



# Developing a Construction Safety Management System

OSHA's construction standards require construction employers to have accident prevention programs that provide for frequent and regular inspection of the jobsites, materials, and equipment by competent persons designated by the employers. This course introduces the student to the three-phase design-develop-deploy strategy for developing an effective safety management system within the construction industry.

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# OSHAcademy Course 833 Study Guide

## Developing a Construction Safety Management System

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This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 833.

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

Despite its high fatality rate, construction can be a safe occupation when workers are aware of the hazards, and use an effective Construction Safety Management System (CSMS).

OSHA's construction standards require construction employers to have accident prevention programs that provide for frequent and regular inspection of the jobsites, materials, and equipment by competent persons designated by the employers.

An effective construction safety management system makes all the difference in preventing injuries and illnesses in the worksite. The result is lower accident-related costs. Other benefits include reduced absenteeism, lower turnover, higher productivity, and improved employee morale. And it's the right thing to do.

### *Safety does pay*

A good way to begin the creation of an effective construction safety management system (CSMS) is to determine which standards and rules apply to the work being performed by your company. Construction employers should be in compliance with OSHA's construction standards within [CFR 29 1926](#), Construction.

### The “3D” Process of the CSMS

Using the 3D model, the CSMS is implemented in three phases:

1. The **Design** Phase – The employer designs vision and mission statements, goals, objectives, roles, and responsibilities.
2. The **Development** Phase – The employer develops policies, plans, programs, processes, procedures and practices.
3. The **Deployment** Phase – The employer deploys the CSMS to everyone through instruction, training, feedback, CSMS analysis and evaluation, and continuous Improvement.

We'll discuss each of the nine phases and the components of each phase throughout the course.

Hopefully, management in your company will be convinced that the 3D model will work to create a world-class CSMS and culture that is both efficient and effective in preventing and

controlling hazards. Let's continue by discussing what you'll need to do to create that world-class CSMS using the 3D model.

### **The OSHA Challenge Program – Construction Track**

OSHA Challenge provides interested employers and workers the opportunity to gain assistance in improving their safety and health management systems. Challenge Administrators experienced in safety and health guide Challenge Participants through a three-stage process to implement an effective system to prevent fatalities, injuries, and illnesses. OSHA Challenge is available to general industry and construction employers in the private and public sectors under OSHA's federal jurisdiction.

As you work through this course, look for the logo to the right for specific information regarding the "OSHA Challenge" program.



## Module 1: Culture, Leadership, Commitment, Involvement

No matter how well you have designed, developed, and deployed the CSMS; it is destined to fail unless the underlying safety culture expresses real management commitment, tough-caring leadership, and genuine employee involvement. This module will briefly explore some of the effective strategies for improving the safety culture through leadership, commitment and employee involvement in worksite safety.

### Culture

There is no single definition of “a safety culture”. The term first arose after the investigation of the Chernobyl nuclear disaster in 1986 which led to safety culture being defined as “an organizational atmosphere where safety and health is understood to be, and is accepted as, the number one priority”. However, as we’ll learn, safety should not be considered a “priority,” but rather a “value.” So, we still need to ask: “What is 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."

A strong safety and health culture is the result of:

- ) Positive workplace attitudes – from the president to the newest hire.
- ) Involvement and buy-in of all members of the workforce.
- ) Mutual, meaningful, and measurable safety and health improvement goals.
- ) Policies and procedures that serve as reference tools, rather than obscure rules.
- ) Personnel training at all levels within the organization.
- ) Responsibility and accountability throughout the organization.

From the employer’s point of view, it’s 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.”***

### Types of Leadership

Effective safety leadership can and should be demonstrated at all organizational levels. Managers can demonstrate leadership by setting the properly example and organizing the programs within the CSMS. Supervisors can demonstrate leadership by directly providing

employees the resources, motivation, priorities, and accountability for ensuring their safety and health. Employees can demonstrate leadership through personal example and involvement. Everyone understands the value in creating and fostering a strong safety culture within the company. We will discuss three leadership models below.

Let's start with the worst first.

**Tough-coercive leadership:** In this approach, managers are tough on safety to protect themselves: to avoid penalties. The manager's approach to controlling performance may primarily rely on the threat of punishment. The objective is to achieve compliance to fulfill legal or fiscal imperatives. The culture is fear-driven. Management resorts to an accountability system that emphasizes negative consequences.

As you might guess, fear-driven cultures, by definition cannot be effective in achieving world-class safety because employees work (and don't work) to avoid a negative consequence. Employees and managers all work to avoid punishment. Consequently, fear-driven thoughts, beliefs and decisions may be driving their behaviors. Bottom-line: a fear-driven safety culture will not work. It cannot be effective for employees and managers at any level of the organization. It may be successful in achieving compliance, but that's it.

**Tough-controlling leadership:** Managers are tough on safety to control losses. They have high standards for behavior and performance, and they control all aspects of work to ensure compliance. This leadership model is most frequently exhibited in the "traditional" management model. As employers gain greater understanding, attitudes and strategies to fulfill their legal and fiscal obligations improve. They become more effective in designing safety management systems that successfully reduce injuries and illnesses, thereby cutting production costs. Leaders displaying this leadership model believe tight control is necessary to achieve numerical goals. Communication is typically top-down and information is used to control. A safety "director" is usually appointed to act as a safety cop: responsible for controlling the safety function.

**Tough-caring leadership:** The most successful and effective safety cultures emphasize a tough-caring leadership model. Managers and supervisors are tough on safety because they have high expectations and they insist that their workers demonstrate the highest standards in personal leadership. Managers and supervisors are tough on safety because they care about the personal safety and success of their employees first. This is a self-less leadership approach.

The tough-caring leadership model represents a major shift in leadership and management thinking from the selfish tough controlling model. Managers understand that complying with

the law, controlling losses, and improving production can best be assured if employees are motivated, safe, and able.

Management understands that they can best fulfill their commitment to external customers by fulfilling their obligations to internal customers: their employees.

Communication is typically all-way: information is used to share so that everyone succeeds. A quantum leap in effective safety (and all other functions) occurs when employers adopt a tough-caring approach to leadership. Rather than being the safety cop, the safety manager is responsible to "help" all line managers and supervisors "do" safety. Line managers must be the safety cops, not the safety department. This results in dramatic positive changes in corporate culture which is success-driven.

You can find out more about tough-caring and other leadership models in Course 700.

**The 5-STARs of Leadership:** Below are the five key elements that help the supervisor demonstrate "5-STARs" leadership in management of the CSMS. The key 5-STARs of leadership areas are listed below.

- a. **Supervision** - overseeing work activities to make sure employees are safe
- b. **Training** - conducting safety education and training
- c. **Accountability** - insisting everyone complies with company safety policies and rules
- d. **Resources** - providing physical resources - tools, equipment, materials, etc. so employees can work safely.
- e. **Support** - creating a sound psychological environment - schedules, workloads, recognition, etc. so employees do not work under harmful stress.

You can learn more about this topic in Course 712.

**Proactive vs. reactive safety leadership:** Integrating safety and health concerns into the everyday work allows for a proactive approach to safety. In a proactive approach, hazards and unsafe behaviors are addressed before an injury or illness occurs. In a reactive safety culture, safety is not a problem until after an injury or accident occurs.

**Value vs. Priority:** Safety must be elevated so that it is considered a critical value as opposed to something that must be done or accomplished as priorities allow. How can you tell when safety is a value vs. a priority on the worksite? Simple: Values don't change; priorities do, especially when the going gets tough.



## OSHA Challenge: Leadership

Stage 1: Establish a policy requiring company and subcontractor, if applicable, executives, managers, and supervisors to participate and demonstrate leadership in S&H activities.

Stage 2: Continue participation by top executives and managers. Require subcontractors to adopt and begin implementing leadership policies and increase frequency of management participation in S&H activities.

Stage 3: Continue to ensure total involvement in S&H of all company and subcontractor senior management, supervisors and lead persons.

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### Commitment

Before you set out to create the world's best CSMS, make sure that top management in your organization fully supports and has made a real commitment to your effort. But, what's the difference between "support" and "commitment"?

- ) Full support occurs when management tells everyone they back up your efforts and insists that everyone else give their full support as well.
- ) Full commitment occurs when management not only backs you up with words, they back you up with action in terms of time and money.



Top management may communicate their support for safety, but the real test for commitment is the degree to which management acts on their communication with serious investments in time and money. When management merely communicates their interest in safety, but does not follow through with action, they are expressing moral support, not commitment.



## Managers Need to Commit to Safety

So, what's the secret in getting top management commitment to safety? The answer to that question is that management commitment will occur to the extent each employer clearly understands the positive benefits to their own success as well as to the success of the company.

Most employers will put time and money into employee safety when they understand the benefits in terms of how their commitment helps to fulfill their social, fiscal and/or legal obligations as an employer. Therefore, you should stress the benefits to your employer when meeting each of the three obligations. Let's take a look:

**The social obligation:** Get management to come to the realization that long-term corporate survival depends on being a good "corporate citizen" in the community by doing whatever it takes to keep employees safe and healthful at work. By the way, fulfilling this obligation is most effective in assuring the long term success for the company.

**The fiscal obligation:** Stressing this obligation can be quite effective. Managers will be motivated to invest in safety when they understand the financial benefits derived from effective application of safety programs. Emphasize the cost vs. benefits of safety.

**The legal obligation:** Place a lot of emphasis on this obligation when managers only want to fulfill the obligation to comply with OSHA rules. You need to be familiar with how OSHA works be sure to understand the OSHA enforcement process.





### **OSHA Challenge: Commitment-Communication**

Stage 1: Establish clear lines of communication throughout all aspects of company operations.

Stage 2: Maintain clear lines of communication with company and subcontractor employees re: S&H issues.

Stage 3: Continue open dialogue between company and subcontractor management staff and employees.

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### **OSHA Challenge: Commitment-Communication**

Stage 1: Develop safety and health budget and commit and ensure utilization of adequate resources. Establish and implement a policy that integrates S&H into the overall company management planning and budgeting process.

Stage 2: Provide additional resources for S&H activities, including access to certified S&H professionals, if necessary, and licensed health care professionals, and improve integration of S&H into other planning activities.

Stage 3: Continue committing and ensuring the utilization of adequate resources by company and subcontractors. Ensure integration of S&H in all company and subcontractor planning and budget processes in the company.

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### **Involvement Through Effective Recognition**

The key to employee involvement in safety is “perception.” What they believe about the company, management, and themselves is critical to a successful CSMS. To get employee involvement, we'll primarily address effective recognition because it's so important in shaping employee performance; after all, we do what we do to either avoid negative consequences or

to obtain positive consequences. Recognition helps ensure employees focus on positive consequences.

Recognition as a positive consequence can be quite effective in dramatically increasing daily involvement in safety.

Michael Topf, M.A., is president of the Topf Organization, a company providing leading-edge awareness and attitudinal and behavioral improvement processes for safety, health and environmental incident prevention.

Let's look at what Topf has to say about employee involvement in the CSMS:

### **What does it look like?**

*(Employee involvement) means participation by employees at every level. When used as part of the term employee ownership, 'employee' does not refer uniquely to line or hourly workers, but to everyone involved in the organization at every level and in every department. (Topf, 2000)*

### **What does it require?**

For any safety, health and environmental improvement process to become self-sustaining and successful, it needs to become a seamless part of the organization. This is doubly true if the desired end result is employee ownership. To that end, the process and its benefits must be seen as having value for the employees, their families and others in the company.

Topf, M. D. (2000). The Importance of Site Manager Involvement. *Occupational Hazards*, 62(9), 31.

Now let's discuss some ways to effectively involve employees in the CSMS.

### **The Construction Safety Committee (CSC)**

Because construction is such a hazardous industry, most employers understand the importance of a strong safety committee. This is one of the most important safety teams within the CSMS and a very important part of employee involvement.

At least annually the CSC should develop its own strategic plan with written Safety goals and objectives, and the tactics to achieve them. Monthly tracking of progress is also important. The safety goals and objective should be communicated to all employees.

Membership on your company's CSC should include both management and hourly employees. Members should be elected, appointed and/or volunteers and should serve on the committee

for at least a year or other specified amount of time. OSHAcademy courses 701 and 707 cover safety committee operations.

You can learn more about the importance of the CSC by taking Course 701.

### **Safety Inspections**

Employees should participate in regular safety inspections (Daily/Weekly/Monthly/Quarterly) to help identify potentially hazardous conditions and unsafe actions and initiate corrections. Findings should be presented to the decision-maker who is usually the executive in charge of your company. Also send a copy of the findings to supervisors and safety committee for review.

Corrective action should be approved by the decision-maker and implemented under the direction of a designated line worksite superintendent, manager, or supervisor.

### **Safety Suggestion Program**

The employees in your company are crucial to the company's success, so they should be encouraged to make safety suggestions to help improve a process, prevent an accident, or to make any improvement in the CSMS.

The suggestion program procedures should be implemented by a designated person who will be responsible for determining priority and the proper means of implementation.

Safety suggestions should be shared with the Safety Committee for input. A good idea is to have a suggestion box in which employees can submit suggestions. A better idea is to have employees give suggestions directly to their supervisor or safety committee chairperson. Suggestion forms must readily available if required. Actually, in a truly effective CSMS, there's no need for a formal suggestion report form. An informal process may be more efficient and effective in identifying problems and solutions.

### **Employee Participation**

The employees in your company should be given an opportunity to provide input regarding recommendations on safety 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 formal suggestion program, or informally. Make sure employees are recognized EVERY TIME they make a suggestion that results in some kind of improvement in safety or the CSMS – EVERY TIME.

Employees could also participate in a variety of ways such as; a trainer, inspection team member, or problem- solving team member.

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### **OSHA Challenge: Employee Involvement**

Stage 1: Develop a plan and implementation schedule for involving employees in developing a company safety and health program (e.g. S&H teams) and begin involving employees in S&H activities (e.g. safety audits)

Stage 2: Increase participation on teams, and/or form additional teams. Involve employees in S&H activities (e.g., accident/near-miss investigations). Require subcontractors to adopt and begin implementing company policy, participate in company activities, or equivalent processes.

Stage 3: All teams are functioning and meaningfully contributing to S&H. Ensure teams are routinely conducting audits, accident/incident investigations, self- inspections, and job hazard analyses. Utilize team input to improve and continue the company's hazard reporting system. Encourage more active and open subcontractor participation.

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### **OSHA Challenge: Employee Notification**

Stage 1: Notify all employees of their S&H rights under the OSH Act and inform them of the company's participation in Challenge program. Discuss the VPP principles. Encourage the reporting of hazardous conditions.

Stage 2: Notify new employees of their S&H rights, company participation in Challenge, & VPP principles. Incorporate into new employee/subcontractor orientation. Require the reporting of hazards.

Stage 3: Inform all employees annually of worker rights and include elements in company/project site orientation for new company and subcontractor employees. -Reinforce as appropriate.

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Understanding the benefits will create a strong desire to improve the company's safety culture which is ultimately the most important outcome of an effective CSMS.

### **Successful Safety Culture**

You will know when your company's safety culture is successful when:

- ) All individuals within the organization believe they have a right to a safe and healthful workplace.
- ) Each person accepts personal responsibility for ensuring his or her own safety and health.
- ) Everyone believes he or she has a duty to protect the safety and health of others.
- ) A high level of trust exists between management and labor in general.

## Module 1 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The findings of Safety inspections should be presented to \_\_\_\_.**
  - a. the Construction Safety Committee
  - b. an OSHA inspector
  - c. the decision-maker
  - d. both (a) and (c)
  
- 2. Employees should be given an opportunity to provide input on which of the following topics?**
  - a. who should be punished for violating a safety rule
  - b. how to improve the CSMS
  - c. how to cover up unsafe behaviors and conditions
  - d. purchasing the least expensive safety products
  
- 3. When should employees be recognized for making safety suggestions?**
  - a. every time
  - b. once a month
  - c. quarterly
  - d. annually
  
- 4. In this leadership approach, managers are tough on safety because they are concerned first about employee safety and success.**
  - a. tough-coercive leadership
  - b. tough-controlling leadership
  - c. tough-caring leadership
  - d. tough-committing leadership

**5. Which choice is the key to employee involvement in safety?**

- a. perception
- b. consequences
- c. performance
- d. attitude



## Module 2: Vision, Mission, Roles, Responsibilities

Once you have gained the support and a real commitment (a budget and others who will help), it time to begin the process of creating the CSMS.

We think the following process to design, develop and deploy the CSMS can be very effective, so let's take a look at it:

### Design the CSMS

During this first phase in the process, gather a team of managers, supervisors, and employees who volunteer to discuss and draft the following five components within the CSMS:

1. Mission and vision statements
2. Safety goals, objectives and performance measures
3. Safety positions, duties and responsibilities of line and staff
4. Programs to include in the CSMS
5. Strategic Safety Plan



The purpose of this first phase in the implementation of the CSMS is to paint the “big picture” that helps guide everyone in developing and deploying the CSMS. From the very start it's important to have the vision to understand who you are and a sense of mission about what you do as a corporate entity, and to do that, you'll need to create a vision and mission statement. So let's take a look at these two concepts.

### Vision and Mission Statements

A very important psychological principle that everyone should understand at all levels of the company is that...

***“we do what we do because of who we think we are.”***

If we believe our company is the best, we will act like it is the best. If we think the company values safety, we will act in ways that reflect that belief.

With that in mind, it's important to develop a vision statement that tells everyone (people within and outside of the company) who the company is.

Take a look at a few sample vision statements below:

### Sample Vision Statements

- *XYZ Construction values its "relationship with customers" above all. To be successful we treat all employees as valued internal customers. We respect their ideas, value their work, and provide whatever is needed so that they may accomplish excellence in a safe-productive manner. Doing this empowers our employees so that they may manifest our values daily with our external customers.*
- *At XYZ, our safety isn't separate from our operations. It's safe-operations or no operations.*
- *At XYZ, safety is a line responsibility, not a staff responsibility. It's equal to all other considerations of production, costs, and quality.*
- *At XYZ, we are never done!*
- *The XYZ Safety Committee is a team of dedicated volunteers that serve as an "internal consultant" to all managers, supervisors and employees.*

The mission statement, on the other hand, tells the world what the company does -- why your company exists, by stating its intended purpose. The mission statement lets everyone know what your company's product or service is; who its customers are; what its service territory is.

Let's take a look at some examples:

### Sample Mission Statements

- ) *It is the mission of XYZ Construction to safely manufacture and deliver the highest quality megalithic cyberwidgets to our valued customers throughout the world.*
- ) *The XYZ Safety Committee's mission is to help management keep the worksite as safe and healthful as possible by providing quality feedback and effective solutions to safety issues.*



## OSHA Challenge: Vision and Policy Statements

Stage 1: Develop, issue, and communicate S&H Vision Statement and S&H Policy Statement.

Stage 2: Communicate Vision and Policy Statements to all company and subcontractor employees; incorporate into new employee/subcontractor orientation. Include the vision and policy in bid packages.

Stage 3: Take proactive steps to ensure company and subcontractor employees understand the S&H Vision and Policy Statements. Ensure policies become an integral part of routine activities and decision making during all phases of construction.

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### Goals and Objectives

OK, so now you know who you are and what you do as stated in the vision and mission statements. The next step is to develop some broad goals and specific objectives for your company's CSMS.

Goals are easy to write. That's because they're nothing more than mere "wishes". For instance, a safety goal might be to:

- ) "get everyone trained"
- ) "lower injury rates"
- ) "recognize everyone who exceeds expectations"

### Operational Objectives

Operational objectives, on the other hand, are structured and take a little more thought to properly construct. Objectives should include the following components:

- ) A **behavior**. You'll use an action verb. (Decrease, increase, improve, conduct, identify, etc.)
- ) A **standard**. A standard will describe a single key result to be accomplished. The result should be measurable or quantifiable. (50%, all, at least 200, etc.)

- J A **performer**. Describes who will be responsible for achieving the result. (Safety department, supervisors, regions, etc.)
- J A **time limit**. This is the target date that you set. The result must be achieved by that date.
- J A **condition**. This is usually just "given the requirement." (without help, a \$1,000 budget, after CEO approval, etc.)

For example, operational safety objectives might be written like this:

- J "Each facility will increase the number of safety suggestions submitted each month to at least 15 by the end of each quarter"
- J "The shipping department will reduce the number of back injuries in the warehouse by 70% by the end of the year."
- J "We will lower our workers compensation rate to .9 by October 1, 2019."

Remember to work with the safety committee to share the goals and objectives with everyone in the company.



### OSHA Challenge: Goals and Objectives

Stage 1: Set and communicate annual S&H goals and objectives based on findings from baseline hazard and trend analyses, and S&H perception survey results.

Stage 2: Review progress towards achievement of S&H goals & objectives; establish & communicate new goals, as appropriate. Require subcontractors to develop goals and objectives consistent with Challenge participation.

Stage 3: Company and subcontractors review, revise, and communicate S&H goals and objectives. Ensure S&H goals and objectives are routinely considered in company and subcontractor activities and programs.

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### Roles and Responsibilities

Now that you have developed some broad goals and objectives for your CSMS, the next step is to think about and draft general management-level roles and responsibilities that will be assigned to your managers, site superintendents, foremen and supervisors.

A person's role and associated responsibilities have the same kind of relationship as the company's vision and mission statement. Remember, the vision statement tells everyone who we are, and the mission statement let's everyone know what we do.

### **The Roles We Play**

A person's "role" may be thought of as the part (or assigned position) played by a person in a particular business environment. The person's behavior and actions at work is influenced by his own, and other employees' expectations of what are appropriate for the role being played.

Some examples of business roles are:

- Manager
- Supervisor
- Safety Director
- OSHA Inspector
- Safety Committee Member

I think you can see that each of these "roles" has a certain set of expectations tied to them. And, since every company's corporate culture varies, expectations for these same roles might be quite different.

For instance, in one company, the safety director might perform the role of a "cop" enforcing safety with an iron fist, while in another company; he or she might more appropriately be expected to perform the role of "consultant," helping line managers with their safety responsibilities.

### **With Roles Come Responsibilities**

Management safety responsibilities are assigned to line and staff positions within the company. Responsibilities include organizing, coordinating, and administering programs as appropriate.

Here are some examples of typical management and supervisor safety responsibilities:

- ) Conduct or supervise Job Safety Analyses.
- ) Assure compliance with OSHA construction Safety standard requirements.
- ) Conduct regular job site safety inspections.

- ) Establish corporate safety procedures.
  - ) Coordinate regular Safety training.
  - ) Conduct or assist with Tool Box Talks or Five Minute Safety Talks.
  - ) Document training, inspections, injuries and illnesses, and other safety records.
  - ) Participate in accident investigations and implementation of corrective actions.
  - ) Involve employees in the implementation of the CSMS.
  - ) Create statistical reports that compare severity and frequency rates against prior records.
- 



### **OSHA Challenge: Roles, Responsibilities, Authorities, and Accountability**

Stage 1: Develop a S&H accountability plan for managers/supervisors and non-supervisory employees.

Stage 2: Communicate and implement accountability plan. Assign additional responsibilities to non-supervisory employees as appropriate. Encourage subcontractors to adopt and begin implementing similar accountability plan or establish equivalent process.

Stage 3: Fully implement accountability system for all company and subcontractor workers, including incorporating S&H responsibilities into job descriptions and performance plans. Begin measuring performance of S&H responsibilities in annual performance appraisal processes.

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### **Determine Safety Programs**

Finally, in the design phase you'll need to determine which specific safety programs will be a part of the CSMS. Every CSMS is composed of various programs that are actually quite similar in structure to the corporate SMS but they have a very narrow focus and are determined primarily by the type of construction performed by the company. Each program can also be created using the 3D process.

Below are just a few programs that are usually included in the CSMS:

- ) Safety Training Program
- ) Safety Suggestion/Recognition Program
- ) Industrial Hygiene Program
- ) Hazard Communication Program
- ) Confined Space Safety Program
- ) Industrial Truck Safety Program
- ) Construction Safety Committee Program
- ) Electrical Safety Program
- ) Asbestos Safety Program

We'll discuss more about plans, policies, programs, processes, procedures and practices (the 6-P's) in upcoming modules.

## Module 2 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The purpose of the design phase in the implementation of the CSMS is to \_\_\_\_\_ that helps guide everyone in developing and deploying the CSMS.**
  - a. focus on programs
  - b. narrow options
  - c. paint the “big picture”
  - d. provide control measures
  
- 2. During which phase in the implementation process, would you gather a team of managers, supervisors, and employees to discuss CSMS roles and responsibilities of line and staff?**
  - a. design Phase
  - b. development Phase
  - c. deployment Phase
  - d. duplication Phase
  
- 3. Why is it important to understand the role you play at work?**
  - a. You will be more liked at work because you’ll know what’s expected of you.
  - b. You’ll likely receive a promotion because you’ll meet the expectations established for your role.
  - c. Your behavior and actions at work are influenced by your own, and other employees’ expectations.
  - d. You won’t get in trouble because you will be able to meet the expectations others have of you.
  
- 4. Which statement tells everyone within and outside the company who the company is?**
  - a. vision statement
  - b. mission statement
  - c. OSHA statement



- d. objective statement
- 5. Which of the following would be considered an important safety responsibility assumed by line supervisors?**
  - a. performing job appraisals that do not appraise safety performance
  - b. coordinating safety training
  - c. reviewing the employee's time cards
  - d. all of the above

## Module 3: Plans and Programs

### Develop the CSMS Components

Now that you have the basic design of the CSMS completed, it's time to get down to the nitty-gritty by completing the "6-P's". Yes, another acronym! Using the 6-P development model, we can systematically complete the following components:

#### **Plans, Programs, Policies, Processes, Procedures and Practices.**



In most instances, a safety professional will be responsible to assist others, but it's important to understand that development of the CSMS should not be a "one person show" – others, from top management, to employees should be involved in the development phase.

The outcome of the development phase is a formal comprehensive written CSMS Plan containing all components of the CSMS. This will serve as the primary document that everyone at all levels in the company will use to help them fulfill their own safety responsibilities.

### The CSMS Written Plan

One of the most important end-results of the design and development phases when creating a CSMS is the written plan. This is the formal document that contains all of the important information needed to deploy the CSMS.

It's important to note that you will not only write a plan for the overall CSMS, but you'll need to write a plan for each of the various programs within the CSMS as well. OK, this might be a little confusing, and even the language can get you tied up, so let's define a couple of terms:



## Plan vs. Program

You'll hear safety people (and OSHA) regularly use these two terms interchangeably as though they mean the same thing. Actually these concepts are related but different concepts. A written "plan" formally details the overall long-term plan-of-action in the CSMS.

## Plans Within Plans

The CSMS will also contain many "programs" and each program will require a more narrowly-focused "plan". When all of the program plans are combined, you have your CSMS "plan". I hope that clears it up. I know I was confused about this for a couple of years. 😊

Both the CSMS and each program within the CSMS should contain at least the following sections:

- ) vision and mission statements,
- ) goals and objectives,
- ) roles and responsibilities (R&R), and
- ) programs, policies, processes, procedures, and practices

Last, but not least, a "formal" CSMS plan should be written, approved, and signed by top management. We'll discuss each of these components of the written plan below.

## CSMS Program

A safety "program" may be thought of as a plan of action to accomplish a safety objective. The safety program will give specific details on:

- a. **The task or work to be done.** For example, a task described within the Fall Protection Program might be to conduct a routine inspection of fall protection equipment.
- b. **The person or group responsible.** Usually this would be the person or group performing the hazardous procedure or work practice.
- c. **When the hazardous procedure or practice is to be done.** For instance, a safety inspection program might specify that an inspection must be completed before and after each use of the fall protection equipment.

- d. **The means or resources used to accomplish the task or work.** A worker might use a magnifying glass to look for tiny cracks in the fall protection metal parts or tears in the fabric.

An effective safety program is designed around the processes, procedures, and practices normally assigned to employees and integrates safety-related decisions and precautions into them.

### Sample Program Responsibilities

Now let's look at a few examples of OSHA-required responsibilities you will most likely need to include in your CSMS.

#### Hazard Identification Program

- ) Evaluate operations, procedures, facilities, and equipment to identify hazards [29 CFR 1926.20(a), 29 CFR 1926.21(b)].
- ) Monitor exposure levels [29 CFR 1926.55, 29 CFR 1926.62, 29 CFR 1926 Subpart Z, 29 CFR 1926.1101].
- ) Ensure regular safety and health inspections [29 CFR 1926.20(b)(2), 29 CFR 1926.703(b), 29 CFR 1926.1081].
- ) 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].

#### Hazard Control Program

- ) Ensure machines and tools are in safe working order and in compliance with relevant standards [29 CFR 1926.20(b)(3), 29 CFR 1926.550(a), 29 CFR 1926.951].
- ) Institute engineering and work practice controls to eliminate health hazards [29 CFR 1926.55, 29 CFR 1926.103, 29 CFR 1926 Subpart Z].
- ) Perform housekeeping to remove hazards posed by scrap and debris in work areas [29 CFR 1926.25, 29 CFR 1926.852, 29 CFR 1926.152(c)(5), 29 CFR 1926.900(k)(5)].
- ) Provide appropriate personal protective equipment when other controls are infeasible [29 CFR 1926.28(a), 29 CFR 1926 Subpart E].

- ) Guarantee safe means of egress [29 CFR 1926.34].

### **Emergency Response Program**

- ) Develop emergency response plans [29 CFR 1926.35, 29 CFR 1926.65(q)].
- ) Develop fire prevention and protection programs [29 CFR 1926.24, 29 CFR 1926.352, 29 CFR 1926 Subpart F].

### **First Aid and Medical Program**

- ) Provide medical services, first aid treatment, and supplies [29 CFR 1926.50(a), 29 CFR 1926.103, 29 CFR 1926.50(c), 29 CFR 1926.50(d), 29 CFR 1926 Subpart Z].
- ) Ensure availability of emergency rescue for injured employees [29 CFR 1926.50(e), 29 CFR 1926.106(a), 29 CFR 1926.21(b)(6), 29 CFR 1926.802(b)].
- ) Post emergency numbers for physicians, hospitals, or ambulances [29 CFR 1926.50(f)].

### **Training Program**

- ) Train employees to recognize hazards [29 CFR 1926.21(b)(2), 29 CFR 1926.65, 29 CFR 1926.302(e), 29 CFR 1926.1060].
- ) Train workers to recognize and avoid unsafe conditions [29 CFR 1926.21(b)(2), 29 CFR 1926.65, 29 CFR 1926.454, 29 CFR 1926.901(c)].
- ) Provide training on safe work practices and applicable standards [29 CFR 1926.21(b)].
- ) Provide training on safe operation of equipment and machinery [29 CFR 1926.20(b)(4), 29 CFR 1926.302(e)].
- ) Provide training on hazards of access ladders and stairways [29 CFR 1926.1060(a), 29 CFR 1926.454, 29 CFR 1926.800(b) and (c)].
- ) Provide training on confined and enclosed space entry hazards and precautions [29 CFR 1926.21(b)(6), 29 CFR 1926.353(b), 29 CFR 1926.801].

### **Recordkeeping and Abatement Verification Program**

- ) Record injuries and fatalities [29 CFR 1904.5, 29 CFR 1904.8].
- ) Maintain medical records [29 CFR 1926.33].

- ) Maintain exposure records [29 CFR 1926.33].
- ) Maintain appropriate documents and tags for abatement verification [29 CFR 1903.19].



### **OSHA Challenge: Industrial Hygiene (IH) Program\***

Stage 1: No action required for IH Program. (Establishment of a written program for some OSHA standards is required.)

Stage 2: Establish, document, & implement future sampling schedule, strategy, and rationale, e.g., develop a formal written IH program. Follow-up on results of baseline IH study. Conduct more in-depth analysis if warranted to determine actual employee exposures. Require subcontractors to participate in the company IH program where necessary. Follow-up on results of subcontractor baseline IH study, if applicable, and conduct more in-depth analysis, if warranted.

Stage 3: Continue implementing the written IH programs taking proactive steps to improve control of health hazards to prevent occupational disease.

\* Note: The actions within the three stages will apply to any safety and health program you develop.

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### Module 3 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. What is one of the most important end-results of the development phases when creating a CSMS?**
  - a. written plan
  - b. pareto chart
  - c. phase analysis
  - d. control policy
  
- 2. Which of the following may be thought of as a plan of action to accomplish a safety objective?**
  - a. safety policy
  - b. safety program
  - c. safe job procedure
  - d. safe work practice
  
- 3. An effective safety program will give specific details on which of the following?**
  - a. the procedure or practice
  - b. the person or group responsible
  - c. the means or resources used
  - d. all of the above
  
- 4. A well-written corporate CSMS plan contains all of the important information needed to \_\_\_\_\_ the CSMS.**
  - a. design
  - b. deploy
  - c. develop
  - d. duplicate



**5. The “formal” CSMS plan should be written, approved, and signed by \_\_\_\_\_.**

- a. top management
- b. the safety manager
- c. the safety committee
- d. an OSHA program auditor

## Module 4: Policies and Processes

Now let's take a look at safety policies and processes to see how they fit into the CSMS.

### Developing CSMS 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.

The safety policy is usually stated in three different ways:

- a. **What you intend to do in safety:** "It will be our policy to perform safe-construction or no-construction."
- b. **Who will be involved in safety:** "Site supervisors/foreman will be responsible for the safety of workers on their site."
- c. **How you will control safety:** "Lockout/Tagout will be performed for electrical work on 50V circuits or higher."

Below are a few more examples of various safety policies that may be important to include:

- ) No job or 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 will be a safe procedure. Shortcuts in safe procedures by either foremen or workers will not be tolerated.
- ) If a worker observes any unsafe condition, which may pose a potential threat to their health or safety, it will 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 of employees.
- ) If a job cannot be done safely it will not be done.
- ) Management will 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 will acknowledge the importance of creating a positive safety culture through employee involvement and effective policies and procedures.

### Safety Rules are Just “Mini-Policies”

Rules are nothing more than narrowly-focused policies. They focus on one specific safety behavior or action that is required of each individual employee.

### Rules vs. Guidelines

It’s important to understand the difference between “rules” and “guidelines”. It’s simple: rules are required – guidelines are not.

To be valid, rules include words like “must”, “shall”, or “will”. Remember, rules do not give a person a choice: they are mandatory. By the way, if no word is listed, assume it’s a rule.

Guidelines, on the other hand, do give employees a choice. They contain words like “should”, “recommend” or “may.” It’s very important to know that you can’t really “enforce” guidelines because they are voluntary. If you find that you have guidelines and rules listed together, be sure to define the concepts and separate them so that everyone clearly understands the difference.

I know you’re probably familiar with the safety rules within your company, but, just to make sure, I’ve listed a few of the more common rules generally found at construction sites:

- ) Keep your work area free from rubbish and debris. A clean job is the start of a safe job.
- ) Compressed air shall not be used to blow dust or dirt from clothes, hair, or hands.
- ) Any fear of working at heights must be reported to the immediate supervisor.
- ) Employees working at height must keep back at least 10’ from all power lines.
- ) Do not use power tools and equipment until you have been properly instructed in the safe work methods and are formally (in writing) authorized to use them.
- ) Do not remove a safety device or safeguard on equipment without proper authorization.
- ) Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect it, lock out the source of power, and tag it out. (no word listed, so assume it’s a rule.)

- ) Excavations more than five feet deep will be shored or sloped as required. Keep out of trenches or cuts that are not properly shored or sloped.
- ) All workers will use the "four to one" rule when using a ladder. One foot of base for every four feet of height.
- ) Portable ladders in use shall be equipped with safety feet unless the ladders are tied, blocked or otherwise secured. Step ladders shall not be used as a straight ladder.

### Developing CSMS Processes

A process is nothing more than a sequence of interdependent and linked procedures. Each CSMS program may include one or more processes used to build residential or commercial buildings, construct highways or to construct dams. The emphasis would be to ensure safe procedures and practices.

Here are some more common processes for building a residential building.

- ) Worksite inspection
- ) Laying a foundation
- ) Roof construction
- ) Framing the structure
- ) Obtaining permits
- ) Accident investigation
- ) Electrical installation
- ) Painting
- ) Installing HVAC

Let's discuss a couple common construction safety processes below.

### Accident Investigation Process

All accidents on your worksite resulting in injury or property damage should be investigated. The investigation is a very important process that includes procedures for documenting the accident scene, analyzing the facts, and interviewing witnesses.

The accident investigation process will make sense if you understand that ultimately, the purpose of the investigation is to improve the safety management system. If you conduct the investigation for any other reason, it will likely result in ineffective solutions.

Here are the six basic procedures in conducting accident investigations.

1. Secure the accident scene
2. Conduct interviews
3. Develop the sequence of events
4. Conduct cause analysis
5. Determine the solutions
6. Write the report

### **Accountability - Disciplinary Process**

The implementation of the following four step disciplinary process should be considered when operational and/or safety rules are not followed or other unsafe actions endanger workers.

1. First violation: Oral warning; notation for personnel file.
2. Second violation: Written warning; copy for file or Personnel Office.
3. Third violation: Written warning; one day suspension without pay.
4. Fourth violation: Written warning and one-week suspension, or termination if warranted.

There are some violations that are so dangerous to the worker and/or others that they will result in immediate termination if justified. For more information on developing an accountability program that includes an effective disciplinary process, be sure to take Course 700, 702, or 704.



### **OSHA Challenge: Discipline**

Stage 1: Establish a company disciplinary policy for all employees re: compliance with S&H regulation, rules, procedures, etc.

Stage 1: Continue to implement disciplinary plan with an implementation schedule for managers and employees. Require subcontractors, if applicable, to adopt company disciplinary policy or establish equivalent policies.

Stage 1: Ensure discipline is equally enforced for company and subcontractor employees.

## Module 4 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. \_\_\_\_\_ help to set standards and guidelines for decision-making.
  - a. safety policies
  - b. safety programs
  - c. safe job procedures
  - d. safe work practices
  
2. The emphasis in any safety process should be?
  - a. keeping the number of steps limited
  - b. safe procedures and practices
  - c. cost efficiency and effectiveness
  - d. limiting the number of workers
  
3. Which of the following focuses on one particular safety behavior or action?
  - a. safety policies
  - b. safety programs
  - c. safety rules
  - d. safe work practices
  
4. What allows managers, supervisors and employees to make safety decisions without having to constantly check with “the boss”?
  - a. safety policies
  - b. safety programs
  - c. safety plans
  - d. safety rules

**5. What are nothing more than narrowly-focused policies?**

- a. rules
- b. programs
- c. plans
- d. procedures

## Module 5: Procedures and Practices

### Introduction

Construction companies should make sure that safe job procedures and safe work practices are developed to address significant hazards that may present significant risks/liabilities to them.

To determine the need for safe job procedures and work practices, conduct a comprehensive hazard analysis prior to the start of work on each worksite. It's important to note that the Job Safety/Hazard Analysis is an excellent process for determining safe job procedures and safe work practices.

### Create Safe Job Procedures

Safe job procedures are a series of specific instructions presented in steps that outline the preferred method for performing a task.

They guide a worker through a job task from start to finish one step at a time in chronological order.

Safe job procedures are designed to reduce the risk to employees by minimizing potential exposure. There may be many safe job procedures in a more complex construction process. Repetitive procedures are called "routines." One or more procedures are included within each process.



Scaffolding installation is an example of a task that should have a safe job procedure.

Sample Procedures include:

- ) Scaffold installation
- ) Setting up guardrails
- ) Installing an appliance
- ) Pouring cement
- ) Laying shingles

Specific Safety procedures that are required by OSHA should be put in writing such as:

- ) Lockout/Tagout,



- ) Handling hazardous chemicals
- ) Using fall Protection equipment
- ) Confined space entry procedures
- ) Use of respiratory protection, dust masks, etc.
- ) Protection from floor holes and other walking-working surface hazards
- ) Safe use of hand and power tools

### **CSMS Safe Work Practices**

Finally, safe work practices are generally written methods outlining how to perform a task with minimum risk to people, equipment, materials, environment, and processes. A particular task, job, or procedure may include one or more safe practices.

As with procedures, safe work practices help to ensure worker exposure to hazardous situations, substances, and physical agents is controlled in a safe manner.

Below are just a few examples of safe work practices:

- ) Testing fall protection equipment prior to each use
- ) Three-point control rule for climbing ladders
- ) Wearing proper gloves for the job
- ) Placing fire extinguishers
- ) Ensuring proper ventilation
- ) Using the “Buddy system”

### **OSHA’s Spin on Safe Work Practices**

Safe work practices include your company’s general worksite rules and other operation-specific rules. For example, even when a hazard is enclosed, exposure can occur when maintenance is necessary. Through established safe work practices, employee exposure to hazards can be further reduced.

Depending on the type of industry and the operations, work practices for specific OSHA standards or to recognize hazards may be required.

Some of these specific areas include:

- ) Respiratory Protection [29 CFR 1910.134].
- ) Lockout/Tagout [29 CFR 1910.147].
- ) Confined Space Entry [29 CFR 1910.146].
- ) Hazard Communication [29 CFR 1910.1200, 29 CFR 1926.59].
- ) Blood borne Pathogens [29 CFR 1910.1030].
- ) Hearing Conservation [29 CFR 1910.95].
- ) Laboratory Chemical Hygiene [29 CFR 1910.1450].

This list is not all-inclusive. Refer to the specific OSHA standard for information and guidance on the required elements for these individual programs.

### **Information and Training**

Keep written safe work practices in a central location where the work is performed. Make sure they are readily available to the workforce, and review them from time to time during safety meetings.

The best way to train safe job procedures and work practices is the time-tested “show and tell” method. To do that, develop a Job Safety/Hazard Analysis each hazardous procedure, and use it as your training plan.

Keep formal documentation that shows employees have been trained on safe job procedures and work practices. The documentation should verify that employees had an opportunity to perform the safety job procedures and work practices under direct supervision, and that they have successfully demonstrated adequate knowledge, skills, and abilities.

### **Should you Reference or Repeat**

Developing safe job procedures and practices is an ongoing challenge. We recommend that you start by covering the most hazardous procedures first, and then continue by incrementally adding procedures and practices as needed.

If OSHA standards clearly cover a procedure, go ahead and reference it so you don't have to repeat it. Generally OSHA standards are “performance-based” and do not provide detailed procedures, so be careful in evaluating the need to develop your own procedures.

## Module 5 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. What are procedures that are repeated regularly called?**
  - a. processes
  - b. practices
  - c. routines
  - d. steps
  
- 2. Safe work practices describe how to perform a task with minimum risk to which of the following?**
  - a. people
  - b. equipment
  - c. materials
  - d. all of the above
  
- 3. What are a series of specific instructions presented in steps that outline the preferred method for performing a task?**
  - a. safe job procedures
  - b. safety programs
  - c. safety policies
  - d. safe job behaviors
  
- 4. Which of the following procedures must be put in writing to comply with OSHA standards?**
  - a. lockout/Tagout
  - b. laying shingles
  - c. painting
  - d. installing wood floors

**5. What helps ensure worker exposure to hazardous situations, substances, and physical agents is controlled in a safe manner?**

- a. safe work practices
- b. safety inspections
- c. accountability
- d. safety posters

## Module 6: Training and Education

### Deploy the CSMS

After the development phase is completed, deploy the completed CSMS plan so that everyone has it and can take action. However, to make sure everyone understands the CSMS, educate everyone on the components of the CSMS and their personal responsibilities within each component.

It's very important to make sure the following training occurs:

- ) Management and supervisors commitment and leadership responsibilities
- ) Train-the-Trainer courses for those who will be conducting classroom and on-the-job (OJT) safety training.
- ) Employee technical training by qualified safety trainers



After completing the training, make sure it is properly documented. Remember, as far as OSHA is concerned, "if it isn't in writing, it didn't get done." Once training is completed, it's time to officially deploy the CSMS.

To make sure the deployment was successful, do the following:

- ) Get feedback from everyone on the success of the deployment
- ) Analyze the results of the deployment after a year
- ) With the data gathered from your analysis, evaluate the success of the deployment
- ) Implement a long-term "continuous improvement" strategic plan

### Orientation and Training

Each construction worker must receive adequate safety orientation, general instruction and technical training on applicable OSHA standards, company safety requirements, and hazardous procedures to do his or her job safely. You should also evaluate safety training and performance periodically to make sure everyone understands their safety responsibilities as well as related OSHA standards.

## How to Monitor Worksite Safety Training

Your company should provide training to protect your employees and to assure OSHA requirements for construction workers are met. It will also be very important to continuously monitor the effectiveness of employee training needs to keep workers safe and healthy on the job. To do that, make sure employees are being observed regularly by supervisors and safety staff.

Use observation, interviews and written exams as necessary to make sure:

- ) all employees, including contractors, understand the hazards to which they may be exposed and how to prevent harm to themselves and others
- ) supervisors and managers understand their responsibilities and the reasons for them so that they can carry out their roles effectively
- ) periodic refresher training is conducted for all employees as necessary
- ) workers are trained on first aid and how to respond to emergencies on the worksite

## New Employee Orientation

New employees should receive orientation training on your company's CSMS, safe work practices and expectations, and specific safety training for the tasks that they will perform.

- ) After inspecting a job site, a designated person should identify and evaluate all potential hazards for potential of serious injuries and 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.
- ) Where Safety training is needed, appropriate training should be provided.
- ) Hazards should 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.

## On-the-Job (OJT) Training

The purpose of OJT is to provide the employee with task-specific knowledge and skills in his or her job/work area. The knowledge and skills presented during on-the-job training are directly related to those they will perform on the job.

OJT can be one of the best training methods because it is planned, organized, and can be conducted at the employee's worksite. OJT is generally the most common method used to broaden employee skills and increase productivity. It is particularly appropriate for developing skills unique to an employee's job. And, did you know that most safety training requires hands-on practice and demonstration, so OJT is a great way to make sure you meet OSHA expectations.

## 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.

## Training records

One of the best ways to keep both the employer and all employees safe is to ensure strong safety training documentation. It's not just a good idea for the employer to keep complete and accurate records of all safety and health training; it's required by more than 100 OSHA standards. It's also recommended by ANSI Z490.1-2009.

Records can provide evidence of the employer's good faith effort to comply with OSHA standards. Strong documentation can also help the employer defend against claims of negligence. Documentation can also supply an answer to one of the first questions an accident investigator will ask: "Was the injured employee adequately trained to do the job?"

## Attendance Rosters

If your training or safety meeting presents general information related to safety it's most likely considered safety "instruction." When conducting general safety instruction, we may not need to evaluate employee performance to determine ability to perform specific hazardous

procedures. It may be perfectly fine to use a simple attendance roster to document the training. An attendance roster may include the following information:

- a. date
- b. subject
- c. names attendees
- d. other identifying information

### **Formal Certification of Training**

When OSHA or any safety training requires employees to demonstrate knowledge and skills in performing hazardous procedures or using safe practices, an attendance roster may not be legally sufficient to document the training.

Technical safety training should include testing and formal (written) certification. Certification of training usually involves issuing a certificate of competency or qualification.

According to ANSI Z490.1-2009, Section 7.4, Issuing Certificates, recommended certification of training should include:

- ) 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
- ) number of credits (CECs, CEUs, etc.), if issued. Make sure employees have met all requirements for credits.



To make your documentation stronger, you may want to consider including the following information:

- ) 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. Describe the safety procedures, practices, policies, rules addressed in training.
- ) a list or description of the specific procedures practiced in the learning environment.
- ) certification - a place for trainee and trainer signatures

Sample Training Certification - Page 1

Training Subject \_\_\_\_\_ Date \_\_\_\_\_ Location \_\_\_\_\_

Trainee Certification of Training. I have received on-the-job training on those subjects listed (see other side of this sheet): This training has provided me adequate opportunity to ask questions and practice procedures to determine and correct skill deficiencies. I understand that performing these procedures/practices safely is a condition of employment. I fully intend to comply with all safety and operational requirements discussed. I understand that failure to comply with these requirements may result in progressive discipline (or corrective actions) up to and including termination.

Employee Name    Signature    Date

\_\_\_\_\_

\_\_\_\_\_

Trainer Certification of Competency. I have conducted orientation/on-the-job training to each employee listed above. I have explained related procedures, practices and policies. Each employee was given opportunity to ask questions and practice procedures in the learning environment. Based on each student's performance, I have determined that each employee trained has adequate knowledge and skills to safely perform these procedures/practices.

\_\_\_\_\_

Trainer Name                      Signature                      Date

Supervisor Certification of Competency. I observed/interviewed the above employees on \_\_\_\_\_ date(s). Each employee has11 demonstrated adequate knowledge and skills to safely perform all steps of the procedures/practices in the work environment (at their workstation, worksite, etc.).

Supervisor Name	Signature	Date
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Notice that supervisor certification of competency is included as part of the training document. This certification evaluates employee knowledge and skills in the actual work environment. Including this will help ensure employees are "fully qualified" to perform hazardous procedures and practices.

On the second page of the certification, information about the subjects, performance exercises, and tests is described.

The benefit of including this second page in the document is that it can also serve as a lesson plan for your training. The learning objects you've written will help you develop the list of subjects and performance exercises. It outlines the subjects and exercises that need to be conducted to make sure required training is accomplished.

### Sample Training Certification - Page 2

The following information was discussed with students: (check all covered subjects)

- Overview of the hazard communication program - purpose of the program
- Primary, secondary, portable, and stationary process container labeling requirements
- Discussion of the various sections of the MSDS and their location
- Emergency and Spill procedures
- Discussion of the hazards of the following chemicals to which students will be exposed
- Symptoms of overexposure
- Use/care of required personal protective equipment used with the above chemicals
- Employee accountability

The following practice/performance exercises were conducted:

- ) Spill procedures
- ) Emergency procedures
- ) Personal protective equipment use

The following written test was administered: (Or "Each student was asked the following questions:") (Keep these tests as attachments to the safety training plan and merely reference it here to keep this document on one sheet of paper)

1. What are the labeling requirements of a secondary container? (name of chemical, and hazard warning)
2. When does a container change from a portable to secondary container? (when employee loses control)
3. What are the symptoms of overexposure to \_\_\_? (stinging eyes)
4. Where is the "Right to Know" station (or MSDS station) located? (in the production plant)
5. What PPE is required when exposed to \_\_\_? (short answer)
6. How do you clean the PPE used with \_\_\_? (short answer)
7. What are the emergency procedures for overexposure to \_\_\_? (short answer)
8. Describe spill procedures for \_\_\_. (short answer)
9. When should you report any injury to your supervisor? (immediately)
10. What are the consequences? if you do not follow safe procedures with this chemical (injury, illness, discipline)

## Job Hazard Analysis

Determining the content of training for employee populations at higher levels of risk like construction is similar to determining what any employee needs to know, but more emphasis is placed on the requirements of the job and the possibility of injury.

One of the best tools for determining training content and required skills for hazardous construction job requirements is the Job Hazard Analysis described earlier. This procedure

examines each step of a job, identifies existing or potential hazards, and determines the best way to perform the job in order to reduce or eliminate the hazards. Its key elements are:

1. job description
2. job location
3. key steps (preferably in the order in which they are performed)
4. tools, machines and materials used
5. actual and potential safety and health hazards associated with these key job steps
6. safe and healthful practices
7. apparel and equipment required for each job step

## Module 6 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. According to ANSI Z490.1-2009, Section 7.4, Issuing Certificates, recommended certification of training should include the \_\_\_\_\_.**
  - a. trainee's name
  - b. course title and course length in hours
  - c. training provider's name
  - d. all of the above
  
- 2. When training employees what is one of the best ways you can help protect your employer?**
  - a. strong documentation
  - b. adequate accountability
  - c. safety committee control
  - d. OSHA avoidance
  
- 3. An attendance roster that lists date, subject and names of those attending may be sufficient as what type of training document?**
  - a. safety instruction
  - b. technical safety training
  - c. all safety training
  - d. training that measures skills
  
- 4. How many OSHA standards require safety and health training?**
  - a. more than 40
  - b. more than 60
  - c. more than 80
  - d. more than 100

- 5. What is one of the best tools for determining training content and required skills for hazardous construction job requirements?**
- a. job Hazard Analysis
  - b. videos
  - c. online training
  - d. classroom training

## Module 7: Worksite Analysis

### Conducting a Worksite Analysis

To make sure the CSMS has been effectively deployed (it's working), conduct regular worksite analyses to analyze and evaluate the performance (results). Conduct systematic actions that provide information as needed to recognize and understand the hazards and potential hazards of your worksite.

Listed below are types of worksite analysis actions that can assist you with making an inventory of potential and actual hazards in your worksite:

1. Job safety analysis.
2. Comprehensive hazard surveys (insurance inspections, OSHA consultation, etc.).
3. Hazard analysis of changes in your worksite (new equipment, new processes).
4. Regular site Safety inspections (employee and management).
5. Employee report of hazards or potential hazards.
6. Accident and incident investigations with corrective actions and follow-up.
7. Injury and illness trend analysis.
8. Personal protective equipment assessment.
9. Ergonomic analysis.
10. Specific identification of confined spaces.
11. Identification of energy sources for specific machines.
12. Copies of written inspections and surveys by: fire department, in-house as required by Safety standards (e.g., overhead crane inspections, powered industrial truck daily inspection, etc.).

OSHAcademy courses 702, 704, 706, 707, 709, 710, and 711 cover these topic areas.





## OSHA Challenge: Baseline Safety and Health Hazard Analysis, including Industrial Hygiene (IH) Surveys

Stage 1: Conduct a S&H baseline analysis including a review of previous accidents, injuries, and illnesses; complaints; previous studies; etc.

Stage 2: Require subcontractors to perform baseline analysis as necessary in accordance with OSHA and company requirements and share pertinent information with the general contractor, or other subcontractors.

Stage 3: Repeat baseline surveys, if warranted, by significant changes in tasks, equipment, or processes.

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### Analyzing a Construction Worksite

Each of the following program components should be analyzed on the worksite. Use a checklist to make sure your analysis is most efficient and effective. Be sure to document what you find whether it is in conformance or not.

1. **Program Administration** – OSHA postings, emergency numbers, HAZCOM labels, training and meeting documents, incident reports, medical kits, etc.
2. **Housekeeping/Sanitation** – Work area orderliness, passageways/walkways clear, lighting, waste containers, sanitary facilities, eating/drinking area.
3. **Fire Prevention** – Fueling/Welding areas, GFCI and overcurrent protection, breaker boxes, lockout/tagout procedures, drop cords, utility lines located and marked, overhead lines, high-voltage lines.
4. **Fall Protection** – Hazards identified and controlled; such as guardrails, walking-working surfaces, skylights, floor holes, window openings, fall protection systems (arrest and restraint systems), equipment use/care, and inspections.
5. **Hand and Power Tools** – Training documentation, defective or damaged tools, proper tools for the job being used, power tool grounding and insulation, condition of cords, mechanical safeguards, power-actuated tools.

6. **Ladders/Stairs** – Ladder inspections, training documentation, condition of ladders, job-made ladders in use, proper ladders for job, ladders secured, extend above landing, stepladders fully open, overhead electrical exposures, stair pans filled, stair railings.
7. **Scaffolds** – Proper erection, supervision, inspection procedures, training documentation, competent person, connections, footing and mudsills, scaffold secured to building, protection from falling objects, scaffold access, planks properly placed and secured, debris, ice, snow, overhead electrical exposure.

8. **Excavation and Shoring** – Competent person, soil analysis documentation, proper equipment (coffins, etc.), area supervision, adjacent structures shored, excavation barricaded, cave-in protection, spoils set back, ladders adequate and properly spaced, equipment away from edge, PPE use.



9. **Heavy Equipment/Motor Vehicles** – Maintenance and inspection, operations manuals available, operator qualification, training documents, roads, speed limits, seat belts in use, vehicle inspections, wheels properly chocked, glass/windows, weight limits and load capacities, personnel properly riding vehicles.
10. **Welding and Cutting** – Extinguishers available, firewatch posted, screens and shields adequate, cylinders secured and stored, proper PPE being used, training documentation, electrical grounding, cables.
11. **Materials Handling and Storage** – Materials properly stored and stacked, dust protection, proper number of workers for job, proper ergonomics practices, training documentation.
12. **Barricades and Fencing** – worksite properly fenced, condition of fencing, evidence of tampering, roadways and sidewalks protected, proper access, traffic control measures, training documentation.
13. **Cranes, Derricks and Hoists** – Equipment maintenance and inspections, equipment support and proper outriggers, proper load capacities posted and observed, use of signalman as necessary, overhead electrical exposure, training documentation for operators and signalman.

14. **Roadway Construction** – Local regulations, permits, ordinances observed, use of PPE, flagman use as necessary, postings and signage, warning markers, training documentation.
15. **Demolition** – Preplanning and documentation, protection of public and property/structures, clear areas for chutes and trucks.
16. **Personal Protective Equipment** – Training documentation, eye/face protection, hand protection, head protection mandatory, foot protection, fall protection, respiratory protection, proper ventilation, noise testing and protection, high visibility vests, outerwear.

### Recognized and Foreseeable Hazards

In conducting the worksite analysis, it's important to look for hazards that are generally recognized within the industry, and those hazards that should be foreseeable on the worksite.

#### "Recognized" Hazards

As described in OSHA's Field Compliance 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 during or before the OSHA inspection, or instances where employees have clearly called the hazard to the employer's attention.
- ) **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.



## OSHA Challenge: Certified Professional Resources

Stage 1: Ensure outside sources are available in needed to conduct baseline hazard analysis.

Stage 2: Ensure adequate resources (e.g., access to certified S&H professionals, licensed health care professionals). Subcontractors ensure adequate resources, as well.

Stage 3: Continue to provide necessary resources (e.g., Certified Safety Professionals, Certified Industrial Hygienists). \*

\*Note – There are other safety professionals that can provide suitable professional services as well. They need not be CSPs or CIHs.

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## "Foreseeable" Hazards

An important, and potentially difficult, question to ask about the nature of worksite hazards relates to whether they are "foreseeable." The question of foreseeability should be addressed by safety managers during the worksite analysis. A hazard for which OSHA issues a citation must be reasonably foreseeable. However, all the factors which could cause a hazard need not be present in the same place at the same time in order to prove foreseeability of the hazard.



## OSHA Challenge: Trend Analysis

Stage 4: Conduct initial trend analysis of 3 previous years' injury & illness rates and begin developing a plan for conducting analysis of other S&H-related information.

Stage 5: Conduct trend analysis of other S&H information not yet studied; conduct one of injury & illness history if a year has gone by since initial analysis. Require subcontractors to develop and implement similar systems.

Stage 6: Conducts trend analysis regularly (at least annually) of company and subcontractor S&H information and use results in setting future goals to address trends.

## **New Equipment, Processes, and Worksite Hazard Analysis**

Designate a competent person to analyze new equipment, processes, procedures and materials on the worksite for hazards and potential hazards at your companies work sites.

Document the findings and develop plans to minimize or design out the hazards using the “hierarchy of control” strategies. (See course 704 for more on this topic)

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### **OSHA Challenge: Pre-Use Analysis**

Stage 7: Establish and begin implementing a pre-use analysis of new equipment, chemicals, facilities/project sites, or significantly different operations or procedures and recommend controls prior to the activity or use. Require subcontractors to develop and implement similar systems.

Stage 8: Continue conducting pre-use analysis of new equipment, chemicals, facilities/project sites, or significantly different operations or procedures and recommend controls prior to the activity or use. Subcontractors begin performing pre-task analysis of work they are contracted to perform.

Stage 9: Continue pre-task hazard analysis of new equipment, chemicals, facilities/project sites, or significantly different operations or procedures and recommend controls prior to the activity or use.

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### **OSHA Challenge: Hazard Analysis of Significant Changes**

Stage 1: Establish and begin implementing systems for identification and documentation of S&H hazards of significant changes, new processes, and changes in design/engineering plans. Require subcontractors, if applicable, to adopt and begin implement similar systems.

Stage 2: Continue conducting hazard analysis for significant changes (e.g., non-routine tasks or new processes, materials, equipment and facilities/project site) and recommend controls prior

to the activity or use per company requirements and OSHA standards. Subcontractors implement a policy and begin identify and document hazards of significant changes.

Stage 3: Continue conducting and documenting hazard analysis for significant changes (e.g., non-routine tasks or new processes, materials, equipment and facilities/project sites) and recommend controls prior to the activity or use.

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### **Job Hazard/Safety Analysis**

A Job Hazard/Safety Analysis (JSA) should be used to determine potential hazards and identify methods to reduce exposure to the hazards at your work sites. (See course 706 for more on this topic).

Job Safety Analysis is a method of planning for Safety. There are three basic parts to a JSA.

1. The first component of a JSA is breaking down a job or task into the specific steps it takes to complete the job. Although this can be done in small detail, typically only the major steps are listed. This often results in five to ten steps. The steps are listed in chronological order, listing the first thing that should be done, then what comes next, and so on.
2. The second component of a JSA is to list all the hazards that are involved in each step. There may be many hazards that get listed next to some steps and may not be any associated with some steps.
3. The third step is to write down how each hazard will be eliminated or controlled. In other words, describe what needs to be done in order to perform that task safely.

Sample JSA Form				
Job Title:	Page: __ of	JSA No.	Date:	<input type="checkbox"/> New <input type="checkbox"/> Revised
Equipment:	Supervisor:		Analysis by:	
Department:	Approved by:			
Required Personal Protective Equipment (PPE):				
Job Steps	Potential Hazards		Recommended Safe Job Procedures	
Trainee(s) Name:			Training Date:	
Trainer(s) Name:			Trainer(s) Signature:	
Four-Step Instruction Completed?	Prepare the Worker.....	Trainer(s) Initials		
	Present the Operation.....	Trainer(s) Initials		
	Try Out Performance.....	Trainer(s) Initials		
	Follow Up.....	Trainer(s) Initials		
Comments:				

**Note:** Job Hazard Analysis is often called different things. Other names for it include: job hazard analysis, job task analysis, task hazard analysis, safe work procedure, and safety task analysis.



### OSHA Challenge: Hazard Analysis of Routine Jobs, Tasks, and Processes

Stage 1: Review routine tasks to ensure compliance with local, state, and Federal safety and health regulations. Begin to formalize system to ensure employees are properly trained on routine jobs, tasks, and processes.

Stage 2: Conduct hazard analysis for work and recommend controls for routine jobs, tasks, & processes that have potential to cause an injuries/illnesses or significant incidents; are perceived as high-hazard; or are required by a regulation or standard. Update the company hazard analysis, as appropriate. Require subcontractors to adopt and implement hazard analysis of routine work tasks.

Stage 3: Conduct hazard analysis and recommend controls for routine jobs, tasks, and processes that have written procedures, have been recommended for more in-depth analysis, or are determined by the Challenge participant to warrant hazard analysis. Ensure subcontractors continue implementing similar processes.

## Employee Hazard Reports

Employees play a key role in identifying, controlling, and reporting hazards that may occur or already exist in your worksite. Employee reports of potential hazards can be an effective tool to trigger a closer look at a piece of equipment, operation, or how work is being performed. Reports of potential hazards can also provide suggestions to eliminate a hazard.

They can also help to determine if any trends in hazardous conditions or unsafe behaviors exist.



### OSHA Challenge: Hazard Reporting System for Employees

Stage 1: Use data collected from accident incident reports and other sources to determine areas to concentrate on. Obtain supervisor and employee input for suggested plan of action in developing a hazard reporting system.

Stage 2: Develop & begin implementing hazard-reporting system for employees (maybe anonymous), requiring timely responses back to employees. Require subcontractors to participate in the company process or establish equivalent processes.

Stage 3: Continue implementing hazard reporting systems and encouraging more active reporting by both company and subcontractor employees; ensure timely investigations of the hazard reported, ensure regular feedback, using different media, to all employees on status of hazards reported.

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## Informal and Formal Employee Observation Processes

An informal observation process is nothing more than being watchful for hazards and unsafe behaviors throughout the work shift. No special procedure is involved. All employees should be expected to look over their work areas once in a while.

One of the most effective proactive methods to collect useful data about the hazards and unsafe behaviors at the worksite is the formal observation program because it includes a written plan and procedures.

For example, safety committee members or other employees may be assigned to complete a minimum number of observations of safe/unsafe behaviors during a given period of time. This



data is gathered and analyzed to produce graphs and charts reflecting the current status and trends in employee behaviors.

Posting the results of these observations tends to increase awareness and lower injury rates. But, more importantly, the data gives valuable clues about safety management system weaknesses.

Observation is important because it can be a great tool to effectively identify behaviors that account for fully 95 percent of all worksite injuries. The walk-around inspection, as a method for identifying hazards, may not be as effective as observation in identifying unsafe behaviors.

### **Worksite Safety Inspections**

Inspections are the best understood and most frequently used tool to assess the worksite for hazards. Much has been written about them, and many inspection checklists are available in various OSHA publications. 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. This includes routine industrial hygiene monitoring and sampling.

### **Inspection Frequency**

The regular site inspection should be done at specified intervals. The employer should inspect as often as the type of operation or character of equipment requires.

The inspection team can document in writing the location and identity of the hazards and make recommendations to the employer regarding correction of the hazards. Regular inspections of satellite locations should be conducted by the committee team or by a person designated at the location.

The frequency of a safety inspection depends on the nature of the work being performed and the worksite. More frequent change and higher probability for serious injury or illness require more frequent inspections. For construction sites, daily inspections are a must because of the rapidly changing nature of the site and its hazards.

At small fixed worksites, the entire site should be inspected at one time. And even for the smallest worksite, inspections should be done at least quarterly. If the small worksite uses hazardous materials or involves hazardous procedures or conditions that change frequently, inspections should be done more often.



## OSHA Challenge: Routine Self-Inspections

Stage 1: Establish a routine self-inspection program that ensures S&H inspections are performed as often as necessary. Train company employees in the recognition and avoidance of hazards in their work area

Stage 2: Develop a system for scheduling routine self-inspections of the workplace; conduct inspections with S&H staff. The entire site must be self-inspected as often as necessary, but never less than weekly. Require subcontractors to adopt similar policies.

Stage 3: Conduct routine self-inspections covering entire worksite as often as necessary, but at least weekly. Ensure subcontractor processes implement similar self-inspection processes.

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## Incident and Accident Investigation

Your company should conduct an investigation for all injury accidents, property-damage incidents and non-injury near misses. Be sure to adequately document all reports. Only those who are properly trained and trusted should conduct investigations involving injury or property damage.

The primary goal of conducting an investigation is to determine the “root cause(s),” or system weakness in the “6-Ps” of the CSMS: plans, programs, policies, processes, procedures and practices. Uncovering the root causes will best help to prevent the risk of a future incidents and accidents on the worksite.

Investigation reports should help determine injury and illness trends over time, so that patterns with common root causes can be identified and prevented. Investigations should not place blame.

Accidents and “near-miss” incidents should be investigated by qualified and trained persons in your company. It’s important that the person also be one who is trusted by employees.

The reports should be reviewed by the executive in charge your company (or the person in your company that has the power and ability to address the findings of the report) and the Safety Committee within a specified amount of time after an accident/incident. (More on this topic in course 702).

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### **OSHA Challenge: Investigation of Accidents and Near-Misses**

Stage 1: Develop and implement requirements to report and investigate incidents/accidents. Investigate accidents and prepare and maintain written reports of investigations. Involve employees in the investigations. Require subcontractors, if applicable, to adopt and begin implementing similar systems.

Stage 2: Company and subcontractors expand investigation activities to include near misses and make findings available to employees.

Stage 3: Continue reporting and investigating accidents/incidents and near-misses.

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## Module 7 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Which type(s) of worksite analysis actions can assist with making an inventory of potential hazards in the worksite?**
  - a. comprehensive hazard surveys
  - b. personal protective equipment assessment
  - c. incident and accident investigations
  - d. all of the above
  
- 2. John is conducting an accident investigation. What is his primary goal?**
  - a. to determine the surface cause(s)
  - b. to determine the root cause(s)
  - c. to reduce the company's liability
  
- 3. As described in OSHA's Field Compliance Manual, recognition of a hazard is established on the basis of each of the following criteria, except \_\_\_\_\_.**
  - a. industry recognition
  - b. employer recognition
  - c. common sense
  - d. foreseeability
  
- 4. Observation is important because it can be a great tool to identify behaviors that account for what percent of all worksite injuries?**
  - a. 95
  - b. 70
  - c. 50
  - d. 100

**5. How should a small fixed worksite be inspected for hazards?**

- a. Employees should inspect separate parts of the worksite at differing times.
- b. On an annual basis by a single person.
- c. At most on a quarterly basis and must include a union representative.
- d. The entire site should be inspected at one time, and should be done at least quarterly.

## Module 8: Controlling Worksite Hazards

### Introduction

In this module, we'll take a look at how employees can get involved in proactive worksite hazard control to help eliminate hazards on the worksite (and future worksites).

### Hazard Definition

Before we study identifying, investigating and controlling hazards in the workplace, it's important to know how OSHA defines the term. A hazard is any workplace condition or a person's "state of being" that could cause an injury or illness to an employee. By "state of being" we mean his psychological, emotional and physical state. Every worker must be fully aware and sober on the job.

### Looking for Hazards

I'll bet if you look around your worksite, you'll be able to locate a number of hazardous conditions or unsafe work practices without too much trouble. Ask yourself, if I was an OSHA inspector conducting a surprise inspection of this worksite, what would I find? What does OSHA look for? Now, if you used the same inspection strategy as an OSHA inspector, wouldn't that be smart? Well, that's what I'm going to show you in this module!

### The Five Workplace Hazard Categories

To help identify workplace hazards it's useful to categorize them into easy-to-remember categories. The first three categories represent hazardous physical conditions that, according to [SAIF Corporation](#), account for only 3% of all workplace accidents. The fourth category describes behaviors in the workplace which may contribute up to 95% of all workplace accidents. The final category may contribute to both the hazardous conditions and unsafe behaviors, and therefore, may be ultimately responsible for fully 98% of all accidents in the workplace.

**1. Materials:** Hazardous materials include hazardous:

- ) **Liquid and solid chemicals** such as acids, bases, solvents, explosives, etc. The hazard communication program is designed to communicate the hazards of chemicals to employees, and to make sure they use safe work practices when working with them.
- ) **Solids like metal, wood, plastics.** Raw materials used to manufacture products are usually bought in large quantities, and can cause injuries or fatalities in many ways.

- ) **Gases like hydrogen sulfide, methane, etc.** Gas may be extremely hazardous if leaked into the atmosphere. Employees should know the signs and symptoms related to hazardous gases in the workplace.

**2. Equipment:** This area includes machinery and tools used to produce or process goods. These examples all represent hazardous conditions in the workplace. Hazardous equipment includes machinery and tools.

Hazardous equipment should be properly guarded so that it's virtually impossible for a worker to be placed in a danger zone around moving parts that could cause injury or death. A preventive maintenance program should be in place to make sure equipment operates properly. A corrective maintenance program is needed to make sure equipment that is broken, causing a safety hazard, is fixed immediately.

Tools need to be in good working order, properly repaired, and used for their intended purpose only. Any maintenance person will tell you that an accident can easily occur if tools are not used correctly. Tools that are used while broken are also very dangerous.

**3. Environment:** This area includes facility design, hazardous atmospheres, temperature, noise, factors that cause stress, etc. Are there areas in your workplace that are too hot, cold, dusty, dirty, messy, wet, etc. Is it too noisy, or are dangerous gases, vapors, liquids, fumes, etc., present? Do you see short people working at workstations designed for tall people? Such factors all contribute to an unsafe environment.

**4. People:** This area includes unsafe employee behaviors at all levels in the organization such as taking short cuts, not using personal protective equipment, and otherwise ignoring safety rules.

**5. System:** Every company has, to some degree, a CSMS. It's good to think of the "state" of the CSMS as a condition. For instance, management may develop and implement ineffective policies, procedures and safety rules. I consider a flawed CSMS as a systemic hazardous condition because it could increase the number accidents. If the condition of the CSMS is flawed, it may also result in manager and supervisor behaviors such as ignoring safe behaviors or by actually directing unsafe work practices that will contribute to accidents in the workplace.

To remember the five hazard areas, just remember the acronym:

**MEEPS = Materials, Equipment, Environment, People, and System**

## Controlling Exposure - The Hierarchy of Controls

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective controls. One representation of this hierarchy is summarized 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.

**Elimination and substitution**, while most effective at reducing hazards, also tend to be the most difficult to implement in an existing process. If the process 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.

**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.

**Administrative controls and personal protective equipment** are frequently used with existing processes where hazards are not particularly well controlled. Administrative controls and personal protective equipment programs may be relatively inexpensive to establish but, over the long term, can be very costly to sustain. These methods for protecting workers have also proven to be less effective than other measures, requiring significant effort by the affected workers.



**Note:** [ANSI/AIHA Z10-2005](#) also includes "Warnings" as one of the strategies in the Hierarchy of Controls. However, I would classify this strategy as an administrative control because warnings are only as effective as the awareness of and compliance with the message. Warnings do not eliminate or reduce hazards.

## Two Strategies

To identify and control hazards in the workplace, two basic strategies are used. First and most common is the walk-around inspection. Now, you probably have participated in a safety inspection, or at least have watched others conduct one.

- ) Most companies conduct safety inspections in compliance with OSHA rule requirements. But, is that good enough? Safety inspections may be effective, but only if the people conducting the inspection are properly educated and trained in hazard identification and control concepts and principles specific to your company. In high hazard industries, which experience worksite change on a daily basis, it takes more than an occasional inspection to keep the project safe from hazards.
- ) In world-class safety cultures supervisors, as well as all employees inspect their areas of responsibility as often as the hazards of the materials, equipment, tools, environment, and tasks demand. It's really a judgment call, but if safety is involved, it's better to inspect often.
- ) Employees should inspect the materials, equipment, and tools they use, and their immediate workstation for hazardous conditions at the start of each workday. They should inspect equipment such as forklifts, trucks, and other vehicles before using them at the start of each shift. Again, it's better to inspect closely and often.

## The Safety Inspection is Not the Answer

The picture to the right illustrates the major weakness of the inspection process. Although the walk-around safety inspection is good at discovering hazardous conditions, it's not good at uncovering unsafe behaviors.

## What's the Solution?

The Job Hazard Analysis (JHA), on the other hand, can be the answer to this weakness. It uncovers unsafe work practices as well as hazardous conditions because sufficient time is given to close analysis of one unique task at a time.

## Management Involvement

Involvement is one of the key principles in making sure your CSMS is effective (gets desired results). Management should involve employees/unions in all aspects of CSMS development so that they will gain a sense of buy-in or ownership in the system.

Employee involvement in the JHA process helps ensure they will use the safe job procedure developed by the JHA when not being directly supervised. Employees want to work efficiently, and that means they're more likely to use procedures they believe will get the job done most efficiently. If they're not involved in developing safe job procedures, they're more likely to see their own (possibly less safe) procedures as more efficient. When employees are directly involved, supervisors can be a little more sure their employees are using safe job procedures because employees are more likely to consider the procedures as their own.

## Dig up the Roots!

When investigating hazards discovered in a walk-around inspection or JHA, it's important that you uncover the root causes that have allowed those hazards to exist in the workplace. Taking this approach to hazard investigation is called root cause analysis.

Check out the well-known "accident weed" to the right.

The flower represents the injury. It's the result of the transfer of an excessive amount of energy from an outside source to the body. This is called the direct cause of the accident.

The leaves of the weed represent hazardous conditions and unsafe work practices in the workplace. Conditions and/or practices are typically called the surface or indirect causes of an accident.

The roots of the weed represent management's effort to maintain a safe and healthful workplace, safety policies, safety supervision, safety training, and enforcement of safety rules. Think of these as management controls which pre-exist every hazardous condition, unsafe work practice, and accident. Inadequate or missing system components represent the root causes for accidents in the workplace. System weaknesses may include programs, policies, plans, processes, procedures, and practices (remember the "6-P's") in any or all of the seven element



areas of the safety management system. Root causes may feed and actually promote or nurture hazardous conditions and unsafe work practices.

Research findings indicate hazardous conditions, alone, represent only about 3% of the causes for accidents in the workplace, while unsafe behaviors make up about 95% of the causes for accidents. Consequently, about 98% of all workplace accidents are ultimately caused by a combination of inadequate safety management system components, under the control of management, that result in hazardous conditions and/or unsafe work practices.

For a look at a more complete **accident weed** with explanation review course 702.

## Module 8 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. What may be a contributing factor in up to 95 percent of all workplace accidents?**
  - a. unsafe behaviors
  - b. unsafe conditions
  - c. unsafe situations
  - d. unsafe people
  
- 2. Which cause category is ultimately responsible for most accidents in the workplace?**
  - a. hazardous conditions
  - b. unsafe behaviors
  - c. management system weaknesses
  - d. lack of common sense
  
- 3. Which of the following is not one of the five areas within which all workplace hazards exist? (Hint: MEEPS)**
  - a. materials
  - b. equipment
  - c. energy
  - d. people
  
- 4. Which method of controls is most effective at reducing hazards?**
  - a. elimination and substitution
  - b. engineering controls
  - c. administrative controls
  - d. personal Protective Equipment

**5. Which method of controls has also proven to be less effective than other measures, requiring significant effort by the affected workers?**

- a. elimination
- b. engineering controls
- c. administrative controls
- d. substitution

## Module 9: Managing Subcontractors

### Introduction

One of the greatest challenges the general or prime contractor has is managing the work that is being conducted by one or more subcontractors on a project. Change is continual on the worksite and subcontractors routinely create hazardous conditions, and unless all employees of other contractors are continually aware, they may get seriously injured or killed by a hazard that didn't exist just moments ago. Consequently, one of the greatest hazards in any construction project is the lack of subcontractor awareness of what's going on around them.

### The Project Safety Plan

Both the Project Manager and Project Safety Representative/Manager have the responsibility to take reasonable care to recognize and control all worksite hazards and to make sure subcontractors comply with all safety and health requirements. To do that, a specific project safety plan needs to be written.

A well-designed project safety plan will include most or all of the following subjects:

#### **SAFETY MANAGEMENT SYSTEM**

- A. Contractor Prequalification
- B. Contractor Safety Representatives
- C. Monthly Safety Reports
- D. Communication
- E. Job Safety Board
- F. Project-Specific Safety Plan Overview

#### **PROJECT-SPECIFIC SAFETY PLAN**

- A. Accountability Plan
- B. Audits/Inspections
- C. Cell Phone Usage
- D. Confined Space Entry

- E. Crane Safety and Rigging
- F. Electric – Temporary
- G. Emergency Action/Response Plan
- H. Hazard Communication
- I. Equipment Safety
- J. Fall Protection
- K. Fire Prevention and Protection
- L. Housekeeping
- M. Job Hazard Analysis (JHA)
- N. Personal Protective Equipment (PPE)
- O. Potentially hazardous exhaust systems
- P. Protection of the Public/Visitors
- Q. Recordkeeping and Incident Reporting
- R. Rooftop Access
- S. Smoking
- T. Substance Abuse Policy
- U. Temporary Elevators
- V. Utility Tunnel Safety
- W. Near Miss/Incident/Accident Reports
- X. Safety Plan Certification Form
- Y. Job Safety Analysis Form
- Z. Hot Work Permit



### **OSHA Challenge: Equal S&H Protection**

Stage 1: Develop and begin implementing a plan for how subcontractors will provide their employees with equal S&H protection.

Stage 2: Work with subcontractor to improve and continue implementing subcontractor program.

Stage 3: Work with subcontractor to improve and continue implementing subcontractor program.



### **OSHA Challenge: Adherence to Rules**

Stage 1: Require subcontractors and their employees to comply with OSHA and company S&H rules. Inform all subcontractor employees of this requirement before work begins.

Stage 2: Develop a system to handle S&H violations of subcontractor employees working on-site.

Stage 3: Improve and continue to enforce company policy for S&H violations.

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### **Steps for Managing Subcontractors**

Managing subcontractors on the worksite involve these steps for the General Contractor:

1. Select subcontractors who can show they are competent to do the job safely and can demonstrate a history of doing so with a workers compensation rate at or below 1.0.
2. Give subcontractors a copy of your worksite safety plan and have them sign an agreement that they intend to comply with all requirements. Get a copy of the subcontractor's safety plan as well.



3. Only allow subcontractors on site who have completed safety orientation and training.
4. Monitor subcontractor safety performance on the worksite to make sure they are complying with safety rules and policies and using safe work procedures and practices.

### General Contractor Responsibilities

The general contractor should take the following actions to help ensure subcontractor safety on the worksite:

- ) Prior to the start of work on the project, obtain and review site-specific subcontractor safety plans and training records to make sure needed programs are included
- ) Ensure coordination and cooperation of subcontractors regarding information and worksite safety and health activities, such as safety training and meetings.
- ) Make sure there is appropriate safety and health communication processes between and among all contractors on the project.
- ) Require that all subcontractors conduct regular safety and health training and toolbox/tailgate meetings.
- ) Ensure adequate procedures are in place for non-injury incident and injury accident reporting.
- ) Develop measures for safety and health and document performance through written reports, audits, and safety inspections.
- ) Control visitor access to the project.

### Managing Subcontractors

Subcontractor management is a collaborative team effort throughout all phases of the project. Be sure to establish requirements pertaining to subcontractor safety. The contractor is responsible to prequalify all subcontractors/trade contractors engaged on a project per their own written prequalification process.

Prior to the start of a project, a designated project safety representative/manager should be appointed and required to be on site at all times while work is being performed.

**Safety Representative:** General and subcontractor designated project safety representatives should have completed and documented at least an authorized 30-Hour OSHA Construction

Safety Course and have current CPR/First Aid Training from a nationally recognized program. The project safety representative may also function as a superintendent, foreman or crew leader on the Project.

**Safety Manager:** A dedicated, full-time safety manager should be assigned on large or high-risk projects. If a safety manager is required by contract, he or she should not have any other duties. Safety managers should have earned professional credentials (CSP, CIH, CSHM, etc.) or completed the OSHA 30-Hour Construction Safety Course plus have additional training and experience necessary to understand the management of a project CSMS.

### Selecting Subcontractors

- ) Make sure you require bid documents include subcontractor injury and illness records for the past three years (if the subcontractor has them), and copies of their written safety and health program, including training.
- ) Establish the criteria for safety and health performance required of potential bidders.
- ) Encourage subcontractors to develop and implement their own effective CSMS.

As part of the subcontractor bid process, you will want to ask subcontractors for documentation of the following:

- ) The experience modification rate (called a “Mod Rate” or EMR) for the past three years. It should be 1.0 or less.
- ) The OSHA Recordable Incident Rate, DART incidents and near misses for the past three years
- ) OSHA inspection results for the past three years, if available
- ) Incident/Accident analysis and investigation procedures
- ) Participation by management and supervisors
- ) Supervisors’ safety meetings and toolbox safety meetings
- ) Written safety and health plan
- ) Employee orientation and training



## OSHA Challenge: Subcontractor Selection

Stage 1: Require in bid documents to include subcontractor injury and illness records for past three years (if available), and copies of their written S&H program. Consider the above information in when selecting subcontractors for work.

Stage 2: Implement policy and process for addressing S&H performance of potential bidders.

Stage 3: Continue to encourage and reinforce the importance for subcontractors to develop and implement good effective S&H management systems.

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## Subcontractor Responsibilities

All subcontractors should make sure the following is completed during the project:

- ) Develop a site-specific written safety and health plan for your particular work activity.
- ) Identify the hazards of the work you will be doing on the worksite and determine the risks they pose to your employees and other subcontractors, and how these risks will be controlled.
- ) Maintain written documentation of the training and competence of all employees involved in the project.
- ) Keep the general contractor informed of all hazardous conditions, non-injury incidents and injury accidents that occur on the worksite.

## Correcting Hazards Created by Subcontractors

- ) Establish and communicate the requirement for and methods that subcontractors can use to promptly correct hazards involving their work activities.
- ) Make sure subcontractors understand the hazards on the specific worksite, and the hazard other subcontractors may create during the workday. One of the most common reasons for injuries by one subcontractor is the lack of awareness of hazards created by other subcontractors.

- J Work with subcontractor to use methods to ensure that hazards are identified, analyzed, corrected, and tracked in subcontractor's work areas.
  - J Make sure subcontractors have a person assigned responsibility for managing their safety and health program on site.
  - J Ensure subcontractors effectively implement systems to identify and correct hazards in their work areas and include responsibility for hazard correction in writing.
- 



### **OSHA Challenge: Subcontractor Hazard Correction**

Stage 1: Establish a requirement that subcontractors promptly correct hazards involving their work activities.

Stage 2: Formalize and begin implementing methods to ensure that hazards are identified, corrected, & tracked in subcontractors' work areas including assignment of responsibility.

Stage 3: Ensure subcontractors effectively implement systems to identify and correct hazards in their work areas and include responsibility for hazard correction in writing.

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### **OSHA Challenge: Removal Policy**

Stage 1: No action required.

Stage 2: Establish and communicate a formal policy on subcontractor S&H violations, including removal and possible financial penalties. Include policy in the company contract requirements.

Stage 3: Hold subcontractors responsible for correcting hazards created by their work and ensure any penalty policies are understood by all subcontractors and tier contractors described in their contracts.

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## Project Safety Representatives and Managers

During the construction phase it will be important to do the following:

- ) Continue to identify the impact of changes on the worksite in safety and health of workers involved in the project.
- ) Continue to provide sufficient information on health and safety on the worksite to supervisors and those who will train workers on safety, so they can conduct the necessary training if needed.
- ) Cooperate and coordinate safety and health with the subcontractors and others throughout each phase of the project.
- ) Provide advice and information regarding the general contractor's health and safety plan to everyone involved with the project.
- ) Make sure other the general contractor and all subcontractors continue to carry out their duties and responsibilities to regularly submit activity reports and hold worksite safety meeting.

## Multi-Employer Worksites

Most large construction projects are actually multi-employer worksites composed of the general or prime contractor and a number of subcontractors. It's important to understand the safety responsibilities of each employer category as more than one employer may be citable by OSHA for violations. Employers may perform one or more roles on a project.

## Multi-Employer Categories

The four employer roles or categories on multi-employer worksites are:

**Creating employer:** The employer that caused a hazardous condition that violates an OSHA standard.

**Exposing employer:** This is an employer whose own employees are exposed to the hazard. See Chapter III, section (C)(1)(b) for a discussion of what constitutes exposure.

**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 particular safety/health equipment or devices.

**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.

For a more complete discussion of these categories, reference OSHA CPL 02-00-124, X. Multi-employer worksites.

### Multiple Roles

As mentioned above, an employer on a multi-employer worksite may, in fact, play a number of roles during throughout the project. For instance, an exposing employer may also perform the role of a correcting employer.

### Reasonable Care

It's important for everyone on a project to understand the concept of "Reasonable Care". According to OSHA, reasonable care may be established by meeting the following criteria on multi-employer worksites:

1. The controlling employer should have adequate knowledge of the hazards or violations of the creating or exposing employer.
2. There should be evidence of an effective safety and health program in place for the project.
3. There should be a system in place for identifying and correcting hazards for the project.
4. There should be documentation of regular jobsite safety meetings and or safety training.
5. If creating or exposing employers have a previous history of similar violations, documented steps should have been taken to identify and correct these situations.

## Module 9 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. What is one of the greatest hazards on any construction project?**
  - a. a lack of awareness of ongoing work activities
  - b. a lack of individual common sense
  - c. an inability to foresee hazards
  - d. a hazardous object falling out of the sky
  
- 2. The \_\_\_\_\_ must take reasonable care to recognize and control all worksite hazards and to make sure subcontractors comply with all safety and health requirements.**
  - a. Project Manager and Project Safety Representative/Manager
  - b. Project Manager or Project Safety Representative/Manager
  - c. each general contractor and subcontractor employees
  - d. the corporate safety professional
  
- 3. Select subcontractors who can show they are competent to do the job safely and can demonstrate a history of doing so with a workers compensation rate \_\_\_\_\_.**
  - a. at or below 1.0
  - b. at or above 1.0
  - c. less than 5.0
  - d. at least 10.0 or above
  
- 4. A dedicated, full-time \_\_\_\_\_ should be assigned on large or high-risk projects. If a safety manager is required by contract, he or she should not have any other duties.**
  - a. safety manager
  - b. safety monitor
  - c. safety coordinator
  - d. safety helper

**5. On a multi-employer project, the employer that caused a hazardous condition that violates an OSHA standard is called the \_\_\_\_\_.**

- a. creating employer
- b. exposing employer
- c. correcting employer
- d. controlling employer



## Module 10: Improving the CSMS

### Reviewing Your Program

Any good CSMS requires a periodic review, analysis, and performance evaluation to ensure that the system is operating as intended. You should take a careful look at each element in your safety and health program to determine what is working and what changes are needed. Identifying needed improvements provides the basis for new safety and health objectives for the coming year. Developing and implementing new action plans for those improvements will ensure continued progress towards an effective safety and health program. That, in turn, will reduce safety and health risks and increase efficiency and profit.

In this module, we'll examine Total Quality Safety Management concepts that apply to all elements of the CSMS. Since we're talking about "life and limb," continuous evaluation and improvement of the CSMS is all the more important to make sure all elements are in place and effectively maintained.

### Quality and Safety: Partners in Productivity

It's important to think of safety as an important aspect of both product and process quality in the workplace. In this course, we'll address those concepts and principles that apply safety specifically to process safety. Let's take a brief look at how product and process safety differ.

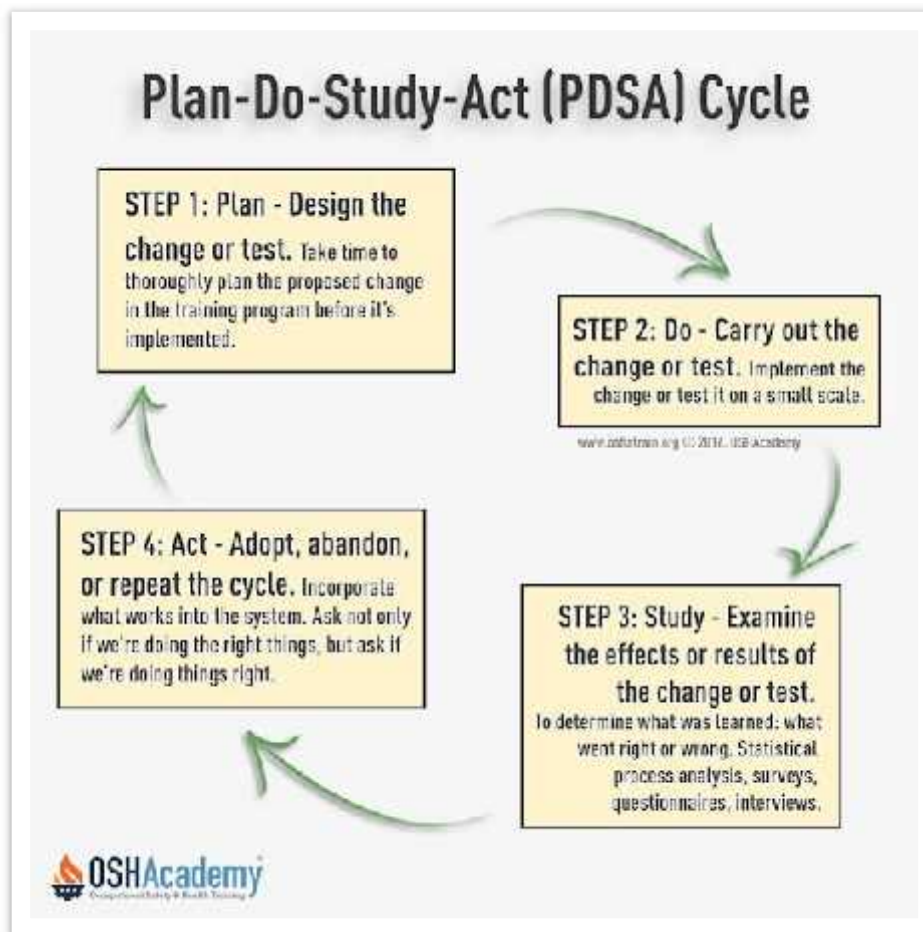
Product quality is elusive. The only way you know you have it is by asking those who define it: The customer. All the company can do is to try hard to produce a product that fits the customer's definition of quality. When the product is designed to prevent injury or illness, the customer will define the product as safe. As we all know, customer perceptions about product safety are very important these days. Unfortunately, some companies do not take safety into consideration when designing their products. Consequently, they may unintentionally design unsafe or unhealthful features into their products.

Process quality and safety are very closely related. Process quality may be considered error-free work, and safety, as one element of process, can be thought of as injury-free work. When an injury occurs, the "event" increases the number of unnecessary and wasted steps in the production process. How does safety fit into the continuous quality improvement philosophy?

## The Shewhart/Deming Cycle

After asking the questions above, you may discover that one or more improvements to your training program is necessary, it's important to carefully develop and implement the change through effective change management principles.

One simple change management technique is to use the Plan-Do-Study-Act (PDSA) Cycle, first developed by Dr. Walter Shewhart, and later applied by W. Edwards Deming, who is considered the father of total quality management, to transform the industry of Japan after World War II. He promoted the PDSA Cycle that was partly responsible for Japan's meteoric rise in manufacturing. He believed that statistics hold the key to improving processes, and that management must take responsibility for quality in the workplace because management controls the processes.



This module will take a look at his 14 Points of Total Quality Safety Management as they relate to safety.

## Deming's Fourteen Points Applied to Total Quality Safety Management

Deming's 14 Points form some of the most important concepts and approaches to continuous quality improvement philosophy. The focus of this module is to better understand and apply each of Deming's 14 points to workplace safety. So, let's examine what he says about quality, and how it can be applied to safety.

***Point 1: Create a constant purpose to improve the product and service, with the aim to be competitive, stay in business, and provide jobs.***

Management should be focused constantly on improving the safety of materials, equipment, workplace environment, and work practices today so that it can remain successful tomorrow. If management successfully communicates the clear, consistent message over the years that workplace safety is a core value (as stated in the mission statement), and if there are "no excuses" for accidents, the company can be successful in developing a world-class safety culture. If a company considers safety only a priority that may be changed when convenient, constancy of purpose is not communicated to the workforce.

***Point 2: Adopt a new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for a change.***

Safety can never be understood or properly appreciated if only the short-term view is taken by management. Quick fix programs to "impose" change will not work. Only understanding of the long-term benefits will give management the vision to properly and consistently send and act on the message of workplace safety.

The old philosophy accepts as fact that a certain level of injury and illness will result from a given process, and that the associated costs should represent one of many costs of doing business.

The new safety philosophy strives to:

- ) Prevent injuries and illnesses by continually analyzing and improving upstream factors such as work practices, equipment design, materials, and the workplace physical and cultural environment through education, training and recognition.
- ) Improve product safety for the benefit of the customer.

***Point 3: Cease dependence on mass inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.***

When we apply principle this to safety, Deming might consider relying on the results (defects) as measuring our success solely by counting the number of accidents (also defects) that occur. No consideration is given to measuring employee and management-level safety activities.

In safety, evaluating only results (lagging indicators) is like driving a car down the road and trying to stay in your lane by looking through a rear-view mirror. All you can do is react after the fact. When we only analyze accident rates, we can only react to the number. Accident rates tell us nothing about why the accidents are happening. The old safety philosophy we discussed above primarily measures injury and illness rates (defects) which represent the end results of the safety component of the process. Incident rates, accident rates, MOD rates, etc. all measure the end point, and since these measures are inherently not predictive, these statistics provide little useful information about the surface and root causes (upstream) for injuries and illnesses.

The new philosophy emphasizes measurement along the entire production process, primarily:

- ) measurement of management/supervisor safety activities
- ) employee safety education and training
- ) individual worker behaviors
- ) materials and equipment design prior to purchase

***Point 4: End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.***

Safe equipment, materials, and chemicals may cost a little more but will save money in the long-term through fewer injuries and illnesses. Management should write safety specifications that meet their requirements into pre-bid contracts. Even today, manufacturers of equipment and machinery sell equipment that does not meet NEC, NIOSH, ANSI, or other safety standards for product safety. Employers purchasing such equipment run increased risk of injury and illness to their employers.

With respect to personal protective equipment (PPE), "cheap" is not better. Ensuring employees have high quality personal protective equipment is smart business when we realize that using quality PPE is actually a profit-center activity. How's that? If you spend \$5,000 in various types of PPE in a given year and any one piece of PPE prevents a serious injury, your company has just paid for all the PPE they'll need for that year and probably for many years into the future. The money spent on quality PPE should be thought of as an investment that may result in substantial returns (reduced direct and indirect accident costs) to the company.

Unfortunately, many employers consider only the initial cost of PPE. They don't see the big picture benefits.

Relying on a single supplier for safety equipment, such as personal protective equipment, may have many benefits. Supplier representatives, calling on an employer over a period of years, will become familiar with the particular safety equipment needs of the employer. The employer who establishes a long-term close relationship with the supplier is more likely to receive the attention and higher quality equipment when requested. Developing a close, cooperative partnership between the employer and the supplier of safety equipment is extremely important for the success of both parties, and is possible by applying the single supplier principle.

***Point 5: Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.***

A system refers to a number of processes or procedures that have been standardized. Everyone does something the same way. It's important to have an effective safety and health management system. What safety process or procedure might be standardized to improve your company's safety and health management system?

Jeffrey Castillo, CSP, states that:

"Traditionally, safety functions have been under the direction of the human resource department, which places safety and health at odds with the organization's primary goals: to produce and sell goods/services. Too often, managers in other departments feel the safety manager (alone) should contain costs, solve safety problems via training or committees, and reduce injury costs. Yet, in most cases, the safety manager must accomplish such tasks while other managers increase production goals."

*Jeffrey E. Castillo, CSP, IHIT, "Safety Management: The Winds of Change." Professional Safety, Feb 95.*

Management must integrate safety as an element of quality into operations so completely that it disappears as a separate function. It must be viewed by each employee, supervisor and manager as his or her personal responsibility; one that is important in not only improving the production process, but in saving lives.

***Point 6: Institute training on the job.***

Some companies today consider training a cost, not a benefit. How many workers are properly educated and trained in supervisory, management, and leadership principles as they move up the corporate ladder? Have you ever been in a situation where the worker who "makes the most widgets" gets promoted? Does management assume new supervisors and managers know what they're doing?

Currently many companies rely on the safety director or the human resources department to train safety. The new employee receives a safety overview when hired, and a safety "expert," conducts more specific training related to the employee's job exercise. The supervisor, in many instances, does not think he or she is getting paid to train safety. But, who is better suited to do the training than the person responsible for the safety and health of his or her employees? If the supervisor cannot train safety, how can he or she have the knowledge to effectively oversee safe work practices? How can the supervisor provide effective safety feedback? How can the supervisor, when needed, properly enforce safety rules?

The supervisor cannot perform any of these responsibilities unless he or she thoroughly understands safety concepts and principles, the hazards in the workplace, and is competent to train those subjects specifically related to the workspace he or she controls. The human resources department or the safety director can't provide that quality of training for a couple of reasons: They don't work in the area, and they're "not the boss."

***Point 7: Adopt and institute leadership. The aim of supervision should be to help people and machines do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.***

The key to adopting and instituting leadership, of course, lies at the top. Management needs to lead by example, action, and word. The leader "cares" about those he or she leads. After all, the leader's success is tied to the success of his or her workers. The "servant leadership" model fits well into the ideas expressed by Deming and others.

There is no better way to demonstrate these principles of leadership than in making sure employees use safe work procedures in a workplace that is, itself, safe from hazards. Ensuring safety is one of the most visible undertakings that management can take to show employees that they are not merely hired hands who can be replaced, but are valued human resources... part of the family.

***Point 8: Drive out fear, so that everyone may work effectively for the company.***

Driving out fear is the most important requirement when implementing a Total Quality Safety Management process. You must begin here. Management controls the workplace. It influences the standards of behavior and performance of its employees by creating cultural norms in the workplace that dictate what are, and are not acceptable behaviors. Management may rely solely on safety rules and progressive discipline (negative reinforcement) in their attempt to control the safety behavior and performance of its employees. However, a strategy such as this, that may be successful in forcing compliance, is never successful in producing excellence in product or process. Strategies using fear and control are rarely, if ever successful. What develops from such a strategy is a controlling, compliance driven climate of mistrust and disgust; only a shell of an effective safety and health management system.

In the TQM system, managers and supervisors drive out fear through a real commitment to fact-finding to improve the system, not fault-finding to punish someone. They emphasize uncovering the weaknesses in the system that allowed unsafe work practices and hazardous conditions to exist. They educate and train everyone so that those weaknesses are strengthened, thus helping to continually improve the production process. They recognize employees for appropriate safety behaviors; compliance with safety rules, reporting injuries immediately, and reporting hazards in the workplace. Trust increases. Morale and motivation improve because employees are not afraid to report safety concerns to management. Safety is never a complaint in a TQM organization.

***Point 9: Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.***

We should only compete with our competitors, not ourselves. Internal cooperation and external competition applies to safety as well. Cooperation among all internal functions is another key to effective safety.

Competitive safety incentive programs: Reactive safety incentive programs that challenge departments to compete against each other for rewards set up a system that may promote illegal behaviors by creating situations where peer pressure causes the withholding of injury reports. Consequently, the "walking wounded syndrome" develops that eventually results in increased injury costs and workers compensation premiums. The performance of one employee impacts the success of others in the department. Employees will do virtually anything, in some cases, to ensure the department gets their pizza parties, saving bonds, or safety mugs. The fix: Reward/recognize employees individually for appropriate behaviors: complying with safety

rules, reporting injuries and reporting workplace hazards. Reward activities that enhance cooperation.

Bringing management and labor together: Cooperation at all levels of the company to identify and correct hazards is very important. Of course, the process designed to promote this kind of cooperation is called the safety committee (or safety improvement team). A world-class safety system will take advantage of the cross-functional makeup of safety committees to bring management and employees together in a non-adversarial forum to evaluate programs and make recommendations for improvement in workplace safety.

***Point 10: Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.***

What! Zero defects are not an appropriate goal? Does that apply to safety too? Remember, Deming is talking about product defects here. The related safety goal might be "zero accidents." Although this goal may be unachievable, it's the only morally appropriate goal to have because we are dealing with injuries and fatalities. If we set a goal of anything less than zero accidents, what's going to happen? If we reach the goal, we pat ourselves on our collective back, sit back with our feet up on the desk, and believe we "have arrived." When this occurs, you can bet your accident rate will start rising once again. Contentment is a dangerous condition in safety. If we set zero accidents as our goal, we may never reach it, but that's fine. We should never be content anyway. We should always be frustrated...never satisfied to make sure we continually improve the system.

If we set a goal to reduce accidents by 50%, we will design a less effective system to get us to the goal, but no farther. If we set a zero-accident goal, we will design the more effective system to reach that goal.

On another line of thought: In safety, the "happy poster syndrome" is a common occurrence. Managers think that by placing a safety poster every thirty feet on a wall, they have a successful safety awareness program. Employees, for the most part, ignore the posters, and may not believe the message that management is trying to convey. The Fix: Get rid of the posters and meaningless slogans. Replace them with action, example, and word. Each supervisor and manager becomes a walking safety slogan.



***Point 11: Eliminate numerical quotas for the workforce, and eliminate management by objectives. Eliminate numerical goals for people in management. Substitute leadership.***

According to Krause, in the safety field, many reward systems and performance appraisals are based on numerical goals and measures, such as incident rates, that are untested for random variability... this could mean receiving an undeserved bad performance rating... On the other hand, ignorance of the concept of random variability also means that work groups often get good safety ratings when they do not deserve them.

The problem with measuring the success of a company's safety effort using incident rates is that once the rate has been reduced to what management feels is an acceptable level, complacency sets in, the effort to reduce incident rates relaxes, and incident rates begin the inevitable rise to previous unacceptable levels. Management reacts to the increase in incident rate with a renewed safety emphasis. This reactive management approach to loss control, based on end results (defects), creates an endless cycle of rising and falling incident rates.

Deming would look upon such a situation with dissatisfaction (and wonder). He would probably encourage management to do away with any numerical quotas or goals based solely on unpredictable measures such as incident frequency rates. He would stress the need to measure upstream activities such as the degree of safety education and training, number of safety meetings, individual safe work behaviors, and the safety of materials, chemicals, and equipment purchased by the company.

In emphasizing TQM principles, the company may never realize sustained zero accident rates, but the critically important ingredient in a successful process, that of continually journeying closer to that end state would be realized. Focus on the journey, not the result.

If management relies only on quotas in the "production" system, it causes them to look the other way when unsafe work practices and hazardous conditions exist. A "macho" (it is part of the job) attitude by management, under pressure to produce the numbers, results in higher rates of injury and illness. Very little thought is given to the human tragedy involved with serious injuries or fatalities. Even less thought to the indirect and 'unknown and unknowable' losses to the company. Management must understand the danger of the pressure ever-increasing quotas place on supervisors and employees. Short cuts in work practices are inevitable, and along with them, injuries and illnesses.

Remember, managers and employees should be held accountable only for what they can control. It's difficult to control statistical results. However, as we learned earlier, they can control activities.

***Point 12: Remove barriers that rob people of pride of workmanship.***

According to Deming, the responsibility of supervisors must be changed from sheer numbers to quality. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. Abolish the annual merit rating and adopt continual feedback processes. Deming offers some interesting ideas here, but they are crucial to success in safety as well as production.

Supervisors must ensure their workers receive equipment and materials that are as safe as possible. Employees should work at stations that have been ergonomically designed for them to decrease the possibility of strains and sprains, and repetitive motions disease which represent the greatest category of workplace injury and illness in the workforce today. Workers require and deserve the highest quality personal protective equipment to protect them from workplace hazards. The highest quality safety equipment, materials and environment all contribute to pride of workmanship.

***Point 13: Institute a vigorous program of education and self-improvement for everyone.***

Continual learning is an important concept. It's important that employees be educated in personal and professional skills. Safety certainly applies here as well. Return on the investment made in education is well worth the money.

Weekly or monthly safety education and training sessions, when conducted properly by supervisors, can go far in improving the performance of employees, and would send a strong message to all that safety is a core value in the company. Unfortunately, most companies do not see the wisdom in adopting the principle that to be successful today, each manager and employee in the company must be continually learning. Currently, most employees receive very little safety training, internal or external, on safety related topics.

***Point 14: Take action to accomplish the transformation.***

Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job. What a concept! Put everybody to work to accomplish the transformation. How can we do this when it comes to safety and health?

Here's the hard part. Someone must have the vision: If not top management, who? How do you shift responsibility for safety from the safety director and/or safety committee to line management? If the effort does not have the blessing of the CEO (with action); the transformation may never be successful. The safety committee may serve as the catalyst to

initially begin the planning for the transformation. Expanding the size of the committee, then breaking it into "safety teams" specializing in various process functions in the company might be a way to go. However, educating up is crucial if top management balks at the need for the transformation. The safety committee must provide the education (usual data... sorted... objective... bottom line) to influence the perceptions that ultimately shape the transformation.

Taking on the goals of TQSM is not an easy task. If you decide to begin the TQSM journey, be sure to continue your study of the concepts. Go slowly and don't expect big changes overnight. Ultimately, you are attempting to change culture and that process can, and probably will, take years.

### **Final Words**

Well, that's it. We haven't covered everything there is related to developing a world-class CSMS, but we did a pretty good job covering most of it. Be sure to continue your education on this topic as well as the other construction topics to help improve your competency as a safety professional in the construction industry!

## Module 10 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Quality safety in the workplace may be thought of as one aspect of \_\_\_\_\_ - free performance.**
  - a. quality
  - b. emotion
  - c. error
  - d. stress
  
- 2. Which person is considered by most to be the father of Total Quality Management?**
  - a. Peter Drucker
  - b. Howard Trump
  - c. W. Edwards Deming
  - d. Bill Gates
  
- 3. Safety can never be understood or properly appreciated if the \_\_\_\_\_ view is taken by management.**
  - a. national
  - b. global
  - c. long-term
  - d. short-term
  
- 4. According to Deming, what is the most important requirement when implementing a Total Quality Safety Management process?**
  - a. Instituting continuous safety education and training
  - b. Expressing constancy of purpose
  - c. Driving out fear in the workplace
  - d. Purchasing safe materials and equipment

**5. According to Total Quality Safety Management how often should improvement occur?**

- a. continually
- b. often
- c. monthly
- d. just in time