaces without proper training and management authorization.

A confined space is defined as the following:

1. space that is NOT DESIGNED FOR CONTINUOUS employee OCCUPANCY  
2. large enough and so configured that a person can bodily enter into and perform assigned work  
3. has LIMITED or RESTRICTED means for ENTRY or EXIT

Confined spaces that may have a HAZARDOUS ATMOSPHERE require special precautions. Hazardous atmospheres are those that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue caused by:
- **flammable atmospheres** - gases or oxygen level above 23.5%
- **airborne combustible dust or fibers** - sugar, plastic, wood, etc.
- **oxygen-deficient atmosphere** - concentration below 19.5
- **toxic gases, vapors, or fumes** - carbon monoxide, hydrogen sulfide etc.
- **high concentration of inert gases** - nitrogen, helium, radon, etc.

8. Oxygen levels in confined spaces are considered deficient when the concentration is below _____.
   
   a. 21%
   b. 19.5%
   c. 16.5%
   d. 15%

**Analyze Fall Hazards**

Each year falls consistently account for the greatest number of fatalities in the construction industry. A number of factors are often involved in falls, including:

- unstable working surfaces
- misuse or failure to use fall protection equipment
- human error

Studies have shown that using guardrails, fall arrest systems, safety nets, covers and restraint systems can prevent many deaths and injuries from falls.

Analyze the project to determine if you will be using:

- aerial lifts or elevated platforms to provide safer elevated working surfaces
- guardrail systems with toeboards and warning lines or install control line systems to protect workers near the edges of floors, roofs, and floor holes
- safety net systems or personal fall arrest systems (body harnesses)
9. Which of the following consistently accounts for the greatest number of fatalities in the construction industry?

   a. Poisoning  
   b. Heat stress  
   c. Crushed-by accidents  
   d. Falls

Analyze for Excavation Hazards

The primary hazard of trenching and excavation is employee injury from collapse. Soil analysis is important in order to determine appropriate sloping, benching, and shoring.

Additional hazards include:

   • working with heavy machinery  
   • manual handling of materials  
   • working in proximity to traffic  
   • electrical hazards from overhead and underground powerlines  
   • hazardous atmospheres  
   • underground utilities, such as natural gas.

For more information on excavation safety take OSHA Academy Course 802, Trench and Excavation Safety.
10. What is the primary hazard to employees working in trenches and excavations?
   a. Collapse
   b. Flooding
   c. Temperature extremes
   d. Falls

Analyze for Hazardous Chemicals

Analyze the project for the potential for hazardous chemicals requiring a Hazard Communications Program (HCP) to ensure all workers know about the chemicals that they work with and work around.

The HCP involves the following elements:

1. written hazard communication program
2. training on the chemicals your company uses
3. labeling: using properly labeled containers
4. Safety Data Sheets (SDS): SDS must be readily available onsite - workers must know where to find SDS and be able to read and properly utilize an SDS.
5. Posting signs to inform employees of the location of SDS and when new chemicals are brought on the job site.
6. Informing other contractors: if using chemicals around other contractors, it is your responsibility to inform the other contractors of the hazards involved. Every effort must be made to keep other contractors safe from the chemicals in use. Typically, the general contractor onsite will need to coordinate all chemical use of all contractors to maintain a safe workplace.

Note: Your written Hazard Communication program should outline the specific details of the elements listed above.
11. To keep other contractors safe from the chemicals in use, the general contractor onsite should _____.

   a. give each contractor a list of chemicals used on site
   b. conduct standard threshold shift testing
   c. coordinate specific SDS data with contractors
   d. keep SDSs in the contractor's office

Analyse Electrical Hazards

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 See 29 CFR 1926.416(a)(1):

- Contact with Power Lines - When using heavy equipment, stay at least 10 feet away from overhead powerlines
- Lack of Ground-fault Protection - Use GFCIs
- Path to Ground Missing or Discontinuous - Ground power supplies, circuits, and equipment
- Equipment Not Used in Manner Prescribed - Use according to manufacturer's instructions
- Improper Use of Extension and Flexible Cords - Use only factory-assembled, 3-wire extension cords

Deaths Due to Improper Use of Extension and Flexible Cords

A worker received a fatal shock when he was cutting drywall with a metal casing router. The router's 3-wire power cord was spliced to a 2-wire cord and plug set which was not rated for hard service. A fault occurred, and with no grounding and no GFCI protection, the worker was electrocuted.
12. How far should workers keep themselves or equipment away from power lines?

   a. More than 5 meters
   b. At least 10 feet
   c. 15-20 feet
   d. Not less than 20 feet
Module 6: Education and Training

Introduction

This module will introduce you to general OSHA requirements for education and training in the construction industry. We will not only look at the minimum requirements, but all address best practices in effective safety and health education programs.

The employer should conduct construction safety training courses and educational programs in compliance with OSHA standard 1926.21, Safety training and education, to help broaden worker and manager knowledge/skills to recognize, avoid, and prevent safety and health hazards on jobsites. Click on the button below to see the safety and training standard.

To learn more about safety education and training, be sure to complete OSHAcademy courses 703, 721, and 723.

1. The primary reason employers should conduct construction safety training is to make sure employees _____ on jobsites.
   a. comply with OSHA rules and regulations
   b. report unsafe behaviors to supervisors
   c. recognize, avoid, and prevent hazards
   d. correct all observed hazards

Informing Employees of Hazards

It’s very important for the employer to establish safety education and training for employees so that they know how to avoid and prevent of unsafe conditions at the construction worksite.

Employers should also educate all employees on how to control or eliminate any hazards to which they are exposed.

Employees required to handle or use poisons, caustics, and other harmful substances should be instructed on how to safely handle and use them, and first aid procedures if exposure occurs. Employees should also be made aware of the potential hazards, personal hygiene, and personal protective measures required.

Employees required to enter into confined or enclosed spaces should instructed as to the nature of the hazards involved, the necessary precautions to take, and how to use protective and emergency equipment.
Employers must inform employees about the hazards of all classified chemicals produced or imported.

Employees who perform work while on a scaffold must be trained by a qualified person to:

1. recognize the hazards associated with the type of scaffold being used
2. understand the procedures to control or minimize those hazards

The employer must inform workers on the physical and health hazards associated with toxic and hazardous substances to which employees may be exposed on the worksite.

Employers must provide workers and their designated representatives a right of access to relevant exposure and medical records. Employers must provide OSHA representatives access to these records in order to fulfill responsibilities under the OSH Act.

2. Employees who perform work while on a scaffold must be trained by a _____.
   a. representative of OSHA
   b. another worker
   c. qualified person
   d. safety staff

Implementing Education and Training

The company should provide safety information and training to assure the requirements of OSHA standards are met and it should continuously evaluate employee training needs to keep workers safe and healthy on the job.

New Employee Orientation

New employees should receive training on your company’s safety and health management system, safe work practices and expectations, and specific safety and health training for the tasks that they will perform.

After inspecting a job site, a designated person should identify and evaluate all potential hazards that may cause serious injuries and increase the probability of an accident. Actions will be taken to minimize the hazards and protect the workers.
The Safety Coordinator or other designated site safety person will appraise the skill and knowledge level of exposed workers and provide any needed training. Appropriate training should be provided where it is needed.

The following things must also be done when training new employees:

- Hazards must be identified.
- Necessary precautions will be explained.
- Training length and level of detail should be determined by the severity of the hazards and the requirements of OSHA.
- Records should be maintained for all training sessions with descriptions of topics covered and names of workers trained.

**Toolbox Talks**

Toolbox talks should be conducted regularly (weekly or daily). Topics covered should include:

- the safe work practices necessary for that day’s work
- any safety concerns workers may have
- brief refresher training on relevant safety topics (topics to be provided by the Safety Coordinator)

3. Training length and level of detail should be determined by the severity of the hazards and the _____.
   
   a. requirements of OSHA  
   b. the safety committee  
   c. size of the project  
   d. safety manager

**A Simple Seven Step On-The-Job Training (OJT) Process**

Safety training should be simple training. It should be done where the task is performed, and hopefully the supervisor is conducting the training. Here is a seven-step OJT training process
that helps to ensure new employees don't get hurt while being trained. We know it may appear to be unnecessary, but new construction workers get hurt regularly while being initially taught how to do a job.

**Step 1- Introduction:** State and discuss the learning objectives and answer any questions the employee may have. Discuss the acceptable standards of knowledge and performance. Tell the trainee what you're going to train. Emphasize the importance of the procedure to the success of the production/service goals.

**Step 2- Trainer shows and tells:** In this step the trainee becomes familiar with each work practice and why it is important. Review the initial conditions for the procedure. Demonstrate the process, carefully explaining each step as you go. Answer questions and continue to demonstrate and explain until the employee understands what to do, when and why to do it, and how to do it.

**Step 3- Learner tells - Trainer shows:** This step is necessary when exposure to hazards inherent in the procedure could cause serious harm. It protects the trainee because the trainer performs the procedure. The trainee explains the procedure to the trainer, while the trainer does it.

4. In Step 3 of the 7-Step OJT process, how does the trainer make sure the trainee does not get hurt while practicing during a training session?
   a. The trainee explains the task and the trainer does it
   b. The trainee explains the task and then does it
   c. The trainer explains the task and then does it
   d. The trainer explains the task and the trainee does it

**Step 4: Learner shows and tells:** The trainer has the trainee do it. The trainee explains the step, gets permission to perform the step and then carries out the step. This step is very important when training tasks that might result in serious physical injury or death if not performed correctly.

**Step 5- Conclusion: Recognize accomplishment:** "Good job!” Re-emphasize the importance of the procedure and how it fits into the overall process. Tie the training again to accountability by discussing the natural and system consequences of performance.

**Step 6- Validate:** After the conclusion of the OJT session, observe the employee perform in the actual workplace and question the employee to validate that the training has been successful and that the employee has adequate knowledge, skills, and a proper attitude about the work.
Step 7 - Document: The well-known OSHA adage, "if it isn't in writing, it didn't get done," is true for any kind of safety training. For OJT training, documentation should be more than an attendance sheet.

To document the training, the trainee certifies:

1. training was accomplished
2. questions were answered
3. opportunities provided to do procedure
4. accountabilities understood
5. intent to comply

The instructor certifies the trainee has:

- demonstrated adequate knowledge
- developed the skills to complete the procedures

We have included a sample training certification in the final two sections of this module, and you can learn more about the OJT process in OSHAcademy Course 723.

Training Requirements in OSHA Standards and Training Guidelines. OSHA’s Training Requirements Guide. Here's a great booklet that covers many OSHA training requirements and also gives you some ideas on training strategies.

5. In Step 4 of the 7-Step OJT process, what must the trainee do prior to performing a hazardous task to make sure an injury does not occur?

   a. Sign a waiver in case an injury occurs
   b. Ask the trainer to explain the task prior to doing it
   c. Get permission to do the task before performing it
   d. Repeat the task before asking the trainer if it is correct

Post-Training Observations and Evaluations
After OJT has been completed, it's important that supervisors or designated competent persons observe and evaluate employees performing tasks that were trained. Observations may be conducted informally, or they may be performed as part of a formal observation program.

Supervisor/Competent Person post-training observations help ensure:

- employees have the knowledge, skills, and abilities (KSAs) to perform the work as required
- employees are actually performing the task safely

Specific observations or audits are especially critical when employees have completed training in lockout/tagout, confined space, fall protection and other hazardous programs where the risk of exposure to hazards is high. Results should be documented, and follow-up training should be provided as needed. This process helps assure safety and health training is effective.

After the evaluations have been completed, supervisors or competent persons should formally certify in writing that they have observed employees performing tasks and consider them to have adequate KSAs to work safely.

6. What is the purpose of the post-training observations/evaluations conducted after employees complete training in hazardous tasks?

   a. To be able to let workers complete tasks without supervision
   b. To be able to show documentation to OSHA if they inspect
   c. To make sure that any non-compliance will result in disciplinary procedures
   d. To make sure they have adequate KSAs and can work safely

Documentation

When safety training requires employees to demonstrate knowledge, skills, and abilities (KSAs) in performing hazardous procedures or using safe practices, an attendance roster may not be legally sufficient to document the training. It should include formal written certification that KSAs have been achieved.

Adequate certification of training should be signed by the employee, the trainer, and the supervisor.

Click on the link to see a Training Certification Sample.
Minimum Items

At a minimum, certification should include the following information:

- trainee's name;
- course title;
- date, location and hours of instruction;
- statement that the trainee has successfully completed the course;
- name and address of training provider;
- date periodic refresher training is due (if required) or expiration date;
- a unique trainee identification number;
- the level of training or type of certificate awarded;
- any other information required by regulation; and
- number of credits (CECs, CEUs, etc), if issued. Make sure employees have met all requirements for credits.

To make sure the training is adequate, make sure you include:

- trainee statement that he/she was provided opportunity to ask questions and perform procedures and practices;
- trainer statement that trainees, through testing, demonstrated adequate knowledge;
- trainer statement that measurement (testing) of knowledge and skills was conducted and that trainees met or exceeded required levels of performance;
- trainee statement of intent to comply with the procedures, practices, policies, and rules;
- trainee statement of understanding that failure to comply may result in discipline;
- a list or description of the specific subject(s) being trained;
- a list or description of the specific procedures practiced;
7. Adequate certification of training should be signed by the _____.

   a. trainer, supervisor, and the employer
   b. employee, trainer, and the supervisor
   c. safety manager, trainer, and the employee
   d. employee and the trainer