CERTIFIED OCCUPATIONAL SAFETY SPECIALIST

CERTIFICATE PROGRAM

STUDENT WORKBOOK

Version J

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Module 1.1: Introduction to COSS

Welcome to the Certified Occupational Safety Specialist® (COSS®) course. The course objectives, performance assessments, how assignments are graded, the tools you will use to help you build your knowledge and skills, the class format and the general flow of the course will be explained in detail by your course instructor. Please make yourself comfortable, and feel free to ask any questions as we go along.

COSS Course Outline

Day 1

INTRODUCTION TO COSS

- Review COSS course structure
- List the training objectives for each COSS module

INTRODUCTION TO OSHA

- Describe the importance of OSHA
- Explain the rights employees have under OSHA
- Explain the responsibilities employers have under OSHA
- Demonstrate the use of OSHA standards and guidelines
- Summarize how OSHA inspections are covered
- Identify where you can go for more assistance

RECORDING AND REPORTING OCCUPATIONAL INJURIES AND ILLNESSES

- Summarize the OSHA recordkeeping requirements
- Describe the rule's organization, purpose and scope
- Identify work-related exemptions
- Describe recording criteria
- Learn to identify a first-aid case
- Describe OSHA reporting requirements

INCIDENCE RATES AND RESEARCH

- Calculate incidence rates
- Identify your industry's NAICS and SIC codes
- Compare your NAICS/SIC code to other industries

Day 2

REAL COST OF WORKPLACE INJURIES

- Differentiate between direct and indirect costs of workplace injuries
- Calculate the effect injuries have on workers' compensation premiums
- Measure the impact of injuries on profitability

WORKSITE ANALYSIS/HAZARD PREVENTION AND CONTROL

- Define "hazard"
- Describe the basic hazard types
- Describe hazard control measures
- Identify tools for analyzing workplace hazards

SUBPART REVIEW: WALKING/WORKING SURFACES

Day 3

MULTI-EMPLOYER POLICY AND FOCUSED INSPECTIONS

- Identify categories of employers that can be cited by OSHA
- Identify the five elements of a multi-employer citation defense
- Evaluate and assess responsibilities in a multi-employer setting
- Describe conditions to qualify for focused inspections

SUBPART REVIEW: ELECTRICAL

SUBPART REVIEW: SCAFFOLDS

SUBPART REVIEW: EMERGENCY ACTION PLANS

PSYCHOLOGY AND SAFETY/BEHAVIOR-BASED SAFETY (BBS)

- Define psychology terminology
- Explain safety motivation concepts
- Discuss the pros and cons of safety incentive programs
- Describe the importance of a safety culture
- Explain principles and strategies of BBS
- Discuss steps in BBS implementation

RISK ASSESSMENT/ACCIDENT CAUSATION AND INVESTIGATION

- Define accident terminology
- Describe the risk assessment process
- Identify basic causes of accidents
- Describe the accident investigation process

Day 4

SUBPART REVIEW: FALL PROTECTION

OCCUPATIONAL HEALTH

- Identify occupational health hazards
- Describe occupational health controls
- Describe the duties/responsibilities of an industrial hygienist
- Discuss OSHA's silica rule

HAZARD COMMUNICATION

- Describe basic requirements of the Hazard Communication Standard
- Explain the changes of the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals

MANAGEMENT OF A SAFETY AND HEALTH PROGRAM

- Describe and explain the functions of Safety & Health Program Management
- Differentiate between line and staff functions
- Differentiate between audits and inspections
- Describe the characteristics of an audit
- List the steps of an audit

SUBPART REVIEW: CRANES

SUBPART REVIEW: PERSONAL PROTECTIVE EQUIPMENT

SUBPART REVIEW: MACHINE GUARDING

Day 5

SUBPART REVIEW: LOCKOUT/TAGOUT

SAFETY AND HEALTH PROGRAM

- Set up an effective safety and health program
- List the elements of a safety and health program
- State the functions of management/leadership and worker participation
- Explain how to identify and assess hazards
- Identify hazard prevention and control methods
- Describe how safety and health training should be designed
- Discuss program evaluation and improvement
- Communicate safety and health program elements on multi-employer worksites

Performance Assessments

Throughout the duration of the COSS class, your performance will be assessed by the following:

- Daily quizzes (administered on days 2, 3, and 4)
- 10 minute safety presentation (performed on day 5)
- Final compliance moment exercise (administered on day 5)
- Comprehensive final exam (administered on day 5)

Grading

Your assignments and exams will be graded as follows:

17.5% of the overall grade:

- Daily quizzes (20 questions per quiz; 100 points per quiz); the three combined quiz scores

7.5% of the overall grade:

- 10 minute safety presentation (100 points)
- Final compliance moment exercise (100 points)

75% of the overall grade:

- Comprehensive final exam (50 questions; 100 points)

Note that a minimum score of 70% is required on your final exam, and in your overall class score to pass the course. Please refer to the Course Failure Policy in the Classroom Documents section for more details.

Class Format

The following components will be used to cover the course material:

- Lecture
- Discussion
- Case studies
- Class exercises
- Assessments
- Compliance moments
- Videos
- Projects (safety presentation)

Course Completion

Upon successful completion of the COSS course, you will receive the following:

- The COSS certificate of completion (expires after 3 years - refer to the Classroom Documents section for more details on COSS recertification)
- 4.0 CEUs that may be used toward establishing or maintaining other certifications

Refer to the course syllabus in the Classroom Documents section for any questions you may have about this course, attendance and failure policies, etc.

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Tools Used

The following tools will be used throughout the duration of class:

The most current versions of:

- 29 CFR 1910: General Industry Standards (issues are updated at least once per calendar year)
- 29 CFR 1926: Construction Industry Standards (issues are updated at least once per calendar year)
- Text: *Fundamentals of Occupational Safety and Health* by M. Friend and J. Kohn
- COSS Student Workbook

COSS website (go to www.coss.net/cossresources.aspx for table of contents):

- Safety forms/assessments
- Sample programs
- Hazard flow charts
    - Hazard Identification and Control Model (also referred to as **The COSS Model**). We will be using this model all week long as we use different scenarios to identify hazards and then find ways to eliminate or control those hazards.

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The COSS Model

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Class Exercise: Participant Introductions

Exercise Objectives

Upon completion of this exercise, you will have:

- Met your fellow students and learned something about them
- Begun a dialogue among the students and the instructor
- Assessed your current safety knowledge
- Expressed what you hope to learn from the COSS class

Activity

In this exercise, the instructor will break the participants into pairs, and allow 10 minutes for the partners to acquaint with each other. Then the students will introduce his or her partner to the rest of the class.

- Name _____
- Employer _____
- Job title _____
- Current safety & health knowledge (0-10) _____
- Why is he/she taking COSS _____
- What does he/she hope to learn/gain from COSS _____
- The last unsafe act he/she witnessed _____

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Module 1.2: Introduction to OSHA

In this lesson, you will learn about the Occupational Safety and Health Administration (OSHA), including why and how it was formed. You'll also look at key elements of the Occupational Safety and Health Act that created OSHA. We'll explain the importance of occupational safety and health, look at what happens during an OSHA inspection, and identify the roles and responsibilities of safety function.

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Describe the importance of the Occupational Safety & Health Administration (OSHA)
2. Explain the rights employees have under OSHA
3. Explain the responsibilities employers have under OSHA
4. Demonstrate the use of the OSHA standards and guidelines
5. Summarize how OSHA inspections are conducted
6. Identify where you can go for more assistance

Who is covered by OSHA?

Who Is Covered Under OSHA?	Who Is NOT Covered Under OSHA?
All employers and employees in the United States and its territories	1. Any state or local government entity
	2. The self-employed
	3. Farms that employ only family members
	4. Workplaces already covered by other federal agencies (for example, The Mine Safety and Health Administration (MSHA)
Employer: any person engaged in a business affecting commerce, and who has employees; does not include the United States or other governmental entities. **Employee**: a person employed by an employer that affects commerce.	

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Class Exercise: Who is covered by OSHA?

Read the workers' descriptions below and circle Yes or No. Yes means they ARE covered by OSHA; No means they are NOT covered by OSHA.

Covered by OSHA?	Worker's Description
YES NO	1. Harry Adams, a miner at Below Ground, Inc.
YES NO	2. Adrian Smith, one of 3 employees of ABC Landscaping, Inc.
YES NO	3. Taylor Dell, an accountant in business for herself.
YES NO	4. Rob Jones, one of 10 carpenters working for Woody, Inc.
YES NO	5. Susie Richard, an employee of Louisiana's State Office of Travel.
YES NO	6. The Williams family, who owns their own farm in Kansas.
YES NO	7. Jenny Mikens, an employee of the Safety Council of Jamaica.

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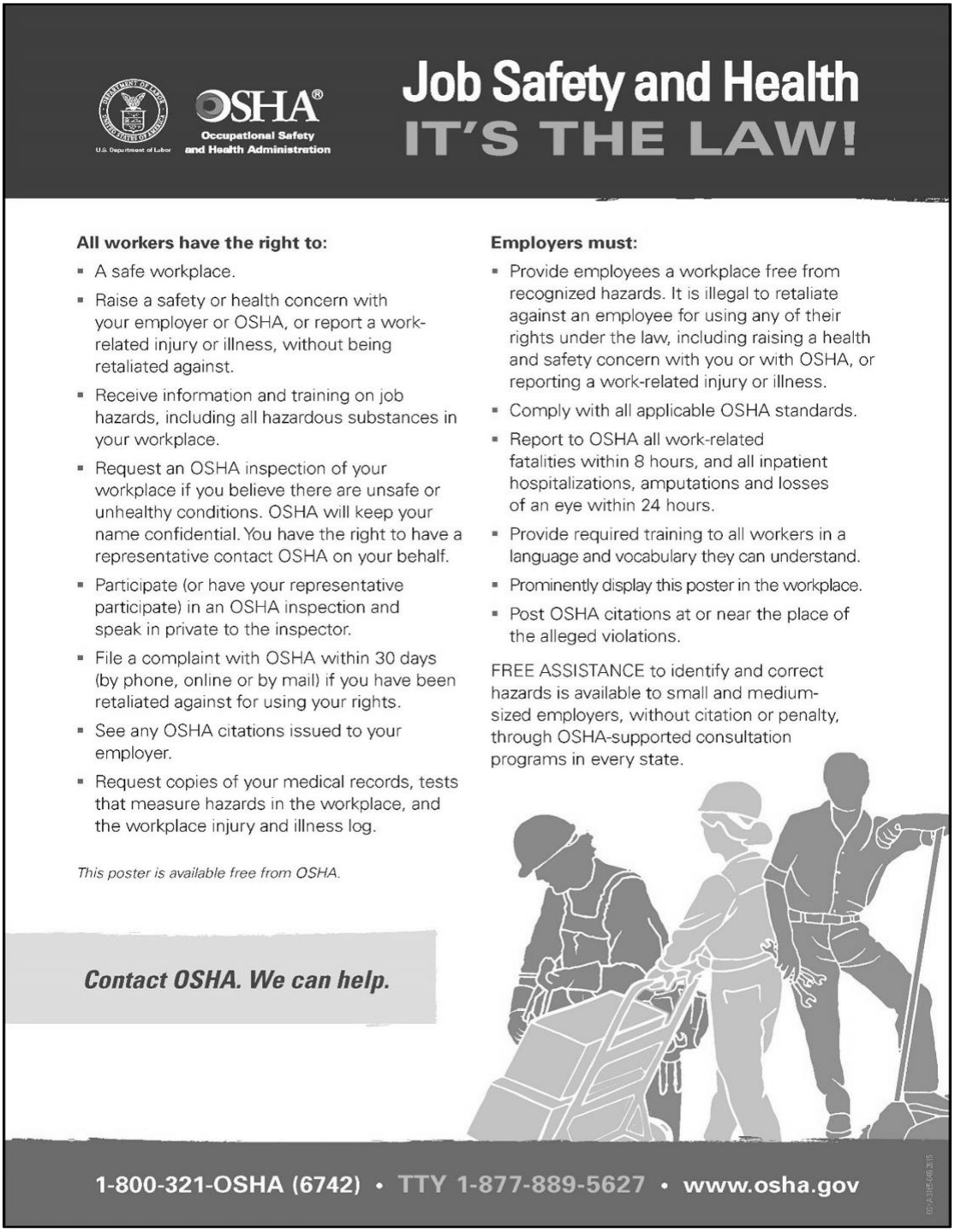
OSHA Handout: OSHA Poster

Have you seen this poster at your place of work?



OSHA®
Occupational Safety and Health Administration
U.S. Department of Labor

Job Safety and Health
IT'S THE LAW!

All workers have the right to:

- A safe workplace.
- Raise a safety or health concern with your employer or OSHA, or report a work-related injury or illness, without being retaliated against.
- Receive information and training on job hazards, including all hazardous substances in your workplace.
- Request an OSHA inspection of your workplace if you believe there are unsafe or unhealthy conditions. OSHA will keep your name confidential. You have the right to have a representative contact OSHA on your behalf.
- Participate (or have your representative participate) in an OSHA inspection and speak in private to the inspector.
- File a complaint with OSHA within 30 days (by phone, online or by mail) if you have been retaliated against for using your rights.
- See any OSHA citations issued to your employer.
- Request copies of your medical records, tests that measure hazards in the workplace, and the workplace injury and illness log.

This poster is available free from OSHA.

Employers must:

- Provide employees a workplace free from recognized hazards. It is illegal to retaliate against an employee for using any of their rights under the law, including raising a health and safety concern with you or with OSHA, or reporting a work-related injury or illness.
- Comply with all applicable OSHA standards.
- Report to OSHA all work-related fatalities within 8 hours, and all inpatient hospitalizations, amputations and losses of an eye within 24 hours.
- Provide required training to all workers in a language and vocabulary they can understand.
- Prominently display this poster in the workplace.
- Post OSHA citations at or near the place of the alleged violations.

FREE ASSISTANCE to identify and correct hazards is available to small and medium-sized employers, without citation or penalty, through OSHA-supported consultation programs in every state.

Contact OSHA. We can help.

1-800-321-OSHA (6742) • TTY 1-877-889-5627 • www.osha.gov

The General Duty Clause

The General Duty Clause

Section 5(a)(1) of the OSHA Act states: "Each employer shall furnish employment free from recognized hazards that are causing, or are likely to cause, death or serious physical harm to employees."

Four Elements of the General Duty Clause

The following four elements are necessary to prove a violation of the General Duty Clause:

1. The employer failed to keep the workplace free of hazards to which employees were exposed;
2. The hazard was recognized;
3. The hazard was causing, or was likely to cause, death or serious physical harm; and
4. There was a feasible and useful method to correct the hazard.

Source: OSHA's Field Operations Manual
https://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-160.pdf

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Classification of the Standards

- Horizontal – regulatory standards that apply to all industries. (Example: personal protective equipment)
- Vertical - regulatory standards that apply to specific industries. (Examples: construction, SCUBA diving)

Types of Standards

- Performance – regulatory standards where compliance is determined by performance, rather than adherence to standard specifics. (Example: process safety management [PSM])
- Specification – regulatory standards that specifies a particular measure that MUST be met in order to do work. (Example: accident prevention signs and tags)

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Class Exercise: Looking Up CFR Standards

Find the following standards in your CFR; briefly state what each standard says:

1926.20(b)(2)_____

_____

1926.20(b)(4)_____

_____

1926.21(b)(2)_____

_____

1926.23 _____

_____

1926.32(d)_____

_____

1926.32(f) _____

_____

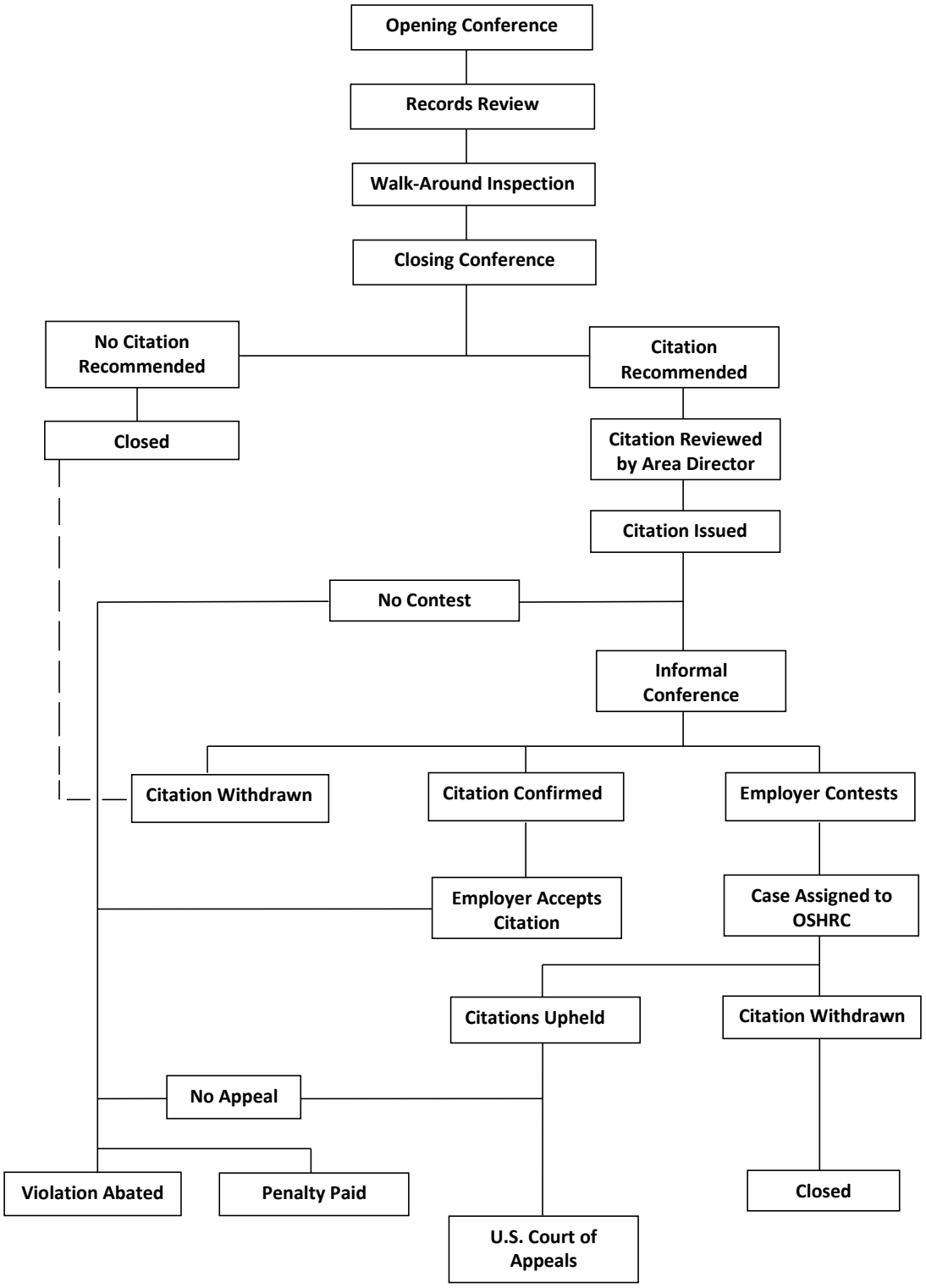
1926.32(m) _____

_____

1926.35(c) _____

_____

THE OSHA INSPECTION PROCESS



Types of Violations

Type of Violation	Description	Old Penalty	New Penalty (effective 8/1/16)
Willful	Violation that the employer intentionally and knowingly commits or a violation that the employer commits with plain indifference to the law.	$70,000/ violation	$124,709/violation
Repeated	Violation that is the same or similar to a previous violation.	$70,000/ violation	$124,709/violation
Serious	Violation where there is a substantial probability that death or serious physical harm could result and that the employer knew, or should have known, of the hazard.	$7,000/ violation	$12,471/violation
Other-Than-Serious	Violation that has a direct relationship to safety and health, but probably would not cause death or serious physical harm.	$7,000/ violation	$12,471/violation
Failure to Abate	Violation that includes a date by which the employer must remedy the situation. If the employer does not do so on the before the specified date, the employer is liable to be fined.	$7,000/day beyond abatement date	$12,471/day beyond the abatement date

NOTES

Defenses against an OSHA Citation

According to OSHA's Field Operations Manual, an employee can have a defense against the following types of citations:

1. **Unpreventable Employee or Supervisory Misconduct or "Isolated event."** By showing that all of the following elements were in place, an employer has a compelling defense against this type of citation:
    - Written work rules were adequate to prevent the violation;
    - Effective communication of the rule to employees;
    - Methods for discovering violations of work rules; and
    - Effective enforcement of rules when violations are discovered.
2. **Impossibility/Infeasibility of Compliance**. Compliance with the requirements of a standard is impossible or would prevent performance of required work and the employer took reasonable alternative steps to protect employees or there are no alternative means of employee protection available.
3. **Greater Hazard.** Compliance with a standard would result in a greater hazard to employees than would noncompliance and the employer took reasonable alternative protective measures, or there are no alternative means of employee protection. Additionally, an application for a variance would be inappropriate.

Source: OSHA's *Field Operations Manual*

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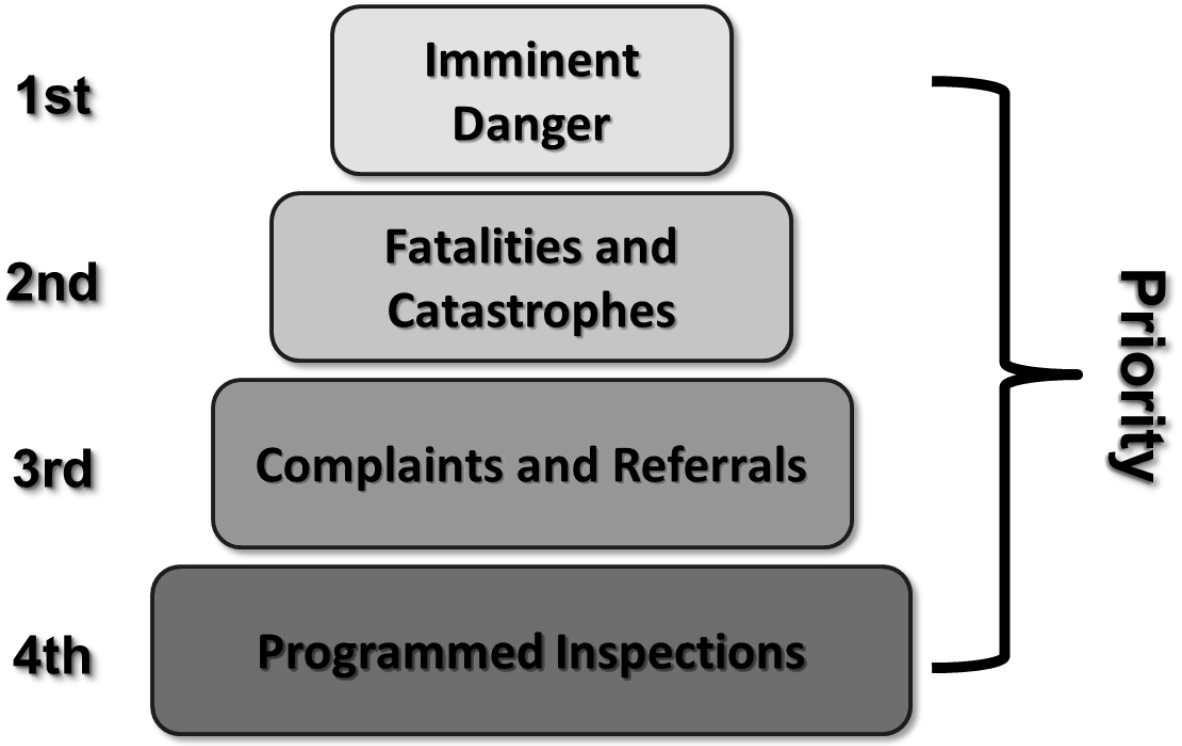
Inspection Priorities



Since not all eight million worksites covered by OSHA can be inspected, the agency has a system of inspection priorities.

Imminent Danger has top priority. This is a condition where there is reasonable certainty a danger exists that can be expected to cause death or serious physical harm immediately (or before the danger can be removed through normal enforcement). An example could be workers working in an unstable trench that has no shoring or sloping. In such cases, OSHA may contact the employer and try to have workers removed from the danger right way. In any case, a CSHO will make an inspection no later than one day after the report was received.

Fatalities and Catastrophes are next in priority. As we learned earlier, employers must report to OSHA any worker fatality or the hospitalization of three or more employees. OSHA starts these investigations as soon as possible after getting the report. CSHOs gather evidence and interview the employer, workers, and others to determine the causes of the event and whether violations occurred.

Complaints and Referrals are OSHA's third priority. A worker or worker representative can file a complaint about a safety or health hazard in the workplace. Generally, it is necessary for the complaint to be written and signed for OSHA to conduct an inspection. In other cases, OSHA may contact the employer by phone, email or fax. Referrals usually are from a government agency, such as NIOSH or a local health department. They are handled the same way as complaints.

Programmed Inspections are the fourth priority. These inspections cover industries and employers with high injury and illness rates, specific hazards, or other exposures. There may also be special emphasis programs in just one OSHA region or certain area offices, based on knowledge of local industry hazards.

OSHA also conducts **Follow-up and Monitoring Inspections**. These inspections are made as needed, and take priority over Programmed Inspections. A follow-up is made to see if violations cited on an earlier inspection were fixed. Monitoring inspections are made to make sure hazards are being corrected and workers are protected whenever a long period of time is needed for a hazard to be fixed.

NOTES

Module 1.3: Recording and Reporting Occupational Injuries and Illnesses

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Summarize the OSHA recordkeeping requirements
2. Describe the rule's organization, purpose, and scope
3. Identify the work-related exemptions
4. Describe the recording criteria
5. Identify what is a first aid case
6. Describe OSHA reporting requirements

Introduction

Recordkeeping is a critical part of the safety and health efforts in every workplace. Under Law 29 CFR 1904, which became effective on January 1, 2002, it is mandatory for many businesses to keep records of injury and illnesses that occur in the workplace. OSHA updated the recordkeeping to expand the list of severe injuries that all employers must report to OSHA. Establishments located in states under Federal OSHA jurisdiction have been required to comply with the new requirements since January 1, 2015.

Purpose of the Recordkeeping Rule

The OSHA Recordkeeping Rule was created to:

- Require employers to record and report work related fatalities, injuries and illnesses
- Allow employees to see workplace injury data
- Allow the Bureau of Labor and Statistics (BLS) to gather data, which helps them identify high hazard industries

OSHA's 5 Step Injury and Illness Recordkeeping Decision Process

Step 1

Did the employee experience an injury or illness?

Definition [1904.46]
An injury or illness is **an abnormal condition or disorder**. Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation. Illnesses include both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning.

YES

Step 2

Is the injury or illness work-related?

Determination of Work-Relatedness [1904.5] Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the **work environment** unless an exception specifically applies.
A case is presumed work-related if, and only if, an event or exposure in the work environment is a discernable cause of the injury or illness or of a significant aggravation to a pre-existing condition.

YES

Step 3

Is the injury or illness a new case?

Determination of a new case
Consider an injury or illness a "new case" if the employee has not previously experienced a recorded injury or illness of the same type that affects the same part of the body, **OR** the employee previously experienced a recorded injury or illness of the same type that affected the same part of body but had recovered completely (all signs and symptoms had disappeared) from the previous injury or illness and an event or exposure in the work environment caused the signs or symptoms to reappear.

YES

Step 4

Does the injury or illness meet the general criteria or the application to specific cases?

General Recording Criteria 1904.7
An injury or illness is recordable if it results in one or more of the following:

- Death
- Days away from work
- Restricted work activity
- Transfer to another job
- Medical treatment beyond first aid
- Loss of consciousness
- Significant injury or illness diagnosed by a PLHCP

Application to Specific Cases 1904.8 – 1904.11

An injury or illness is recordable if it meets the recording criteria for one of the following:

- Bloodborne pathogens
- Medical removal
- Hearing loss
- Tuberculosis

YES

Step 5

Record the Injury or Illness

1904.29 – Forms:

- OSHA Form 300, *Log of Work-Related Injuries and Illnesses*
- OSHA Form 300A, *Summary of Work-Related Injuries and Illnesses*
- OSHA Form 301, *Injury and Illness Incident Report*

Definition of Injury or Illness [1904.46]

An **injury** or illness is an abnormal condition or disorder. Injuries include cases such as, but not limited to:

- Cuts
- Fractures
- Sprains
- Amputations

Illnesses include both acute and chronic illnesses, such as, but not limited to:

- Skin diseases
- Respiratory disorders
- Poisoning

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Exceptions

1904.5(b)(2)	You are not required to record injuries and illnesses if:
(i)	At the time of the injury or illness, the employee was present in the work environment as a member of the general public rather than as an employee.
(ii)	The injury or illness involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside the work environment.
(iii)	The injury or illness results solely from voluntary participation in a wellness program or in a medical, fitness, or recreational activity such as blood donation, physical examination, flu shot, exercise class, racquetball, or baseball.
(iv)	The injury or illness is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption (whether bought on the employer's premises or brought in). For example, if the employee is injured by choking on a sandwich while in the employer's establishment, the case would not be considered work-related. **Note:** If the employee is made ill by ingesting food contaminated by workplace contaminants (such as lead), or gets food poisoning from food supplied by the employer, the case would be considered work-related.
(v)	The injury or illness is solely the result of an employee doing personal tasks (unrelated to their employment) at the establishment outside of the employee's assigned working hours.
(vi)	The injury or illness is solely the result of personal grooming, self-medication for a non-work-related condition, or is intentionally self-inflicted.
(vii)	The injury or illness is caused by a motor vehicle accident and occurs on a company parking lot or company access road while the employee is commuting to or from work.
(viii)	The illness is the common cold or flu (Note: contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the employee is infected at work).
(ix)	The illness is a mental illness. Mental illness will not be considered work-related unless the employee voluntarily provides the employer with an opinion from a physician or other licensed health care professional with appropriate training and experience (psychiatrist, psychologist, psychiatric nurse practitioner, etc.) stating that the employee has a mental illness that is work-related.

1904.7(b)(5)(i) Medical Treatment

Medical treatment is the management and care of a patient to combat disease or disorder. Medical Treatment does not include:

- Visits to a PLHCP solely for observation or counseling
- Diagnostic procedures
- First aid

1904.7(b)(5)(ii) First Aid

When an injury or illness is considered only first aid, it does not have to be recorded. An injury or illness is considered only first aid when the following treatments or items are applied:

- Using non-prescription medication at non-prescription strength
- Tetanus immunizations
- Cleaning, flushing, or soaking surface wounds
- Wound coverings, butterfly bandages, or Steri-Strips
- Hot or cold therapy
- Non-rigid means of support
- Temporary immobilization device, used to transport accident victims
- Drilling of fingernail or toenail, draining fluid from blister
- Eye patches
- Removing foreign bodies from eye, using irrigation or cotton swab
- Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means
- Finger guards
- Massages
- Drinking fluids for relief of heat stress

Activity: To Record or Not to Record?

Next to each incident, indicate whether the item is "not recordable" or "recordable" by placing a check mark in the appropriate column.

Incident Description	Not Recordable	Recordable
1. Treatment limited to cleaning, soaking, applying antiseptic and bandaging a wound.		
2. Butterfly bandages were applied to multiple lacerations.		
3. Applying non-prescription ointments on follow-up visits to prevent drying and cracking of skin.		
4. Removal of an embedded foreign material from the eye.		
5. Second or subsequent hot and cold soaks and use of whirlpool treatments.		
6. Drilling a fingernail to drain the fluid and relieve the pressure.		
7. One-time administration of oxygen for several minutes.		
8. Following a chest x-ray an employee was diagnosed with silicosis.		
9. One time administration of prescription medication to alleviate minor discomfort.		
10. Additional cleaning and application of antiseptic because the bandage became soiled.		
11. Medical removal as mandated by OSHA standard due to cadmium poisoning.		
12. Employee injures back at work and has one chiropractic adjustment...		
13. Employee experiences a brief loss of consciousness due to dehydration from becoming overheated during a hot day on the job.		
14. Following an x-ray of a rib for a fracture, x-ray indicates the rib is not broken.		
15. Reaction to flu shot administered in-plant on a voluntary basis.		
16. The injury is the result of choking on a sandwich from the employee's brown bag lunch.		
17. Adding drops to eye in order to dilate pupils for diagnostic purposes.		

Incident Description	Not Recordable	Recordable
18. Needle stick from sharp object contaminated with potentially infectious material.		
19. Employee has work-related elbow pain and is given non-prescription pain medication at prescription strength.		
20. Employee arrives to work and slips on some slippery steps on the way to the building and fractures her wrist.		

1904.29 Forms

OSHA has prepared and recommends the use of the following forms for recordkeeping:

- OSHA Form 300, Log of Work-Related Injuries and Illnesses
- OSHA Form 300A, Summary of Work-Related Injuries and Illnesses
- OSHA Form 301, Injury and Illness Incident Report

Note: Fillable forms are located at:
https://www.osha.gov/recordkeeping/RKform300pkg-fillable-enabled.pdf.

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Activity: Entering Information on the OSHA 300 Log

Instructions
Review each event for recordability and indicate the classification as appropriate. If the event involves days away from work or days restricted or transferred, indicate the number of days.

MTBFA - medical treatment beyond first aid
RWC - restricted work case
DAWC - day away from work case
FAT - fatality

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3					1	2	3
7	8	9	10	11	12	13	4	5	6	7	8	9	10	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31

Date of Injury	Injury Description		
January 9	Carrie Smith slipped on ice in the parking lot while leaving work to attend a business meeting. She broke her left ankle and was off work. Her first day back was February 6th and she was able to resume her normal duties.	Classification:	
		Number of days away from work:	
		Number of days restricted or transferred:	

Date of Injury	Injury Description		
January 12	Marilyn Rose went to the medical department with an eye irritation. The nurse removed a small particle that was not embedded and gave Marilyn non-prescription eye drops to use as needed. She then sent Marilyn home with a full release to return the next day. Marilyn stayed home January 13th due to the irritation.	Classification:	
		Number of days away from work:	
		Number of days restricted or transferred:	

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3					1	2	3
7	8	9	10	11	12	13	4	5	6	7	8	9	10	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31

Date of Injury	Injury Description		
February 1	Shawn Hogal, Maintenance Supervisor in Maintenance Department working in boiler room. Found unconscious in boiler. Sent to hospital where he died 2/3. Diagnosis was death due to carbon monoxide poisoning.	Classification:	
		Number of days away from work:	
		Number of days restricted or transferred:	

Date of Injury	Injury Description		
February 7	Allen Stickman received minor flash burns in both eyes while assisting with a welding job. He had not been assigned to the job and was just filling in to stay busy. He was given prescription medication, sent home, and released back to his normal job duties the next day with no restrictions.	Classification:	
		Number of days away from work:	
		Number of days restricted or transferred:	

Date of Injury	Injury Description		
February 21	Forklift driver Bob Foglia broke his right large toe when a forklift ran over his foot. He had to use crutches for 4 days after the accident but was able to continue to operate the forklift. The supervisor hired a temp employee to do his legwork for him for the 4 days he was on crutches.	Classification:	
		Number of days away from work:	
		Number of days restricted or transferred:	

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Module 1-4: Incidence Rates and Research

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Calculate incidence rates
2. Identify your industry's NAICS and SIC codes
3. Compare your NAICS/SIC codes to other industries

Introduction

Understanding the demographics of safety is important in helping you solve your safety problems, and a key to understanding those demographics is knowing about Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) Codes. NAICS replaced the SIC system in 1997; however both systems are still in use by industry today. NAICS and SIC codes can tell you what hazards to look for and where to look for them, thus minimizing the ground you'll have to cover when you inspect and assess your worksite. Your NAICS/SIC code can be identified at www.census.gov/eos/www/naics. Injury and illness data for your company's SIC or NAICS code can be found at the Bureau and Labor Statistics website at www.bls.gov.

Additionally, being able to calculate and correctly apply incidence rates will be invaluable to your recordkeeping responsibilities.

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TOTAL RECORDABLE INCIDENCE RATE (TRIR) CALCULATION

Computing Your Firm's Incidence Rate for Safety Management

The Occupational Safety and Health Act of 1970 and 29 CFR Part 1904 require employers to prepare and maintain records of serious occupational injuries and illnesses (OSHA Recordables). The act made the Secretary of Labor responsible for the collection, compilation, and analysis of statistics of work-related injuries and illnesses. The Bureau of Labor Statistics (BLS) administers this recordkeeping and reporting system.

Records of injuries and illnesses and their respective Incident Rates are necessary for carrying out the purposes of the act. This incident rate information provides a statistical basis for the analysis of injury and illness data which are used by OSHA in measuring and directing the agency's efforts; including standard development, local and national emphasis programs, targeted industry inspections and safety and health training program development.

Significant Incidence Rate Indicators

Two significant incidence rate indicators are used to compare data between companies and within industries. They are:

- Total Recordable Incident Rate (TRIR): This is the number of recordable incidents that a company experiences per 100 full-time employees in any given time frame.
- Days Away Restricted or Transferred (DART): This is the number of recordable injuries and illnesses per 100 full-time employees that resulted in days away from work, restricted work activity and/or job transfer that a company has experienced in any given time frame."

How to Compute Total Recordable Incidence Rates (TRIR)

Calculating an incidence rate for occupational injuries and illnesses can be done quickly and easily. The formula requires the following information:

a. The number of nonfatal injuries and illnesses that your company recorded in a given calendar year

   Count the number of OSHA-recordable cases for the year. These numbers are found on the OSHA Log (Form 300) and Summary of Occupational Injuries and Illnesses (Form 301A). The number of injuries and illnesses can also be obtained from the BLS Survey of Occupational Injuries and Illnesses form, if your company was surveyed for the calendar year for which incidence rates are desired.

b. The number of hours all employees in your company actually worked, during the same time period.

   Use payroll or other time records. "Hours worked" should not include any non-work time, even if it is paid time, such as vacation, sick leave, holidays, and so forth. (If actual hours worked are not available for employees who are, for example, paid on commission, by salary, or by the mile, then hours worked may be estimated on the basis of scheduled hours or eight hours per workday.)

Once you have these two numbers, compute the incidence rate of injuries and illnesses by using the following formula:

$$\text{Total Recordable Incidence Rate (TRIR)} = \frac{\text{Number of Injuries and Illnesses} \times 200{,}000}{\text{Employee Hours Worked}}$$

(The 200,000 hours in the formula represents the equivalent of 100 employees working 40 hours per week, 50 weeks per year, and provides the standard base for the incidence rates.)

Example 1:

If a company has 190 employees working eight hours per day, combined, they will work approximately 400,000 hours per year. If there were 15 recordable injuries during the course of the year, the TRIR would be calculated as follows:

$$\text{Total Recordable Incident Rate} = \frac{15 \times 200{,}000}{400{,}000} = \frac{3{,}000{,}000}{400{,}000} = 7.5$$

Example 2:

If a company has 17 full-time employees and 3 part-time employees that each work 20 hours per week, this would equate to a combined total of 28,400 labor hours each year. The company had one recordable incident within a calendar year. This was a broken leg that had 20 days away from work associated with it (no restriction or transfer). The calculation would look like this:

$$\text{Total Recordable Incident Rate} = \frac{1 \times 200{,}000}{28{,}400} = \frac{200{,}000}{28{,}400} = 7.04$$

This means that for every 100 employees, 7.04 incidents resulted in recordable events due to work related injuries or illnesses.

Using the OSHA 300 Log, you can use the same formula to compute incidence rates for:

- Injury and illness cases with days away from work (Column H),
- Injury and Illness cases with job transfer or restriction (Column I),
- Injury and illness cases with days away from work, or job transfer or restriction, or both (DART) (Column H + Column I),
- Other recordable injury and illness cases (Column J),
- Injury-only cases (Column M1),
- Illness-only cases (Column M2 + M3 + M4 + M5).

When comparing illness rates by types of illness, use 20,000,000 hours instead of 200,000 hours to get a rate per 10,000 full-time employees.

How to Compute DART Rate (Days Away/Restricted or Job Transfer Rate)

The DART rate is calculated by adding up the number of incidents that had one or more Days Away, one or more Restricted Days, or that resulted in an employee transferring to a different job within the company. That number is multiplied by 200,000, and the result is then divided by the number of employee labor hours at the company.

$$\text{DART Rate} = \frac{\text{Total Number of DART Incidents} \times 200{,}000}{\text{Employee Labor Hours Worked}}$$

If, for example, the same company described in Example 2 above had two recordable incidents within a calendar year. The first was a broken leg that had only "days away" associated with it (no restriction or transfer), and the second resulted in limited or restricted work activity that necessitated a job transfer to a different position in the company. The calculation would look like this:

$$\text{DART Rate} = \frac{2 \times 200{,}000}{28{,}400} = \frac{400{,}000}{28{,}400} = 14.08$$

This means that for every 100 employees, 14.08 incidents resulted in days away from work, restricted days, or job transfer due to work related injuries or illnesses.

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Class Exercise: Incidence Rate Calculation

ABC Company, a construction machinery manufacturing plant with 200 employees, is finalizing their OSHA recordkeeping forms for the year. Help them calculate their TRIR and DART rates.

ABC Company logged 15 injuries and illnesses and 400,000 hours worked by all employees during the past year. Of those injuries and illnesses, 1 individual missed 4 days of work and 2 were put on restricted ("light") duty for 5 days.

1. Use the TRIR formula to calculate the **incidence rate** for ABC Company:

2. Next, compute the **DART rate** for the most serious injury and illness cases, defined here as cases that resulted in workers taking time off from their jobs or doing lighter (restricted) duties. ABC Company had three such cases. The incidence rate for these cases involving days away from work is computed as:

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Module 1-5: Communication Workshop

Learning Objective

Upon completion of this lesson, you will be able to:

1. Plan a mock safety and hazard information presentation

Introduction

As part of your job, you must be able to communicate information. It is important that the people in the field, as well as those in the front office, are aware of any hazards that have been identified at your jobsites and must be addressed.

Employees in the field must know what changes are being made to equipment, what PPE must be worn to protect themselves, or what procedures are being changed to avoid a particular hazard.

For those in the front office, you must be able to describe hazards in terms they relate to. Additionally, you must be able to:

- Identify a hazard and what is being done in the field to protect against it.
- Assess and relate the degree of risk that that hazard poses in relation to other dangers.
- Describe the costs (or potential costs) of correction weighed against the benefits, in terms of dollars.

Communication Workshop

1. Each student will develop an outline for one of two scenarios:
    a. A 10-minute safety meeting to hourly employees
    b. A 10-minute presentation to upper management that presents important information that must be addressed
2. The topic must be based upon a safety and health topic, OSHA standard, best practice or lessons learned.

    NOTE: The topic must be identified and turned in to the instructor by the end of Day 3.
3. The presentation must include the elements listed on Effective Communication Outline Form, which includes the following:
    - Topic (any safety & health topic)
    - Objectives (use action words to tell what the audience will learn, such as identify, recognize, etc.)
    - Presentation (mode of the presentation, such as PowerPoint, handouts, self-assessment, etc.)
    - Closing (ask if the audience has any questions)

    NOTE: The Effective Communication Outline Form is located in the Classroom Documents section.
4. The outline, along with any supporting documentation, must be turned in to the instructor on Day 4.
5. The safety presentation is to take 10 minutes (plus or minus one minute). The presentation will be timed and will be delivered on Day 5.
6. The presentation must be researched and developed by the student for the purposes of this class. A presentation that has already been developed by you or someone in your company is **not** acceptable.
7. The presentation will be evaluated by the instructor for a grade, according to the *Criteria for Grading Oral Assignments* score sheet. This grade, along with the final compliance moment, will account for five percent of your final grade.

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Module 2-1: The Real Cost Of Workplace Injuries

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Differentiate between direct and indirect costs of workplace injuries
2. Calculate the effect injuries have on workers' compensation
3. Measure the impact of injuries on profitability

Introduction

This lesson will give you the tools you need to identify all of the costs related to an accident and how those costs will affect your company's profitability.

NOTE: Some of the cells in the tables in the following lessons have blank spaces that should be filled in as your instructor progresses through the lessons.

Direct vs. Indirect Costs

In workplace accidents, companies typically suffer from two different types of costs associated with each accident. These types of costs are known as **direct costs** and **indirect costs**.

1. Direct costs of an accident are costs that are:
    - Directly associated with a specific event
    - Easily identified and counted
    - Paid by insurance

Some examples of direct costs of accidents:

- Medical expenses
- Physical therapy
- Repair fees for damaged equipment
- Increase in workers' compensation premiums
- Continuation of pay
- Compensatory damages

2. Indirect (hidden) costs of an accident are costs that are:
   - Not directly associated with a specific event and may be a result of several factors
   - Not easily identified
   - Difficult or impossible to quantify
   - Not paid by insurance

   Some examples of indirect costs of accidents:

   - Time lost from work
   - Loss of earning power
   - Economic loss to injured family
   - Lost time by fellow workers
   - Loss of efficiency by crew breakup
   - Lost time by supervisor
   - Cost of breaking in new worker
   - Damage to tools and equipment

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Activity: Liberty Mutual Workplace Safety Index

According to the Liberty Mutual Workplace Safety Index, which is published by the Liberty Mutual Research Institute for Safety, the most disabling workplace injuries and illnesses account for more than $51 billion in direct U.S. workers' compensation costs. The table below lists the top ten causes of disabling workplace injuries. In the left column, rank the injury causes' costs from highest to lowest (with 1 being the highest cost). Next, the instructor will provide the actual rankings. Record the actual rank in the right column.

Your Rank	Injury Cause	Actual Rank
	Fall to lower level	
	Fall on same level	
	Slip or trip (without fall)	
	Overexertion	
	Other exertions or bodily reactions	
	Struck by object or equipment	
	Struck against	
	Caught in/Compressed by	
	Repetitive motions	
	Roadway incidents	

OSHA's "$afety Pays" Program

$afety Pays is an interactive software developed by OSHA to assist employers in assessing the impact of occupational injuries and illnesses. The program uses the following elements in its assessment:

- Company's profit margin
- AVERAGE costs of an injury or illness
- Indirect cost multiplier (see Table 2 above) to project the amount of sales a company would need to generate in order to cover those costs

The $afety Pays website is available at the following address:
http://www.osha.gov/dcsp/smallbusiness/safetypays/index.html

The **sliding ratio** is the most accepted method to evaluate indirect costs.

The indirect cost multipliers used in $afety Pays are general estimates based on the limited research on this issue. The indirect cost multiplier will vary depending on an employer's unique circumstances.

Sliding Ratio

Direct Cost	Cost Multiplier
$0 - $2,999	4.5
$3,000 - $4,999	1.6
$5,000 - $9,999	1.2
$10,000 +	1.1

Class Activity: Estimating the Impact of Accident Costs on Profits and Sales

This worksheet will assist you in determining the costs of injuries and illnesses and their impact on your business operations.

The Case

Employees of ABC Construction Company routinely used jack hammers to remove and break up air set core from castings. Due to the nature of the work, employees are subjected to equipment vibration and are required to bend over for 4-8 hours per day. ABC researched purchasing a core lump crusher to eliminate the use of the jack hammer, but concluded that the $51,000 price tag was too expensive and opted not to purchase it. As a result of the stress of bending over, one employee developed back problems, which resulted in worker's compensation claims of $1,787.

1. Based on the information provided, what are the **direct costs** associated with the accident?

Direct Cost

To calculate the direct cost, enter the following information:

Total value of the insurance claim for an injury or illness. $ _____

* includes medical costs and indemnity payments

2. Calculate the **indirect costs** of the accident.

Indirect Cost

To calculate the indirect cost of this injury or illness, multiply the direct cost by a cost multiplier. The cost multiplier that you use will depend on the size of the direct cost.

If your direct cost is:	Use this indirect cost multiplier:
$0 - $2,999	4.5
$3,000 - $4,999	1.6
$5,000 - $9,999	1.2
$10,000 or more	1.1

Direct Cost	x	Cost Multiplier	=	Indirect Cost
$_____	x	_____	=	$_____

3. What are the **total costs** associated with the accident?

Total Cost

Direct Cost	+	Indirect Cost	=	Total Cost
$_____	+	_____	=	$_____

4. If ABC's profit margin is 3%, what are the **total sales required** to pay for this injury?

Impact on Profitability

To calculate the impact of an accident on profitability, use your profit margin to determine the sales your company will need to generate to recover the cost of the injury or illness. In the example above, the profit margin of 3% is provided.

If you do not know the profit margin for your company, you can calculate this number by dividing total profits by total sales, as shown in the following equation:

$$\frac{\text{Total Profits}}{\text{Total Sales}} = \text{Profit Margin}$$

Note: Keep the profit margin in decimal form. In our example, the profit margin of 3% would be expressed as .03 in decimal form.

To calculate the sales your company will need to generate to pay for the injury or illness, divide the total cost of the injury or illness by your profit margin.

$$\frac{\text{Total Cost of Injury or Illness}}{\text{Profit Margin}} = \text{Sales Required to Pay for Injury or Illness}$$

Use the space below to perform this calculation:

Worker's Compensation

On the job injuries can have a real effect on Worker's Compensation Premiums, such that:

- An injury can impact a company financially, in the form of increased worker's compensation insurance premiums.
- The real cost of an injury may not stop accumulating for years.

A company's worker's compensation premium is factored by using this formula:

$$\textbf{Worker's Comp Premium} = \frac{\textbf{Annual Payroll}}{\textbf{100}} \times \textbf{Basic Rate} \times \textbf{EMR}$$

Annual Payroll

- The total amount of earnings paid to all employees in a given year

Basic Rate

- Companies are grouped in certain divisions, according to their main type of work performed (examples: mining, construction, and manufacturing). Each division is assigned a number.
- Those divisions are then divided into major groups. Each group is assigned a number.
- The number of the division and the number of the group is combined to form a Standard Industrial Classification (SIC) Code.
- There are 450 different SIC Codes.
- Companies are assigned a Basic Rate according to their SIC Code.
- The Basic Rate for each SIC code is calculated annually by the insurance companies. Certain factors, such as that groups' workers' medical costs and benefits paid during the previous year, are taken into account.

- Companies in classifications that are considered high risk are assigned a higher Basic Rate than less risky companies.
- A Basic Rate of 8% - 15% of payroll not uncommon to see for some higher risk companies.

Sample Basic Rates for a few SIC Classifications

SIC Code	Industry	Basic Rate
4829	Chemical Manufacturing—All Operations	1.13%
8601	Engineer or Architect—Consulting	1.52%
4243	Box Manufacturing—folding paper	3.33%
5606	Contractor—Executive Supervisor	4.24%
3719	Electrical Assistant	4.83%
8292	Storage Warehouse	6.35%
5190	Electrical Wiring Within Buildings	7.53%
5183	Plumbing	7.56%
3724	Millwright	9.31%
2081	Stockyard and Butchering	13.51%
0037	Farm: Field Crops	14.24%

Experience Modification Factor/Rate (E-Mod or EMR)

- The relative index of a company's safety reliability
- Proportionately affects insurance premiums
- Calculated annually by a rating bureau
- Based upon each employer's worker's compensation claims experience
- Considers the last three years' safety history (excluding the most previous year)
- EMR = Actual Losses/Expected Losses

Note: the terms "Experience Modification Factor (E-MOD)" and "Experience Modification Rate (EMR)" are used interchangeably.

Experience History

EMR	Indication	Effect on Worker's Comp. Premium
Greater than 1.0	Poor experience history	Increases
=1.0	Average experience history	Remains the same
Less than 1.0	Good experience history	Decreases

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Typical EMR Demographics

Safety Commitment Rating	EMR	% of Companies Surveyed
Poor	1.30 – 2.05	16%
Inadequate	1.05 – 1.29	20%
Fair	0.82 – 1.04	29%
Effective	0.72 – 0.81	20%
Superior	0.50 – 0.71	15%

The following example will show how a higher EMR can affect the worker's comp premiums for a safe company vs. an unsafe company.

- Both companies perform the same work
- Both have an identical annual payroll of $3,000,000
- Both have a $3.00 manual rate
- Both have a base worker's comp premium of $90,000

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Net Impact of EMR

	Safe Construction Company	Unsafe Construction Company
EMR	.6	1.15
Base Premium	$90,000	$90,000
Adjusted Premium	$54,000	$103,500
Net	**Saved $36,000**	**Increased by $13,500**

In the end:

- The Unsafe Construction Company will pay **$49,500** more in worker's compensation premiums per year than the Safe Construction Company.
- Where will these extra expenses be paid from? **PROFIT!**

Return on investment:

- Safety is not only the right thing to do, it is the profitable thing to do.
- There is a $4 to $6 return for every $1 spent on safety.
- Voluntary Protection Programs (VPP) sites save $110 million every year.

What is the most important thing that we have learned? **SAFETY SAVES!**

Now the true picture becomes clearer. Like an iceberg, the hidden costs of accidents, those that lie below the surface…out of our view, are now visible. And they are formidable. Attempting to calculate all the true costs of an accident is a daunting task as you just found out. This is why the multiplier is such a valuable tool—it eliminates the effort of identifying and calculating all of the accident costs.

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Module 2-2: Worksite Analysis, Hazard Prevention, and Control

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Define what is a hazard
2. Describe the basic hazard types
3. Describe the hazard control measures
4. Identify tools for analyzing workplace hazards

Introduction

In an effort to control hazards, it is necessary to identify the hazards that are most likely to occur. To do that, common hazards must first be identified and categorized. Once this is done, ways to control the hazards must be found.

Definitions

Hazard: a workplace condition or worker action that can cause illness, injury, or other organizational losses.

Exposure: susceptibility to a workplace condition or worker action that can cause illness, injury, or other organizational losses.

Hazard control: the application of an appropriate corrective measure, such as engineering, administrative, or personal protective equipment (PPE).

Examples of **engineering controls** may include:

_____

_____

_____

Examples of **administrative controls** may include:

_____

_____

_____

Examples of **personal protective equipment (PPE)** may include:

_____

_____

_____

Common Hazards and Descriptions

Hazard / Accident Type	Description
Chemical (Toxic)	A chemical that exposes a person by absorption through the skin, inhalation, or through the blood stream that causes illness, disease, or death. The amount of chemical exposure is critical in determining hazardous effects. Check Safety Data Sheets (SDS), and/or OSHA1910.1000 & 1910.1200 for chemical hazard information.
Chemical (Flammable)	A chemical that, when exposed to a heat ignition source, results in combustion. Typically, the lower a chemical's flashpoint and boiling point, the more flammable the chemical. Check SDS for flammability information.
Chemical (Corrosive)	Acids and bases are examples of corrosives.
Caught-Between	A person is crushed, pinched, or caught between a moving object and a stationary object, or between two moving objects.
Caught-In	A person or part of the person is trapped, stuck or otherwise caught in an opening or enclosure.
Caught-On	A person or part of the person's clothing or equipment is caught on an object that is either moving or stationary.
Contact By	Contact by a substance or material that is, by its very nature, harmful and causes injury.
Contact With	A person comes in contact with a harmful material.
Explosion (Chemical Reaction)	Self-explanatory.
Explosion (Over-Pressurization)	Sudden and violent release of a large amount of gas or energy due to a significant pressure difference, such as a rupture in a boiler or compressed gas cylinder.

Hazard / Accident Type	Description
Electrical (Shock/Short Circuit)	Contact with exposed conductors or a device that is incorrectly or inadvertently grounded, such as when a metal ladder comes in contact with power lines. Even 60Hz alternating current (household current) is very dangerous because it can stop the heart.
Electrical (Fire)	Use of electrical power that results in electrical overheating or arcing to the point of combustion or ignition of flammables, or electrical component damage.
Electrical (Static/ESD)	The moving or rubbing of wool, nylon, other synthetic fibers, and even flowing liquids can generate static electricity. This can create either an excess or deficiency of electrons on the surface of material; the electron imbalance then causes a discharge to the ground (via a spark), resulting in the ignition of flammables or damage to electronics or the body's nervous system.
Electrical (Loss of Power)	Safety-critical equipment failure as a result of loss of power.
Ergonomics (Strain)	Damage of tissue due to overexertion (strains and sprains) or repetitive motion.
Ergonomics (Human Error)	A system design, procedure, or equipment that provokes error (such as a switch that goes up to turn something off).
Excavation (Collapse)	Soil collapse in a trench or excavation as the result of improper or inadequate shoring. Soil type is critical in determining the hazard likelihood.
Exposure	A person's close proximity to harmful environmental conditions, which may result in workplace injury.
Fall (Slip, Trip)	Conditions that may result in falls (impacts) from heights or on traditional walking surfaces (such as slippery floors, poor housekeeping, uneven walking surfaces, or exposed ledges).

Hazard / Accident Type	Description
Fall to Below	A person slips, trips, and/or falls to a level below the one that the person was initially walking or standing on.
Fire/Heat	Temperatures that can cause burns to the skin or damage to other organs. Fires require a heat source, fuel, and oxygen.
Foot-Level Fall	A person slips, trips and/or falls to the surface that the person is standing or walking on
Mechanical/Vibration (Chafing/ Fatigue)	Vibration that can cause damage to nerve endings or material fatigue that results in a safety-critical failure. (Examples are abraded slings and ropes, and weakened hoses and belts.)
Mechanical Failure	Self-explanatory; typically occurs when devices exceed designed capacity or are inadequately maintained.
Mechanical	Skin, muscle, or body part exposed to crushing, caught-between, cutting, tearing, or shearing items or equipment.
Chemical	Includes any form of chemical, such as compressed gases, solvents, lead and others.
Physical	Includes noise, vibration, heat, cold and radiation.
Ergonomic	Includes design of the workplace and jobs that involve repetition, force and incorrect posture.
Biological	Includes organisms or toxic substances that are produced by living things and can cause illness or disease in humans (e.g., bacteria, viruses, fungi, parasites and insects).
Noise	Noise levels (>85 dBA/8 hr TWA) that result in hearing damage or inability to communicate safety-critical information.
Overexertion	A person performs a task that is beyond his physical capabilities, resulting in a strain or sprain injury.

Hazard / Accident Type	Description
Radiation (Ionizing)	Alpha, Beta, and neutron particles, and Gamma and X-rays that cause injury (tissue damage) by ionization of cellular components.
Radiation (Non-Ionizing)	Ultraviolet, visible light, infrared, and microwaves that cause injury to tissue by thermal or photochemical means.
Struck By	Accelerated mass that strikes the body, causing massive injury or death. (Examples are falling objects and acceleration projectiles.)
Struck Against	Injury to a body part as a result of coming into contact with a surface in which action was initiated by the person. (An example is when a screwdriver slips.)
Temperature Extreme (Heat/Cold)	Temperatures that result in heat stress, exhaustion, or metabolic slow down such as hypothermia.
Visibility	Lack of lighting or obstructed vision that results in an error or other hazard.
Weather Phenomena (Snow/Rain/ Wind/Ice)	Self-explanatory.

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Compliance Moment: Residential Roofing

In this compliance moment exercise, study the picture to identify the hazards present at the worksite.

Consider the following:

- Is It Construction or General Industry?
- What is the hazard type?
- What type of potential injury or illness could result?
- What control measures are available? Engineering? Administrative? PPE?
- What regulations are applicable?

Record your answers on the Hazard Identification and Control sheet on the next page.

Hazard Analysis

Five tools for analyzing hazards in the work environment are:

1. Observations and worker concerns
2. Inspections
3. Investigations
4. Task and process analysis
5. Examining records

Categorizing Risk

Frequency of Occurrence	Hazard Categories			
	I Catastrophic	II Critical	III Marginal	IV Negligible
(A) Frequent	1A	2A	**3A**	4A
(B) Probable	1B	2B	**3B**	4B
(C) Occasional	1C	**2C**	**3C**	4C
(D) Remote	**1D**	**2D**	3D	4D
(E) Improbable	1E	2E	3E	4E

Levels of Acceptability		
I		Unacceptable
II		Undesirable with mgt. waiver required
III		Acceptable with mgt. review
IV		Acceptable without review

Inspections

An **inspection** is a tool used to determine whether or not equipment is in good or acceptable condition.

In 1926.20(b)(2), OSHA states that "...programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employer."

Inspection reports or records are one way to prove to an OSHA Compliance Officer that your company has an active safety and health program.

Three types of inspections you should be aware of include:

- **Periodic inspections** – Inspections of specific items conducted weekly, monthly, semi-annually, etc.
- **Intermittent inspections** – Inspections performed at irregular intervals
- **General inspections** – Inspections designed to include all areas that do not receive periodic inspections

Class Exercise: Worksite Inspections List

In this exercise, you will work in teams to identify the kinds of inspections that may need to be done in an industrial workplace setting.

As a group, picture yourselves in a workplace setting. Try to think of the kinds of things that must be inspected on a regular basis to be sure that they are:

- Functional
- Safe
- Ready to use at a moment's notice

Next, ask yourselves:

- Where can information be found regarding what needs to be included in a checklist?
- What specifications need to be met?

The most likely place is in the manufacturer's literature. OSHA also has specifications for inspection checklists on things such as forklifts and first aid kits.

Worksite Inspections List

Inspection Item	Frequency	Information Source

Other Hazard Evaluation Procedures

Other hazard evaluation procedures include, but are not limited to:

- Comprehensive surveys
- Pattern analysis
- What-if checklist
- Hazard and Operability Study (HAZOP)
- Failure Mode and Effect Analysis (FMEA)
- Fault tree analysis

The identification of hazardous situations through the use of safety inspections is considered to be the foundation of worksite analysis.

Class Exercise: Worksite Scenario

In this exercise, you will inspect a hypothetical worksite, identify existing hazards, identify hazardous situations, classify hazards, select controls, and cite the applicable standards regarding the hazards that you found.

Read the scenario. Picture the scenes in your mind as you read and note the hazards as you go. Pay special attention to every bit of information you read. Complete the worksheet that follows.

Scenario

You have been assigned to a new project under construction outside the United States in Puerto Rico. As part of the project team, you are responsible for incorporating corporate safety policies into the construction activities. Here's what you see on your first "walkabout" at the site.

Leaving the temporary offices, you head toward an area with crane activity. Arriving, you find that handrails are being installed on a second level of an operations platform. You lean against the counterweight assembly on the rear of the crane and watch as the worker on the upper level wrestles the handrail while signaling the crane operator.

Noticing some barricades nearby, you move in that direction for a look. You notice a fairly new pair of work boots sitting on a pile of dirt next to a straight-walled excavation. Looking over the barricade, you see a worker standing in about a foot of water using a shovel. Alerted to your presence by some dirt clods crumbling into the water from where you are standing, he smiles and speaks what you assume to be a greeting in his native tongue. You wave and continue on your inspection tour.

Crossing the site, you walk up to a trench containing some large diameter pipes (approx. 60") lying in about six inches of water. At one end is a canvas enclosure where a welder and fitter are joining and coating two sections of the pipe. Walking down the side of the trench about 35 feet, you find an opening in the top of the pipe that has an extension cord running down into it and the top of a ladder sticking out. You hear the sound of a grinder inside the pipe and decide there is someone doing cleanup on the inside welds. About this time, you look at your watch and realize it's time to get back to the office for a meeting.

What did you **SEE** on your tour?

Using the following worksheets, identify the following:

- Hazards
- Control measures
- OSHA standards to support your choice of controls

NOTES

Situation	Hazards/ Accident Types	Controls	Standards

Situation	Hazards/ Accident Types	Controls	Standards

Job Safety Analysis

The Job Safety Analysis (JSA) is an employer/employee participation program in which job activities are observed, divided into individual steps, and discussed and recorded with the intent to identify, eliminate, or control hazards.

Another way to identify hazards and potential accident causes is to implement the JSA process. This process is useful in uncovering hazards that:

- May have been overlooked in the layout of the job or facility.
- May have developed after production started.
- Resulted from changes in work procedures or personnel.

JSAs will give the safety and health program certain benefits. This process is an excellent way to further protect employees and help new employees understand safety procedures.

In a JSA, each basic step of the job is examined to identify potential hazards and to determine the safest way to do the job.

Why do a JSA?

- Takes advantage of experience and promotes consensus
- Identifies undetected hazards and increases job knowledge
- Helps determine appropriate PPE requirements
- Provides the details for written safe work procedures
- Serves as a teaching aid for initial job training
- Serves as a briefing guide for infrequent jobs or operations
- Provides a standard for health and safety inspections
- Assists in completing comprehensive accident investigations

Elements of a JSA

- Identify the job to be examined
- Identify the steps or elements of the job
- Identify the hazards connected with each key step
- Identify the control(s) required in order to the perform the job safely

Step 1: Identify the Job

Priorities:

- Accident frequency
- Accident severity
- Accident potential
- New jobs non-routine jobs
- Job changes
- Routine jobs

Step 2: Break into Key Steps

Break job down into key steps and AVOID:

- Too much detail, creating an unnecessarily large number of steps
- Being too general, leaving basic steps out

Example: Changing a Tire (Not By an Auto Mechanic)

Steps too detailed:

- Pull off road
- Put car in “park”
- Set brake
- Activate emergency flashers
- Open door
- Get out of car

- Walk to trunk
- Put key in lock
- Open trunk
- Remove jack
- Remove spare tire

Steps too general:

- Park car
- Take off flat tire
- Put on spare tire
- Drive away

Key steps (sufficient detail):

Step	Hazard	Corrective Action
Park car and set brake		
Remove jack and tire from trunk		
Loosen lug nuts		
Jack up car		
Remove tire		
Set new tire		
Jack down car		
Tighten lug nuts		
Store tire and jack		

Step 3: Identify the Hazards

Step	Hazard	Corrective Action
Park car and set brake	Struck by traffic	
Remove jack and tire from trunk	Back strain Bang head on trunk	
Loosen lug nuts	Back/arm strain Slip and fall	
Jack up car	Car could fall off jack	
Set new tire	Fingers pinched Back strain	
Tighten lug nuts	Back strain Slip and fall	

Step 4: Select Controls

Step	Hazard	Corrective Action
Park car and set brake	Struck by traffic	Park well off the roadway
Remove jack and tire from trunk	Back strain Bang head on trunk	Use proper lifting techniques Be observant
Loosen lug nuts	Back/arm strain Slip and fall	Use proper techniques Be sure of footing Wear shoes with good traction
Jack up car	Car could fall off jack	Select stable surface
Set new tire	Fingers pinched Back strain	Keep fingers away from pinch points Use proper lifting techniques
Tighten lug nuts	Back strain Slip and fall	Use proper techniques Use correct stance

Types of Controls

Determine the kind of control required:

- **Engineering Control**
  - Preferred protection method
  - Has the ability to totally isolate the hazard
  - Examples:
    - Machine guards
    - Sound deadening/dampening
    - Shielding
    - Computerizing or automating an operation

- **Administrative Control**
  - Rescheduling work
  - Changing a procedure
  - Re-assignment to another work area
  - Requiring certain PPE to do a task

- **Personal Protective Equipment (PPE) –** method of last resort because:
  - The individual wears the barrier separating the employee from the health hazard
  - If this barrier fails, for whatever reason, the employee will come in contact with the hazard
  - This control is only effective when used and maintained properly
  - This control can also be circumvented

Implement the Control

- Engineering: rebuild equipment, purchase proper tools, etc.
- Administrative: revise policies, procedures, etc.
- PPE: provide protective equipment

Develop Other Solutions

- Find a new way to do job (redesign the job)
  - Determine the work goal of the job, and then analyze the various ways of reaching this goal to see which way is safest
  - Consider work saving tools and equipment

- Change physical conditions that create hazards
  - Tools, materials, equipment layout or location
  - Study change carefully for other benefits (costs, time savings)

- Change the work procedure
  - What should the worker do to eliminate the hazard?
  - How should it be done?
  - Document changes in detail

- Reduce frequency of performing a job
  - What can be done to reduce the frequency of the job?
  - Identify parts that cause frequent repairs and change them
  - Reduce vibration can save machine parts

- Determine the effects
  - A job that has been redesigned may affect other jobs or work processes
  - Check or re-observe the new process once it has been redesigned

Exercise: Lawnmower JSA

In this exercise, the class will act as a group to conduct a JSA on sharpening and replacing a rotary mower blade on a lawnmower.

First, you and your fellow students will call out the steps as the instructor writes them on the flip chart. The steps do not have to be in order.

Once all the steps are identified, put the steps in order and remove the ones that would make the procedure too detailed. Then, identify the controls that should be implemented, noting each control type.

Next, identify the requirements from the CFR that reinforce the controls you are planning to implement.

Consider how much time it took to perform this JSA and compare it to how long it takes you to conduct JSAs on far more difficult tasks where you work. Ask yourself these questions:

1. Based on the time it took to do this JSA, is enough time being allotted for doing JSAs in your workplace?

   _____

   _____

   _____

2. Are the employees who are responsible for doing JSAs putting enough effort and thought into the process?

   _____

   _____

   _____

   _____

LAWNMOWER JSA

Job Title: _____

Job Location: _____

Date of Analysis: _____

Step	Hazard	Corrective Action

NOTES

NOTES

Module 3.1: Multi-Employer Policy and Focused Inspections

Learning Objectives

Upon completion of this module, you will be able to:

1. Identify categories of employers that can be cited by OSHA
2. Identify the 5 elements of a multi-employer citation defense
3. Evaluate and assess responsibilities in a multi-employer setting
4. Describe the conditions that worksites must meet to qualify for a focused inspection

Introduction

There are all sorts of risks posed for employees on multi-employer worksites. In order to establish criteria for responsibility for those hazards, OSHA has developed four categories of employer: Creating, Exposing, Correcting, and Controlling. This lesson will explain those categories and how they relate to one another.

This lesson will also explain the Construction Focused Inspection Initiative, which "focuses" on the leading hazards that cause a large percentage of injuries and deaths. The policy, which applies only to construction safety inspections, has resulted in improved safety and health conditions on construction jobsites.

Multi-Employer Worksites

Four Categories of Employers on a Multi-Employer Site	
1. Creating employer	The employer who actually creates the hazard
2. Exposing employer	Employers whose employees are exposed to hazards
3. Correcting employer	The employer who has the responsibility for actually correcting the hazard
4. Controlling employer	The employer who is responsible, by contract or through actual practice, for safety and health conditions on the worksite; i.e., the employer who has the authority for ensuring that the hazardous condition is corrected

Employers also have multiple roles:

- A creating, correcting, or controlling employer also may often be an exposing employer
- An exposing, creating, or controlling employer also can be a correcting employer (if it is authorized to correct the hazard)

Before issuing citations to an exposing employer, OSHA first determines whether the available facts indicate that the employer has a legitimate defense to the citation.

Defenses Against OSHA Citations
1. The employer did not create the hazard.
2. The employer did not have the responsibility or the authority to correct the hazard.
3. The employer did not have the ability to correct or remove the hazard.
4. The employer can demonstrate that the creating, controlling and/or correcting employers, as appropriate, have been specifically notified of the hazard to which the exposing employer's workers are exposed.
5. The exposing employer has instructed its employees to recognize the hazard **and:** a) Where feasible, the exposing employer has taken appropriate, alternative means of protecting employees from the hazard. b) If extreme circumstances justify it, the exposing employer has removed its employees from the job to avoid exposure.

NOTES

Activity: Multi-Employer Worksite Scenarios

In this exercise, there are five scenarios. For each scenario, you will:

- Determine which employer is the creating employer
- Determine which employer is the correcting employer
- Determine which employer is the controlling employer
- Determine which employer is the exposing employer
- Determine which company should be cited for violations

Each of the following scenarios describes a multi-employer worksite issue. Read each case and determine the category of each employer (creating, correcting, controlling or exposing). Then determine which employer should be cited under the rule.

NOTES

Multi-Employer Worksite Scenarios

Scenario A

ABB Maintenance has five employees who clean Jones Clinic daily. These employees come in contact with contaminated sharps and other regulated waste. No exposure control plan, nor related precautions, is in effect. ABB Maintenance sent a letter to Jones Clinic expressing concern about employee protection, but received no response.

Upon further investigation, you learn that Jones Clinic is under contract to Associated Medical, Inc. to run day-to-day operations. Associated Medical is responsible for the clinic's safety and health program and all related decisions. Jones Clinic and Associated Medical both have employees at the site who could be exposed to potentially infectious materials.

1. Which company or companies is the creating employer?

_____

2. Which company or companies is the exposing employer?

_____

3. Which company or companies is the correcting employer?

_____

4. Which company or companies is the controlling employer?

_____

5. Which company or companies should receive a citation(s)?

_____

Scenario B

Cawley's Tater Flake Company hired Hightone Paints, a painting contractor, to do repair and painting. During the repair work, Hightone removed a railing near a walkway, exposing its own employees, Cawley's employees, and customers to a 7-foot drop. Cawley's posted a sign, warning customers of the hazard.

1. Which company or companies is the creating employer?

_____

2. Which company or companies is the exposing employer?

_____

3. Which company or companies is the correcting employer?

_____

4. Which company or companies is the controlling employer?

_____

5. Which company or companies should receive a citation(s)?

_____

NOTES

_____

_____

Scenario C

Ma/Pa, Inc. contracted with Bumbstead Plumbing to repair sewer pipes on Ma/Pa's property. The contract stated that Bumbstead Plumbing was responsible for all safety and health conditions related to the sewer job. Bumbstead Plumbing dug a trench but did not provide protection against cave-ins for three of its employees working in the trench.

1. Which company or companies is the creating employer?

_____

2. Which company or companies is the exposing employer?

_____

3. Which company or companies is the correcting employer?

_____

4. Which company or companies is the controlling employer?

_____

5. Which company or companies should receive a citation(s)?

_____

Scenario D

Big Cahuna, Inc. is the general contractor at a construction site. It contracts with Eagle-Eye Surveying and Macho Construction to do work on the site.

During the inspection, the compliance officer finds that Macho Construction has created a floor-opening hazard but has no employees exposed. Eagle-Eye Surveying has notified both Big Cahuna and Macho Construction of the hazard and has told its employees to avoid that area until further notice. (Eagle-Eye Surveying is not able to repair the opening.)

1. Which company or companies is the creating employer?

_____

2. Which company or companies is the exposing employer?

_____

3. Which company or companies is the correcting employer?

_____

4. Which company or companies is the controlling employer?

_____

5. Which company or companies should receive a citation(s)?

_____

Scenario E

Cornhusker, Inc. hired Dingy Tank Co. to clean two of its storage tanks. According to the contract, Cornhusker maintains responsibility for the safety and health conditions at the workplace. During the cleaning operations, three Dingy Tank Co. employees are in the tank. Neither Dingy nor Cornhusker have a confined space program.

1. Which company or companies is the creating employer?

_____

2. Which company or companies is the exposing employer?

_____

3. Which company or companies is the correcting employer?

_____

4. Which company or companies is the controlling employer?

_____

5. Which company or companies should receive a citation(s)?

_____

NOTES

_____

_____

Construction Focused Inspections

The goal of OSHA's construction inspections is to improve employees' safety and health conditions at a worksite. The Focused Inspection Initiative policy applies only to **construction safety inspections**.

Before the implementation of the Focused Inspection Initiative, all construction inspections were comprehensive in scope, addressing all areas of the workplace and, by inference, all classes of hazards. A contractor was likely to be cited for hazards that were unrelated to the four leading causes of death that make up a large percentage of all construction fatalities.

Under the initiative, an OSHA inspector will determine whether a project's safety and health program/plan is effective. The OSHA inspector establishes the adequacy of a safety and health program by looking at:

- The comprehensiveness of the plan
- The degree of implementation
- Whether a competent person has been designated to oversee the program
- How the plan is enforced

An effective safety and health program is key to securing a focused inspection. If a useful program is not in place, a focused inspection will not happen. In fact, if an inspector is performing a focused inspection but observes conditions on the project that indicate the worksite is operating under an ineffective safety and health program, the inspector will immediately terminate the focused inspection and conduct a comprehensive inspection.

On multi-employer worksites, the general contractor must assume responsibility for coordinating safety efforts. If this is not being done, a comprehensive inspection will occur.

In addition, if there is no coordination by the general contractor, prime contractor or other such entity to ensure that all employers provide adequate protection for their employees, then a comprehensive inspection will occur.

Construction Focused Inspection Initiative

General Guidelines

1. The Focused Inspections Initiative that became effective October 1, 1994, is a significant departure from how OSHA had previously conducted construction inspections. This initiative recognizes the efforts of responsible contractors that have implemented effective safety and health programs/plans, and encourages other contractors to adopt similar programs. The number of inspections is no longer driving the construction inspection program. The measure of success of this policy will be an overall improvement in construction jobsite safety and health.

2. The Focused Inspections Initiative enables OSHA to focus on the leading hazards that cause a large percentage of construction worksite injuries and deaths.

Four Leading Construction Hazards
1. Falls (e.g., from floors, platforms, roofs)
2. Struck by (e.g., falling objects, vehicles)
3. Caught in/between (e.g., cave-ins, unguarded machinery, equipment)
4. Electrical (e.g., overhead power lines, power tools and cords, outlets, temporary wiring)

3. Under the Focused Inspection Initiative, Compliance Safety and Health Officers (CSHOs) determine whether or not there is project coordination by the general contractor, prime contractor, or other such entity, and conduct a brief review of the project's safety and health program/plan to establish if the project qualifies for a focused inspection. In order to qualify, both the following conditions must be met:

- The project safety and health program/plan meets the requirements of 29 CFR 1926 Subpart C General Safety and Health Provisions.
- There is a designated, competent person responsible for and capable of implementing the program/plan.

4. If the project meets the above criteria, an abbreviated walk-around inspection shall be conducted focusing on:
    - Verification of the safety and health program/plan effectiveness by interviews and observation
    - The four leading hazards, as listed above
    - Other serious hazards observed by the CSHO
5. The CSHO who is conducting a focused inspection is not required to inspect the entire project. Only a representative portion of the project need be inspected.
6. The CSHO shall determine whether a project's safety and health program/plan is effective, but if conditions observed on the project indicate otherwise, the CSHO shall immediately terminate the focused inspection and conduct a comprehensive inspection. The discovery of serious violations during a focused inspection need not automatically convert the focused inspection into a comprehensive inspection. These decisions will be based on the professional judgment of the CSHO.
7. The Focused Inspection Initiative should be publicized as much as possible, so as to encourage contractors to establish effective safety and health programs/plans and concentrate on the four leading hazards prior to being inspected.
8. The Focused Inspection Initiative will be continuously evaluated and modified based on experience.

Specific Guidelines

1. The Focused Inspections Initiative policy applies only to construction safety inspections. Construction health inspections will continue to be conducted in accordance with current agency procedures.
2. A project determined not to be eligible for a focused inspection shall be given a comprehensive inspection with the necessary time and resources to identify and document violations.
3. A comprehensive inspection shall be conducted when there is no coordination by the general contractor, prime contractor or other such entity to ensure that all employers provide adequate protection for their employees.
4. A request for a warrant will not affect the determination as to whether a project will receive a focused inspection.
5. On jobsites where un-programmed inspections (complaints, fatalities, etc.) are being conducted, the determination as to whether to conduct a focused inspection shall be made only after the complaint or fatality has first been addressed.
6. All contractors and employee representatives shall, at some time during the inspection, be informed as to why a focused or a comprehensive inspection is being conducted. This may be accomplished either by personal contact or posting the "Handout for Contractors and Employees."
7. A brief justification will be included in each case file as to why a focused inspection was or was not conducted. The optional "Construction Focused Inspection Guideline" may be used for this purpose.
8. Although the walk-around inspection shall focus on the four leading hazards, citations shall be issued for any serious violations found during a focused inspection, and for any other-than-serious violations that are not immediately abated. Other-than-serious violations that are immediately abated shall not normally be cited nor documented.
9. Only contractors on projects that qualify for a focused inspection will be eligible to receive a full "good faith" adjustment of 25 percent.
10. For focused inspections, an OSHA-1 will be completed in accordance with the multi-employer policy as stated in the *Field Inspection Reference Manual* for the:
    - General contractor, prime contractor or other such entity
    - Each employer that is issued a citation

Construction Focused Inspection Guidelines

This set of guideline assists the professional judgment of the compliance officer in determining whether an employer has an effective safety plan, thus qualifying the worksite for a focused inspection.

YES/NO

Project Safety and Health Coordination

Are there procedures in place by the general contractor or other such entity to ensure that all employers provide adequate protection for their employees? _____

Designated Competent Person

Is there a designated, competent person responsible for the implementation and monitoring of the project safety and health plan, who is capable of identifying existing and predictable hazards and has authority to take prompt corrective measures? _____

YES/NO

Project Safety and Health Program/Plan*

Is there a program or plan that complies with 1926 Subpart C and addresses, based upon the size and complexity of the project, the following: _____

_____ Project Safety Analysis at initiation and at critical stages, that describes the sequence, procedures, and responsible individuals for safe construction.

_____ Identification of work/activities requiring planning, design, inspection, or supervision by an engineer, competent person or other professional.

_____ Evaluation/monitoring of subcontractors to determine conformance with the Project Plan. (The Project Plan may include or be utilized by subcontractors.)

_____ Supervisor and employee training according to the Project Plan, including recognition, reporting and avoidance of hazards, and applicable standards.

_____ Procedures for controlling hazardous operations, such as cranes, scaffolding, trenches, confined spaces, hot work, explosives, hazardous materials, leading edges, etc.

_____ Documentation of training, permits, hazard reports, inspections, uncorrected hazards, incidents and near misses.

_____ Employee involvement in hazard analysis, prevention, avoidance, correction, and reporting.

_____ Project emergency response plan.

* For examples, see owner and contractor association model programs, ANSI A10.33, A10.38, etc.

The walk-around and interviews have confirmed that the Plan has been implemented, including:

_____ The four leading hazards are addressed: falls, struck by, caught in/between, and electrical.

_____ Hazards are identified and corrected with preventative measures instituted in a timely manner.

_____ Employees and supervisors are knowledgeable of the project safety and health plan, avoidance of hazards, applicable standards, and their rights and responsibilities.

NOTES

Module 3.2: Psychology and Behavior-Based Safety

Learning Objectives

Upon completion of this module, you will be able to:

1. Define psychology terminology
2. Explain safety motivation concepts
3. Discuss the pros and cons of safety incentive programs
4. Describe the importance of a safety culture
5. Explain principles and strategies of Behavior Based Safety (BBS)
6. Discuss steps in BBS implementation

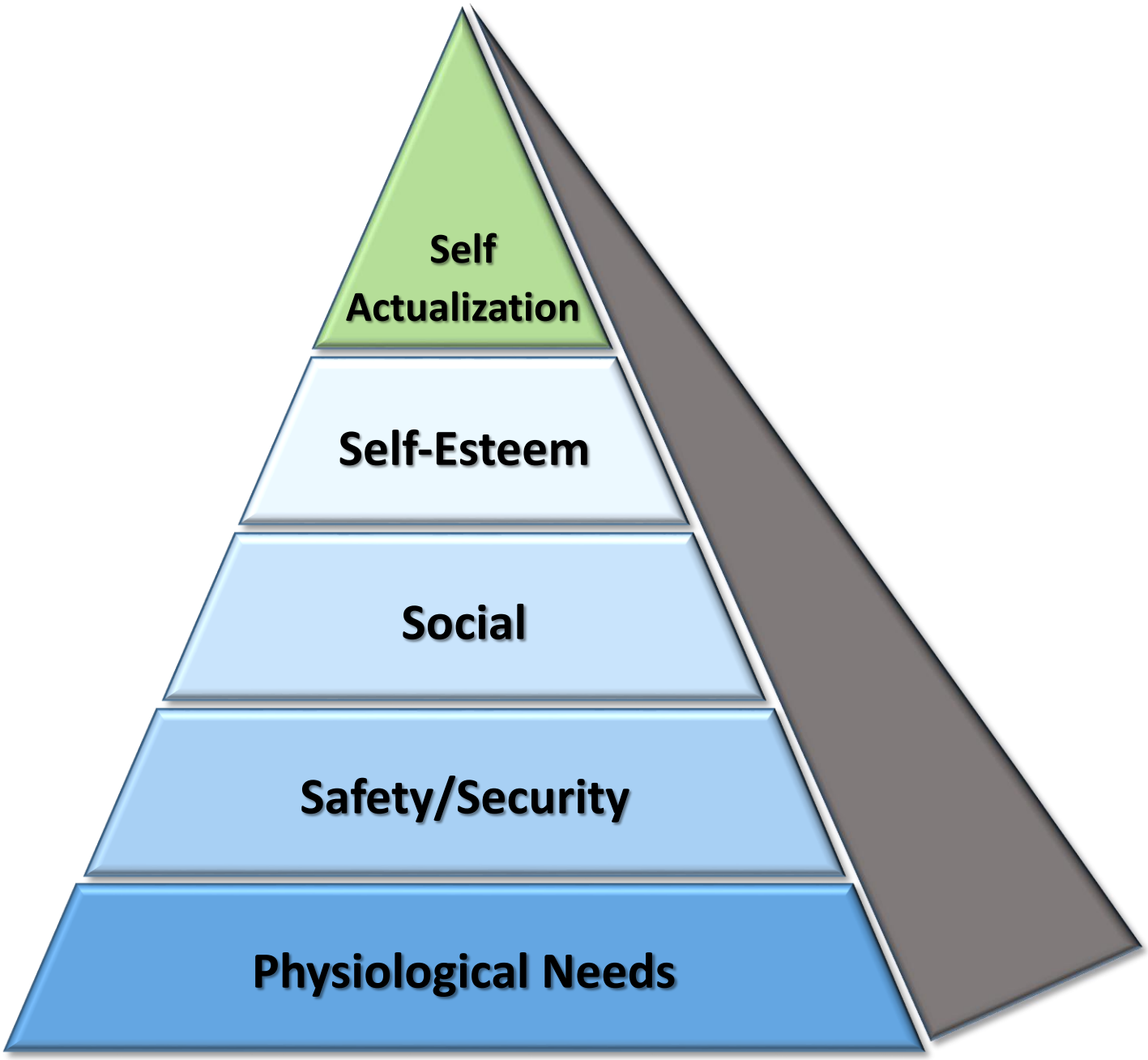
Introduction

Human error may result in as many as 85-95% of all accidents. To reduce the number of accidents, it is important to understand human motivation, capabilities and limitations. Often, simplistic solutions are applied to what are considered simplistic behavioral problems. In doing this, some negative behaviors may be eliminated, but others that may be more harmful can be created in the process. This is why a holistic approach should be taken—problems are not as simple as they may first appear.

Basic Psychology Terminology

- **Psychology**: the study of behavior, encompassing clinical, developmental, educational, experimental, industrial, social, and physiological psychology.
- **Attitude**: enduring reactions toward people, places or objects based on our beliefs and emotional feelings.
- **Job satisfaction**: the specific attitude and emotional feelings that individuals have about their jobs.
- **Behavior**: observable, objective, measurable, and manageable actions of people.
- **Morale**: the attitude of an individual, group, or organization with regard to the function or task at hand.
- **Motivation**: the inner drive, impulse or need that creates a personal incentive towards a given behavior.

Maslow's Needs-Hierarchy Model of Motivation



Behavior-Based Safety

Behavioral safety is not an alternative to traditional safety programs. It is one component of a comprehensive effort. There are three ways organizations can approach safety-related behavior:

- Ignore it
- Handle it poorly
- Handle it effectively, by encouraging safe behavior from top to bottom

Behavioral safety is not a program, but a process by which continuous improvement in safety can be achieved.

Activity: Behavior-Based Safety Observation Checklist

In this exercise, the class will watch an OSHA video of a common task and will demonstrate how overexertion in construction sites can lead to worker injury. The video will also show what employers must do so that the work can be done more safely.

First, you and your fellow students will watch the video to identify at-risk behavior.

Using the checklist provided, identify specific behaviors that are observed and will indicate whether each activity is considered a safe or at-risk behavior.

NOTES

Date:	**Location:**	**Observer:**
Time:	**Shift:**	**Weather:**
Routine Task:	**Non-Routine Task:**	**Outage:**

	Comments	SAFE	AT-RISK
1.0 Body Position			
1.1 Line of Fire			
1.2 Pinch Points			
1.3 Eyes on Path			
1.4 Eyes on Task/Hands			
1.5 Ascending/Descending			
2.0 Body Use/Ergonomics			
2.1 Lifting/Lowering			
2.2 Twisting			
2.3 Pushing/Pulling			
2.4 Response to Ergonomic Risk			
3.0 Tools and Equipment			
3.1 Selection/Condition			
3.2 Use			
4.0 Procedures			
4.1 Lockout/Tagout			
4.2 Confined Space Entry			
5.0 PPE			
5.1 Head			
5.2 Eyes and Face			
5.3 Hearing			
5.4 Respiratory			
5.5 Hands			
5.6 Foot			
5.7 Fall			
6.0 Work Environment			
6.1 Walking Working Surface			
6.2 Housekeeping/Storage			
9.0 Other			
9.1 Other			

Task being performed_____

Comments from worker observed_____

Action needed to remove barrier (e.g., service order, procedure change, tools)_____

NOTES

Module 3.3: Risk Assessment, Accident Causation, and Investigation

Learning Objectives

Upon completion of this module, you will be able to:

1. Define terminology regarding accidents
2. Describe the risk assessment process
3. Identify the basic causes of accidents
4. Describe the accident investigation process

Introduction

In anything we do, we assess and accept a certain amount of risk. When doing a worksite analysis, therefore, risk must be a consideration. Jobs and tasks with the greatest risk require the greatest attention to ensure that an accident doesn't occur. Conversely, jobs and tasks with the lesser risk require the lesser attention, while still ensuring that an accident doesn't occur.

In this lesson, we will determine how to precisely measure and assess risk. Additionally, we will discuss some of the underlying theories associated with the causes of accidents.

Terminology

- **Accident**: any unplanned event that results in personal injury and/or property damage
- **Risk**: describes both the probability and the severity of a loss event;
  - Risk = Probability x Severity
- **Probability**: likelihood of a loss event taking place
- **Probability categories**:
  - Frequent
  - Probable
  - Occasional
  - Remote
  - Improbable
- **Severity:** the magnitude of a loss in a given period of time
- **Severity categories**:
  - Catastrophic
  - Critical
  - Marginal
  - Negligible

NOTES

Risk Analysis

Activity: Risk Analysis Study

Review the list of tasks below. Based on your gut instinct, rank the tasks from least risky to most risky. Using the directions, provided rank the tasks again, and then compare your initial ranking with the structured rankings.

From the following list of tasks, circle the one you would consider to have the most risk associated with it.

Task A: Spraying epoxy-based paint in an enclosed area once per week

Task B: Cutting 2’ x 4's using a skill saw without saw horses daily

Task C: Sweeping a warehouse floor 3 times daily

Task D: Cleaning up a five-gallon gasoline spill once per year

Task E: Installing sheet rock using case hardened screws and an electric drill daily

NOTES

Probability x Severity = Risk

Probability		X	Severity		Risk
Frequent	**5**		Catastrophic	**4**	
Probable	**4**		Critical	**3**	
Occasional	**3**		Marginal	**2**	
Remote	**2**		Negligible	**1**	
Improbable	**1**				

Task A: Probability ___ x Severity ___	
Task B: Probability ___ x Severity ___	
Task C: Probability ___ x Severity ___	
Task D: Probability ___ x Severity ___	
Task E: Probability ___ x Severity ___	

Examples of severities:

- Catastrophic (Fat/Cat)
- Critical (DART)
- Marginal (First Aid)
- Negligible (No injury or near miss)

Now, assign probability and severity ratings to each task and enter your estimates in the blanks. Using the risk formula, calculate the risk for each task.

Do these calculations agree with your initial assessment? _____

Which task is now associated with the greatest risk? _____

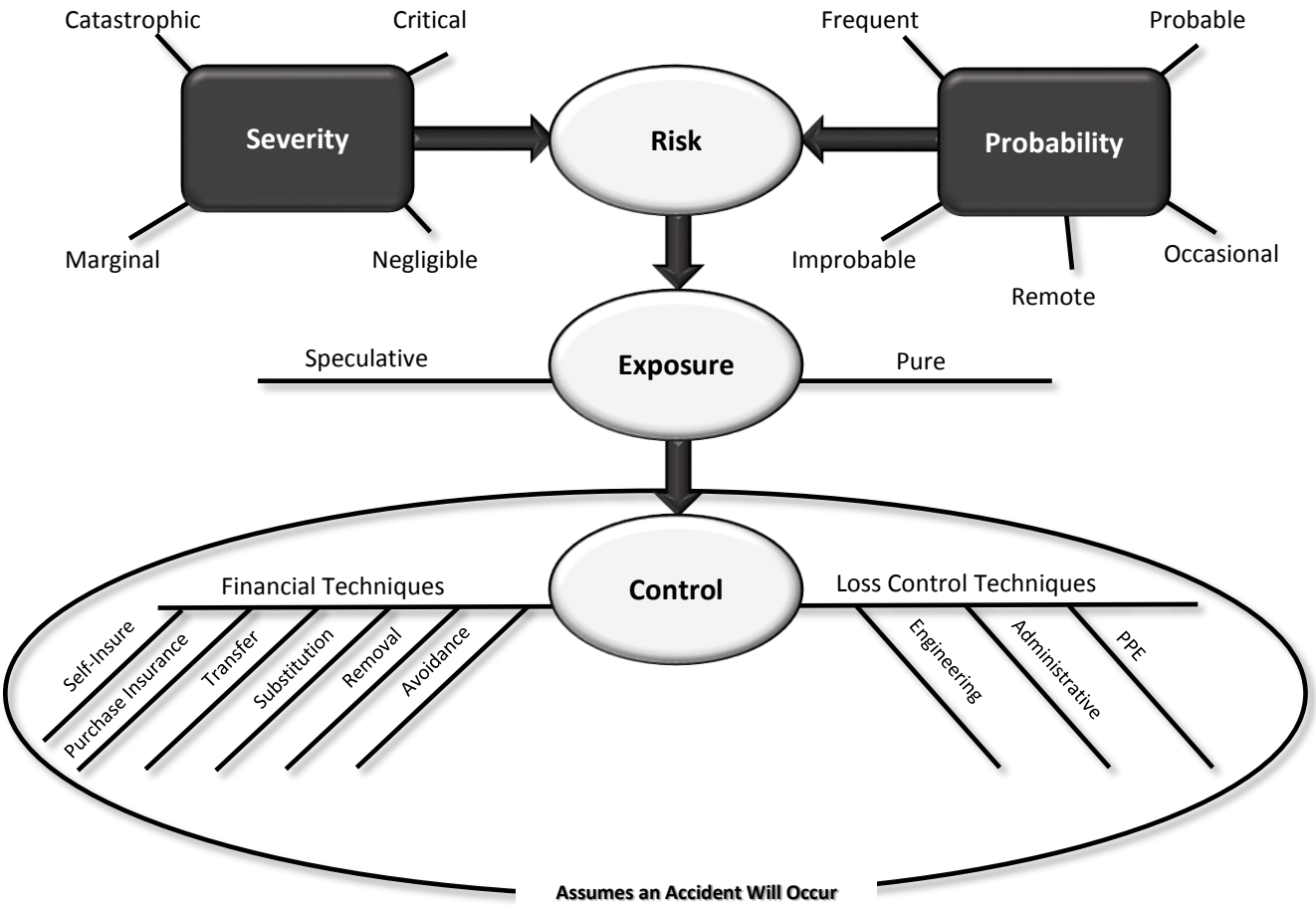
Risk Assessment

The figure below is a concept map that puts the all relationships regarding risk into one graphic Risk is the measure of the probability and severity of a loss event taking place.

Risk = Probability x Severity

Risk leads to exposure, of which there are two types. Assuming that an accident will occur as a result of exposure, there are multiple ways to control the exposure. Exposure is controlled by loss control techniques (engineering, administrative and PPE) and/or financing techniques.

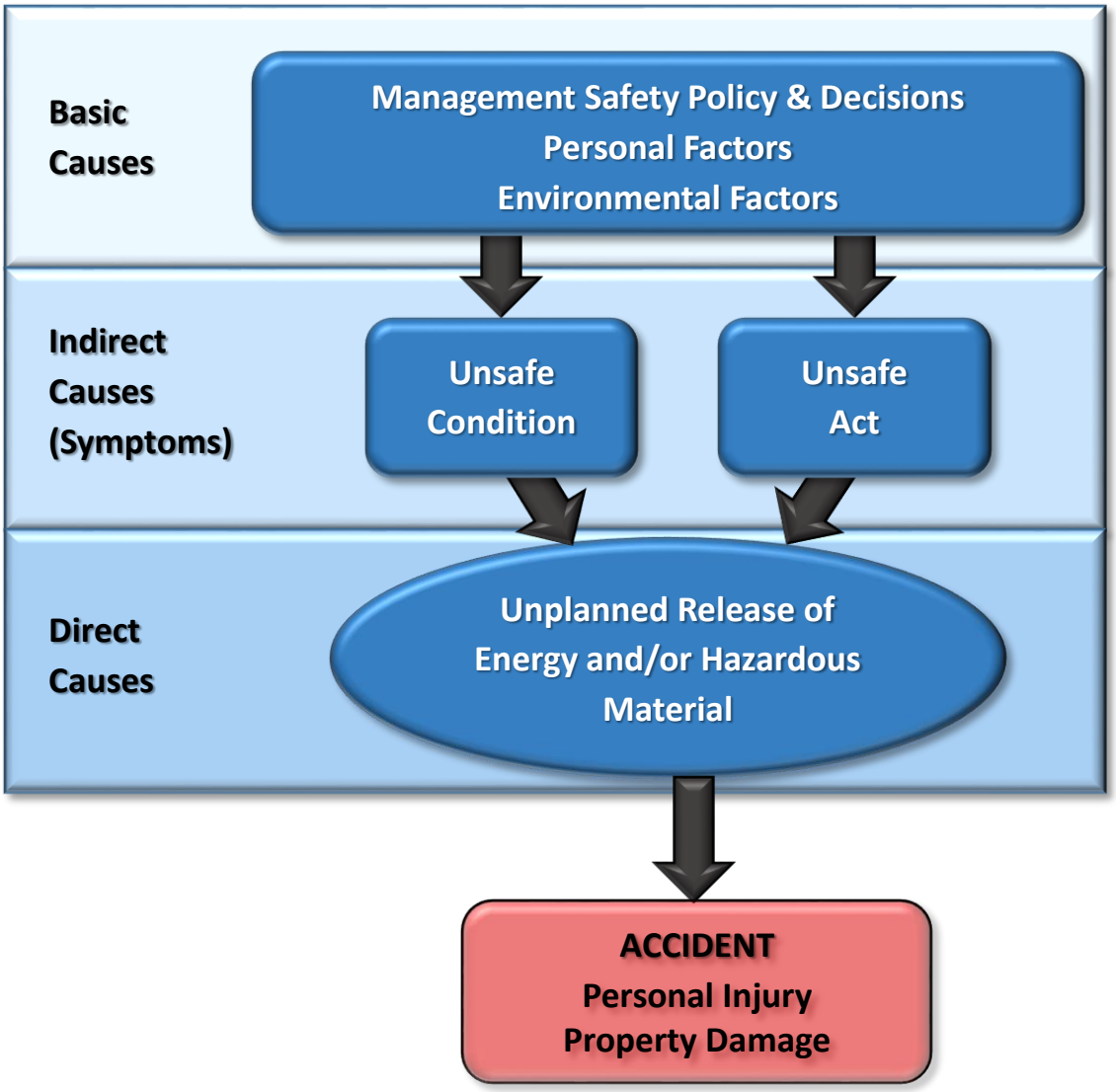
Risk Relationships Concept Map



Accident Investigation

Accident investigation is a part of safety work that no one enjoys. Nonetheless, it is important to be prepared when the time comes. We will discuss the tools and techniques needed to correctly investigate an accident.

Levels of Accident Causation



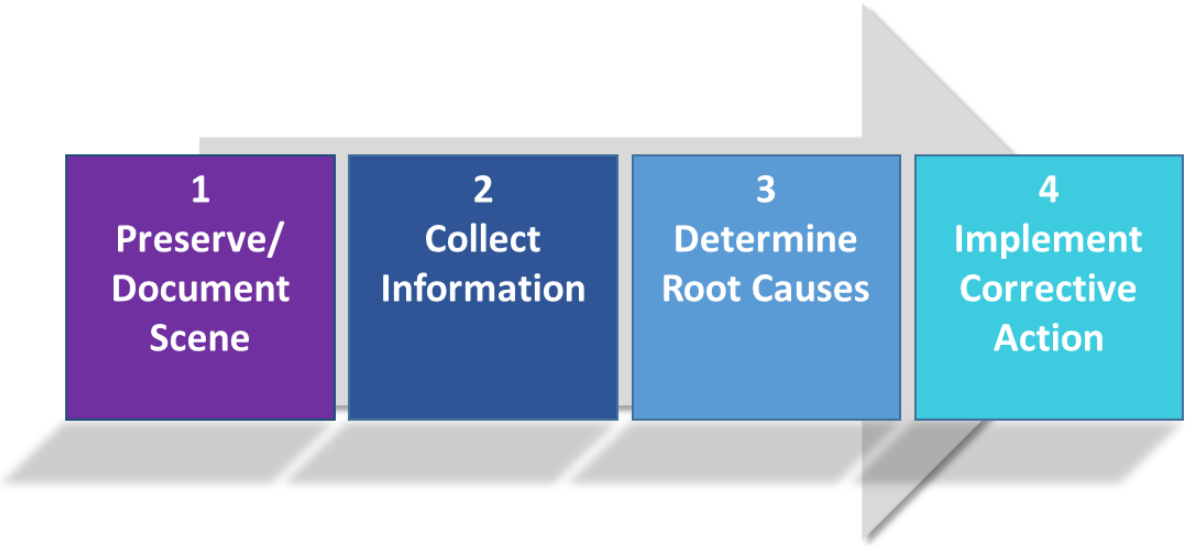
Activity: Accident Investigation Toolkit

Should an accident occur, it will be necessary to get to the incident site immediately and begin to investigate it. You will not have time to search for the things you need to do the investigation. They must be assembled in one place, ready to go. Use the following grid to list the tools that you'll need to have assembled and ready, so that you can immediately begin an investigation.

Accident Investigation Kit

Item	Comment

Steps of an Accident Investigation



OSHA recommends a 4 step process for investigating accidents. The steps are as follows:

- Preserve and document the scene
  - Preserve the scene to prevent material evidence from being removed or altered; investigators can use cones, tape, and/or guards
  - Document the incident facts such as the date of the investigation and who is investigating. Essential to documenting the scene is capturing the injured employee's name, injury description, whether they are temporary or permanent, and the date and location of the incident. Investigators can also document the scene by video recording, photographing and sketching

- Collect information
  - Incident information is collected through interviews, document reviews and other means
  - In addition to interviews, investigators may find other sources of useful information. These include:
    - Equipment manuals
    - Industry guidance documents
    - Company policies and records
    - Maintenance schedules, records and logs
    - Training records (including communication to employees)
    - Audit and follow-up reports
    - Enforcement policies and records
    - Previous corrective action recommendations
- Determine the root causes
  - The root causes are the underlying reasons why the incident occurred in a workplace
  - Finding the root causes requires persistent "digging", typically by asking "Why" repeatedly
- Implement corrective actions
  - Implementation should entail program level improvements and should be supported by senior management
  - Corrective actions offer very limited preventive value if they do not address the root causes of the incident

More detailed information can be found in OSHA's publication entitled *Incident Investigations: A Guide for Employers.*

Activity: Accident Investigation—Witness Report

Should an accident occur, it will be necessary to get to the incident site immediately and begin to investigate it.

There are many reasons that this is important, but for the purpose of this exercise, you will learn that eyewitness accounts of the accident become more skewed with each passing minute, for a number of reasons. Among them:

- Reliving the incident in their own minds.
- Discussing the incident among co-workers.
- Recollection becoming generally less clear over time.

In this exercise, half of the students will leave the room. The others will remain and watch a video of an accident. The half that left the room will then return and perform one-on-one interviews with the eye witnesses, using the accident investigation form located at the end of this lesson. Results of those interviews will then be compared to see how accounts vary.

NOTES

SUPERVISOR'S ACCIDENT REPORT

JOB #

REPORT #

1

A. SENIOR SUPERVISOR	COMPANY NAME IF SUBCONTRACTOR:	ACCIDENT DATE/TIME:
B. MIDDLE SUPERVISOR	EMPLOYEE SSN:	DATE/TIME ACCIDENT REPORTED
C. FIRST LINE SUPERVISOR	PERSON COMPLETING THIS REPORT (IF NOT LINE SUPERVISOR)	DATE/TIME OF THIS REPORT

EMPLOYEE NAME (LAST, FIRST, M.I.)	AGE	JOB TITLE	TIME IN THIS JOB	TIME ON PROJECT	TIME WITH CO.	DAYS / HRS ON DUTY

ADDRESS:	PERMANENT OR TEMPORARY ASSIGNMENT?	WITNESSES OR FIRST PERSON ON SCENE OF INJURY
	1	3
	2	4

2

IS THERE A JSA FOR THIS TASK?	YES		NO	
WAS THE JSA REVIEWED PRIOR TO STARTING WORK?	YES		NO	
WAS THE JSA ADEQUATE AND COMPLETE?	YES		NO	
WAS THE JSA FOLLOWED?	YES		NO	

IS THERE A WRITTEN PROCEDURE (NOT A JSA) FOR THIS TASK?	YES		NO	
WAS THE PROCEDURE REVIEWED PRIOR TO STARTING WORK?	YES		NO	
WAS THE PROCEDURE ADEQUATE FOR THE ASSIGNED TASK?	YES		NO	
WAS THE PROCEDURE FOLLOWED?	YES		NO	

3

EXACT LOCATION OF ACCIDENT	EXACT DESCRIPTION OF TASK (DETAILS)

INVESTIGATION RESULTS: (HOW DID INJURY OCCUR?)

4 MEDICAL INFORMATION

CHECK AT LEAST ONE ITEM IN EACH COLUMN — MAY BE COMPLETED BY MEDIC OR IMMEDIATE SUPERVISOR

	A. ACCIDENT TYPE		B. SOURCE OF INJURY		C. ACTIVITY OF INJURED PERSON		D. TYPE OF INJURY		E. LOCATION (BODY PART)
1.		ALLERGIC REACTION		BODILY MOTION		BENDING		ABRASION	EYE / EAR / NOSE / MOUTH
2.		ARC-RAY EXPOSURE		CHEMICAL		CARRYING		BURN - ARC RAY	FACE / HEAD / NECK
3.		CAUGHT IN, ON, BTWN		CRANE/HOIST		CLIMBING		BURN - THERMAL	CHEST
4.		FALL FROM ELEVATION		WALK/WORK SURFACE		DESCENDING		BURN - CHEMICAL	UPPER SIDE / RIBS
5.		SLIP/TRIP/FALL		HAND TOOL		DRIVING		CONTUSION / IMPACT	UPPER BACK / RIBS
6.		STRIKE AGAINST		POWER HAND TOOL		HANDLING MATERIAL		DISLOCATION	SPINE (CERV / UPPER / LOW)
7.		STRUCK BY OBJECT		LADDER		PULLING		ELECTRIC SHOCK	SHOULDER
8.		ELECTRIC CURRENT		MATERIAL		PUSHING		FOREIGN BODY - EYE	ELBOW
9.		TEMP EXTREME		MECHANICAL EQUIPMENT		RIDING		FRACTURE	ARM (UPPER / LOWER)
10.		SHARP/ABRASIVE OBJ.		SCAFFOLD / PICK BOARD		USING HAND TOOL		HERNIA / RUPTURE	WRIST
11.		MOVING PART/EQUIP.		WORK PLATFORM		WALKING		LACERATION	HAND / FINGER(S)
12.		ABSORPTION		STAIRS/STEPS		WELDING/BURNING		PUNCTURE	ABDOMEN / LOWER SIDE
13.		INHALE		STRUCTURE		CHIPPING/GRINDING		MUSCLE STRAIN	LOWER BACK (SOFT TISSUE)
14.		SWALLOW		VEHICLE		SPRAY/PAINT/WASH		JOINT SPRAIN	PELVIC / GROIN
15.		OVEREXERTION		VESSEL/TANK		OTHER (EXPLAIN)		ILLNESS / DISEASE	BUTTOCKS
16.		OVEREXTEND (JOINT)		OTHER (EXPLAIN)				CARDIAC/CIRCULATORY	LEG (UPPER / LOWER)
17.		OTHER (EXPLAIN)						RESPIRATORY	KNEE
18.								GASTRO-INTESTINAL	ANKLE
19.								INFECTION	FOOT / TOE(S)
20.								OTHER (EXPLAIN)	OTHER (EXPLAIN)
21.									
22.									

SEE BACK OF FORM

5 FACTORS CONTRIBUTING TO THE ACCIDENT

CHECK ALL THAT APPLY — GIVE DETAILS BELOW

A. UNSAFE CONDITIONS	B. CAUSES OF UNSAFE ACTIONS	C. OTHER FACTORS
1. ☐ 4 IF UNSAFE CONDITION: RECOGNIZED? [YES] [NO]	☐ LACK OF CRAFT-SPECIFIC SKILL OR TRAINING	☐ UNFAMILIAR TASK
2. ☐ CREATED BY PERSON WORKING ON THE TASK ?	☐ UNAWARE OF HAZARD INVOLVED IN ACTION	☐ SCHEDULE / WORK / PRODUCTION PRESSURE
3. ☐ TOOLS / EQUIPMENT / MANPOWER NOT ACCESSIBLE	☐ FALSE SENSE OF URGENCY	☐ PRESSURE FROM SUPERVISOR OR OTHERS
4. ☐ INCORRECT TOOL OR EQUIPMENT FOR JOB	☐ FOLLOWING SPECIFIC INSTRUCTIONS	☐ AVOID CONFLICT WITH SUPERVISOR OR OTHERS
5. ☐ INCORRECT ADJUSTMENT OR SIZE	☐ FAIL TO LOCKOUT / TAGOUT	☐ DISTRACTED BY OTHER WORK CONSIDERATIONS
6. ☐ TOOL OR EQUIPMENT IN UNSAFE CONDITION	☐ DID NOT FOLLOW RULE / PROCEDURE / INSTRUCTION	☐ DISTRACTED BY PERSONAL CONFLICT AT WORK
7. ☐ STORAGE OF TOOLS / MATERIALS / CHEMICALS	☐ ACCEPTED PRACTICE (ALWAYS DO IT THIS WAY)	☐ DISTRACTED BY PROBLEM AWAY FROM WORK
8. ☐ SUSPENDED LOAD / OVERHEAD LIFTING	☐ INCORRECT PERSONAL PROTECTIVE EQUIPMENT	☐ FATIGUE
9. ☐ UNSECURED TOOLS / MATERIALS / LOAD	☐ MODIFY / USING MODIFIED SAFETY EQUIPMENT	☐ ILLNESS / INJURY (WORK RELATED OR NOT)
10. ☐ UNSAFE WORK SURFACE	☐ UNSAFE POSITION / POSTURE	☐ ATTEMPT TO SAVE TIME
11. ☐ UNSTABLE WORK PLATFORM	☐ HORSEPLAY	☐ ATTEMPT TO SAVE EFFORT
12. ☐ ACCESS TO WORK AREA NOT ADEQUATE	☐ OTHER (SPECIFY)	☐ ATTEMPT TO AVOID DISCOMFORT
13. ☐ RESTRICTED WORK AREA		☐ RESENTMENT / HOSTILITY / ANGER / FRUSTRATION
14. ☐ HOUSEKEEPING OR ORDERLINESS		☐ OTHER (SPECIFY)
15. ☐ WEATHER OR ENVIRONMENT (RAIN, HEAT, COLD, ETC.)		
16. ☐ OTHER (SPECIFY)		
17.		

DETAILS

6 ACTION TO PREVENT RECURRENCE

CHECK ALL THAT APPLY — GIVE DETAILS BELOW — **IDENTIFY PERSON RESPONSIBLE FOR EACH ACTION**

A. ACTIONS CARRIED OUT TO DATE	B. ACTIONS PLANNED BUT NOT YET COMPLETED	C. SUGGESTED BUT BEYOND THIS LEVEL OF AUTHORITY
1. ☐ REVIEW INCIDENT WITH WORKERS	☐ REVIEW INCIDENT WITH WORKERS	☐ EMPLOYEE TRAINING (CRAFT OR SAFETY)
2. ☐ DEVELOP / MODIFY SAFETY STANDARD	☐ DEVELOP / MODIFY SAFETY STANDARD	☐ SUPERVISOR TRAINING (CRAFT OR SAFETY)
3. ☐ DEVELOP / MODIFY WORK PROCEDURE	☐ DEVELOP / MODIFY WORK PROCEDURE	☐ ACTION TO IMPROVE INSPECTION / MONITORING
4. ☐ DEVELOP / MODIFY JSA	☐ DEVELOP / MODIFY JSA	☐ ACTION TO IMPROVE DESIGN
5. ☐ RETRAIN TO EXISTING STANDARD / PROCEDURE / JSA	☐ RETRAIN TO EXISTING STANDARD / PROCEDURE / JSA	☐ IMPROVE CONSTRUCTION / FABRICATION
6. ☐ CHANGE REQUIRED PERSONAL PROTECTIVE EQUIPMENT	☐ CHANGE REQUIRED PPE	☐ IMPROVE STANDARD / PROCEDURE / PROCESS
7. ☐ CHANGE REQUIRED TOOLS / EQUIPMENT	☐ CHANGE REQUIRED TOOLS / EQUIPMENT	☐ CHECK WITH MANUFACTURER
8. ☐ CHANGE REQUIRED MANPOWER FOR TASK	☐ CHANGE REQUIRED MANPOWER FOR TASK	☐ REQUEST ASSISTANCE FROM SAFETY DEPT
9. ☐ INSTALL GUARD / SAFETY DEVICE	☐ INSTALL GUARD / SAFETY DEVICE	☐ REQUEST SITE VISIT FROM SAFETY DEPARTMENT
10. ☐ REPAIR / REPLACE TOOLS / EQUIPMENT	☐ REPAIR / REPLACE TOOLS / EQUIPMENT	☐ OTHER (SPECIFY)
11. ☐ DISCIPLINE EMPLOYEE (DOCUMENTED ACTION)	☐ DISCIPLINE EMPLOYEE (DOCUMENTED ACTION)	
12. ☐ DISCIPLINE SUPERVISOR (DOCUMENTED ACTION)	☐ DISCIPLINE SUPERVISOR (DOCUMENTED ACTION)	
13. ☐ OTHER (SPECIFY)	☐ ACTION TO IMPROVE INSPECTION OR MONITORING	
14.	☐ ACTION TO IMPROVE SUPERVISION SKILLS	
15.	☐ ACTION TO IMPROVE EMPLOYEE CRAFT SKILLS	
16.	☐ OTHER (SPECIFY)	
17.		

DETAILS

SIGNATURE OF LINE SUPERVISOR: TITLE: DATE:

7 ADMINISTRATIVE REVIEW

TO BE COMPLETED BY SENIOR LOCATION SUPERVISOR — REVIEW AND COMPLETE BEFORE FORWARDING

WHAT KEY FACTORS / ROOT CAUSES LED TO THIS INJURY?

COULD FOLLOWING EXISTING COMPANY OR JOBSITE STANDARDS AND / OR PROCEDURES HAVE PREVENTED THIS ACCIDENT? YES ☐ NO ☐ (WHY NOT?)

HAS THIS ACCIDENT BEEN INVESTIGATED TO YOUR SATISFACTION? YES ☐ NO ☐ (WHY NOT?)

WHO IS ASSIGNED RESPONSIBILITY FOR ACTIONS TO PREVENT A RECURRENCE? (REFER TO SECTION 6 ABOVE)

WHAT RESOURCES ARE NEEDED TO PREVENT A RECURRENCE, THAT ARE NOT AVAILABLE?

COMMENTS / ADDITIONAL INFORMATION:

SIGNATURE OF SENIOR SUPERVISOR: TITLE: DATE:

Module 4-1: Occupational Health

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Identify occupational health hazards
2. Describe occupational health hazard controls
3. Describe the duties and responsibilities of an industrial hygienist
4. Discuss the National Emphasis Program (NEP) on silica

Introduction

When the OSH Act was enacted in 1970, the primary emphasis was on injury prevention in the occupational environment. In the 1980s and 1990s, OSHA redirected its attention toward worker health. The promotion of employee health and illness prevention are two of the primary concerns of the discipline known as *industrial hygiene*.

Routes of Entry

There are four common modes by which contaminants can enter the body:

1. **Inhalation** is the most common way that contaminants enter the body in the workplace. As physical demands on the body increase, there is a corresponding increase in cardiopulmonary activity that allows more contaminants to enter.

2. **Ingestion** exposures are often the result of poor housekeeping and/or poor personal hygiene. Dirty surfaces where food is handled or dirty hands are the culprits.

3. **Absorption** can occur when solvents or waste oils enter the body through the skin. Some of these can damage the skin, causing dermatitis, which has long been one of the leading causes of occupational illness.

4. **Injection** occurs via puncture injuries or passage of contaminants through lesions in the skin. With the increasing concern over AIDS and Hepatitis B, injection routes of entry have been an increasing concern.

Health Hazards

List the types of health hazards that may be present at your workplace.

Chemical

_____ _____

_____ _____

Physical

_____ _____

_____ _____

Biological

_____ _____

_____ _____

Ergonomic

_____ _____

_____ _____

Functions of the Industrial Hygienist

Anticipate	Recognize	Evaluate	Control
Health hazards in the workplace	***Initial/informal assessments***	***Specific/formal analyses***	***Engineering*** ***Administrative*** ***PPE***
• Processes • Practices • Procedures • Products • Materials	• Employee surveys • Interviews • Observations • Reviews of incidents • Review of health issues • SDS reviews	• Air monitoring • Noise monitoring • Radiation monitoring • Wipe samples • Temperature assessments	• Redesign • Isolation • Computerization Ventilation • Procedures • Job rotation • Schedule changes • Respirators • Gloves • Chemical suits

Silica

Silicosis is a disease where scar tissue forms in the lungs and reduces the ability to extract oxygen from the air.

Methods of silica exposure control include:

- Silica substitutes
- Engineering controls
- Work practices
- Personal protective equipment

Best Work Practices
Use disposable or washable work clothes at the worksite.
Install workplace showers.
Change into clean clothing before leaving the worksite.
Do not eat, drink, use tobacco, products, or apply cosmetics in areas where there is silica dust present.
Participate in air monitoring and training.

NOTES

NOTES

Module 4-2: Hazard Communication

Learning Objectives

Upon completion of this lesson, you will be able to:

1. Describe the basic hazard communication requirements
2. Explain the changes of the Globally Harmonized System (GHS)

Introduction

29 CFR 1910.1200, the Hazard Communication (HAZCOM) Standard, applies to any chemical that an employee may be exposed to under normal conditions or in the event of an emergency. OSHA requires employers to know what harmful chemicals are present at their worksites and to protect employees from harm by preventing contact with those hazardous substances.

Labeling

There are three main types of chemical container labels:

- Globally Harmonized System of Classification and Labeling of Chemicals (GHS) label
- National Fire Protection Association (NFPA) label
- Hazardous Materials Identification System (HMIS) label

The NFPA and HMIS classification systems include the ratings 0, 1, 2, 3, and 4. Circle the **least** severe and **most** severe hazard ratings.

Least Severe: 0 1 2 3 4 **Most Severe: 0 1 2 3 4**

The GHS classification system includes the ratings 1, 2, 3, 4, and 5. Circle the **least** severe and **most** severe hazard ratings.

Least Severe: 1 2 3 4 5 **Most Severe: 1 2 3 4 5**

Safety Data Sheets

Safety Data Sheets (SDS) must:

- Be developed or obtained for each hazardous chemical
- Be in English
- Have 16 mandated sections
- Not have blank sections
- Be maintained in the workplace
- Be readily available to employees

NOTES

Activity: SDS

Turn to the sample SDS for benzene (following this lesson), review each section, and answer the questions below.

Section 1—Identification of Substance / Mixture

What is the product name? _____

What are some synonyms for the product name?

_____

What is the Chemical Abstract Service number? _____

Section 2—Hazard Identification

Is this product flammable? **Y N** If flammable, what category is it? **1 2 3 4**

What the signal word for this product? _____

Is this product a carcinogen? **Y N**

Is this product a mutagen? **Y N**

Section 3—Composition of Ingredients

What percent of the product is benzene? _____

Section 4—First Aid

Vomiting **should** / **should not** be induced if this product is ingested.

Section 5—Fire Fighting Measures

What extinguishing agent(s) are suitable for firefighting?

Water / **Foam** / **Dry Chemical** / **CO_2**

Section 7 - Handling and Storage

What would be considered incompatible materials during storage?

_____

Section 8—Exposure Control / Employee Protection

The NIOSH REL (STEL) for benzene is _____ ppm.

What glove materials would be acceptable for benzene use?

_____

Section 9—Physical and Chemical Properties

The odor threshold levels for Benzene are _____ ppm.

Is benzene **lighter** or **heavier** than air?

Section 10—Stability and Reactivity

What are the two main decomposition products for benzene?

_____

NOTES

_____

_____

_____

_____

_____

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Chemical type	:	Substance
Substance name	:	Benzene.
Trade name	:	Benzene.
EC index no	:	601-020-00-8
EC no	:	200-753-7
CAS No.	:	71-43-2
REACH registration No.	:	01-2119447106-44-0082
Product code	:	691: SDS # PbR0010
Synonyms	:	Benzol / cyclohexatriene / phenyl hydride / nitration benzene

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/preparation : Intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Only representative:
Petrobras Europe Ltd.
4th Floor, 20 North Audley Street
London W1K 6WL, United Kingdom
Fax number: +44(0) 20 7355 8750
E-mail: reach@petrobras.com.br

Manufacturer:
Petróleo Brasileiro S. A.
Avenida Chile, 65.
20035-900 Rio de Janeiro - Brazil
E-mail: sac@petrobras.com.br

1.4. Emergency telephone number

Emergency number : For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada (collect calls accepted): 1-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225
Skin Irrit. 2 H315
Eye Irrit. 2 H319
Muta. 1B H340
Carc. 1A H350
STOT RE 1 H372
Asp. Tox. 1 H304

Full text of H-phrases: see section 16.

Classification according to Directive 67/548/EEC or 1999/45/EC

F; R11
Carc.Cat.1; R45
Muta.Cat.2; R46
Xn; R65
Xi; R36/38
T; R48/23/24/25

Full text of R-phrases: see section 16.

Adverse physicochemical, human health and environmental effects

Depression of the central nervous system. This material or its emissions may alter blood formation within marrow and thereby aggravate existing bone marrow disease.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS07 GHS08

Signal word (CLP) : Danger

Hazard statements (CLP) : H225 - Highly flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H340 - May cause genetic defects
H350 - May cause cancer
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (CLP) : P210 - Keep away from open flames, sparks. - No smoking.
P202 - Do not handle until all safety precautions have been read and understood
P243 - Take precautionary measures against static discharge
P280 - Wear eye protection, protective clothing, protective gloves.
P301+P310 - If swallowed, immediately call a doctor.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P331 - Do NOT induce vomiting

2.3. Other hazards

This substance/mixture does not meet the PBT/vPvB criteria of REACH, annex XIII.

other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
Benzene	(CAS No.) 71-43-2 (EC no) 200-753-7 (EC index no) 601-020-00-8	99.9-100	F; R11 Carc.Cat.1; R45 Muta.Cat.2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Benzene	(CAS No.) 71-43-2 (EC no) 200-753-7 (EC index no) 601-020-00-8	99.9-100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304

Full text of R-, H- and EUH-phrases: see section 16.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. In case of irregular breathing or respiratory arrest provide artificial respiration. In case of breathing difficulties administer oxygen. Get immediate medical advice/attention. If medical advice is needed, have product container or label at hand.

First-aid measures after skin contact : Take off immediately all contaminated clothing, including underwear and shoes . Rinse thoroughly with plenty of water for at least 20 minutes and take medical advice. If medical advice is needed, have product container or label at hand.

First-aid measures after eye contact : Rinse immediately and plentifully with water, also under the eyelids, for at least 20 minutes. If medical advice is needed, have product container or label at hand.

First-aid measures after ingestion : If swallowed, do not induce vomiting: seek medical advice immediately and show this container label. If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	:	Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Symptoms/injuries after inhalation	:	Inhalation of the product into the lungs may cause very serious pneumonia. Hemorrhage. irritation of mucous membranes. Coughing.
Symptoms/injuries after skin contact	:	Effects of skin contact may include: irritation and burn feeling.
Symptoms/injuries after eye contact	:	Irritating to eyes. May cause destruction of eye tissue.
Symptoms/injuries after ingestion	:	Can occur: irritation.

4.3. Indication of any immediate medical attention and special treatment needed

CNS depression. This material or its emissions may alter blood formation within marrow and thereby aggravate existing bone marrow disease.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:	:	Foam. Water spray. dry chemical powder. Carbon dioxide (CO2).

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	Toxic vapours may be released. irritating vapours vapours may be released.
Reactivity	:	Hazardous decomposition products. Carbon monoxide. Carbon dioxide. Thermal decomposition can lead to the escape of irritating gases and vapours.

5.3. Advice for firefighters

Protective equipment for firefighters	:	In case of fire: Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Cool tanks/drums with water spray/remove them into safety.

6.1.1. For non-emergency personnel

Emergency procedures	:	Evacuate unnecessary personnel. No flames, No sparks. Eliminate all sources of ignition. Do not smoke.

6.1.2. For emergency responders

Protective equipment	:	Refer to section 8.

6.2. Environmental precautions

Stop leak if safe to do so. Do not discharge into drains or the environment. Do not discharge into surface water. Prevent spreading over great surfaces (e.g. by damming or installing oil booms). Ensure all waste water is collected and treated via a waste water treatment plant.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	:	Collect up the product and place it in a spare container: - suitably labelled. Keep container tightly closed. Keep the recovered product for subsequent recycling. Absorb remaining liquid with sand or inert absorbent and remove to safe place.

6.4. Reference to other sections

Refer to sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Provide local exhaust or general room ventilation to minimize vapour concentrations. Use only non-sparking tools. In order to rule out potential electrostatic discharge production, the system must be adequately grounded. Handle in accordance with good industrial hygiene and safety procedures. Wear recommended personal protective equipment. Avoid contact with skin, eye and clothing.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures:	:	Floors should be impenetrable, resistant to liquids and easy to clean. Non oxidizing material according to EC criteria. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Storage condition(s)	:	Store in tightly closed, leak-proof containers. All areas, containers, equipment and exposure points must have signals with the following phrase "DANGER: BENZENE – HEALTH HAZARD" and access to these areas must be restricted to authorized personnel only. The labeling must emphasize the carcinogenic nature of the product and be easily comprehensible to the workers and users. It is mandatory the inclusion of usage instructions, health risks and related diseases, and adequate control measures, in contrasting colors, and in a clear and visible manner.
Incompatible products	:	This material may attack some forms of plastics and rubbers.
Incompatible materials	:	Oxidizing agents.

Storage area : Ensure adequate ventilation of the storage area. The floor should be leak tight, jointless and not absorbent. Floors should be impenetrable, resistant to liquids and easy to clean. Keep away from open flames, hot surfaces and sources of ignition. Only use anti-static equipped (spark-free) tools.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Benzene (71-43-2)		
EU	IOELV TWA (mg/m³)	3.25 mg/m³
EU	IOELV TWA (ppm)	1 ppm
EU	Notation	Skin
Austria	MAK (mg/m³)	3.2 mg/m³
Austria	MAK (ppm)	1 ppm
Austria	MAK Short time value (mg/m³)	12.8 mg/m³
Austria	MAK Short time value (ppm)	4 ppm
Belgium	Limit value (mg/m³)	3.25 mg/m³
Belgium	Limit value (ppm)	1 ppm
Belgium	Remark*	C, D
France	VME (mg/m³)	3.25 mg/m³
France	VME (ppm)	1 ppm
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	0.5 ppm
Italy - Portugal - USA ACGIH	ACGIH STEL (ppm)	2.5 ppm
USA NIOSH	NIOSH REL (TWA) (ppm)	0.1 ppm
USA NIOSH	NIOSH REL (STEL) (ppm)	1 ppm
USA OSHA	OSHA PEL (TWA) (ppm)	1 ppm
USA OSHA	OSHA PEL (STEL) (ppm)	5 ppm
Spain	VLA-ED (mg/m³)	3.25 mg/m³
Spain	VLA-ED (ppm)	1 ppm
Switzerland	VME (mg/m³)	1.6 mg/m³
Switzerland	VME (ppm)	0.5 ppm
The Netherlands	MAC TGG 8H (mg/m³)	3.25 mg/m³
United Kingdom	WEL TWA (ppm)	1 ppm
Czech Republic	Expoziční limity (PEL) (mg/m3)	3 mg/m³
Czech Republic	Expoziční limity (PEL) (ppm)	0.939 ppm
Czech Republic	Expoziční limity (NPK-P) (mg/m3)	10 mg/m³
Czech Republic	Expoziční limity (NPK-P) (ppm)	3.13 ppm
Czech Republic	Remark (CZ)	D, P
Denmark	Grænseværdie (langvarig) (mg/m3)	1.6 mg/m³
Denmark	Grænseværdie (langvarig) (ppm)	0.5 ppm
Denmark	Grænseværdie (kortvarig) (mg/m3)	3.2 mg/m³
Denmark	Grænseværdie (kortvarig) (ppm)	1.0 ppm
Finland	HTP-arvo (8h) (mg/m3)	3.25 mg/m³
Finland	HTP-arvo (8h) (ppm)	1 ppm
Finland	Huomautus (FI)	iho, Kaikki työt
Hungary	CK-érték	3 mg/m³
Ireland	OEL (8 hours ref) (mg/m3)	3 mg/m³
Ireland	OEL (8 hours ref) (ppm)	1 ppm
Ireland	Notes (IE)	Sk, C1
Lithuania	IPRV (mg/m3)	3.25 mg/m³
Lithuania	IPRV (ppm)	1 ppm
Lithuania	TPRV (mg/m3)	19 mg/m³
Lithuania	TPRV (ppm)	6 ppm

Benzene (71-43-2)		
Lithuania	Remark (LT)	K O; IPRV 3,25mg/m3 (1 ppm) galios nuo 2003 06 27 (pagal direktyvos 97/42 EC 2 str. 1 dalyje nurodytà datà).
Norway	Gjennomsnittsverdier (AN) (mg/m3)	3 mg/m³
Norway	Gjennomsnittsverdier (AN) (ppm)	1 ppm
Norway	Merknader (NO)	K
Poland	NDS (mg/m3)	1.6 mg/m³
Sweden	nivågränsvärde (NVG) (mg/m3)	1.5 mg/m³ 0.5 mg/m³ H, C
Sweden	nivågränsvärde (NVG) (ppm)	0.5 ppm 1.5 ppm H, C
Sweden	kortidsvärde (KTV) (mg/m3)	9 mg/m³ 3 mg/m³ H, C
Sweden	kortidsvärde (KTV) (ppm)	3 ppm 9 ppm H, C
Canada (Quebec)	VECD (mg/m³)	15.5 mg/m³
Canada (Quebec)	VECD (ppm)	5 ppm
Canada (Quebec)	VEMP (mg/m³)	3 mg/m³
Canada (Quebec)	VEMP (ppm)	1 ppm

8.2. Exposure controls

Appropriate engineering controls : Keep the container hermetically sealed. Provide adequate ventilation.

Personal protective equipment : Gas mask. Gloves. Safety glasses. Protective clothing.

Hand protection : protective gloves. PVC, PVA and PVAL.

Eye protection : Wear eye protection/face protection.

Skin and body protection : Wear long sleeves.

Respiratory protection : The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, closed-circuit breathing apparatus must be used!. An approved organic vapour respirator/supplied air or self-contained breathing apparatus must be used when vapour concentration exceeds applicable exposure limits. In case of fire: Wear self-contained breathing apparatus.

Environmental exposure controls : This substance/product is registered with strictly controlled conditions as defined in Article 18(4) of Regulation (EC) No. 1907/2006 (REACH Regulation) and must therefore be handled as such. We refer to the industry guidance prepared by Concawe/Cefic/EFCG for advice on the confirmation of strictly controlled conditions, and which is available at http://cefic.org/Templates/shwStory.asp?NID=719&HID=714.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Colour : colourless.

Odour : Sweet. Solvent.

Odour threshold : 1.5-4.7 ppm ASTDR, 1993

pH : No data available

Melting point : No data available

Solidification point : No data available

Boiling point : 80.1 °C

Flash point : -11 °C

Relat. evapor. rate comp. to butylacetate : 4 (n-buthyl acetate=1)

Flammability (solid, gas) : No data available

Explosive limits : 1.4-8 vol %

Vapour pressure : 75 mmHg @20ºC

Relative vapour density at 20 °C : 2.77

Relative density : 0.878 g/cm³

Solubility	:	soluble in most organic solvents. Water: 0.18 g/100ml @ 25ºC
Log Pow	:	2.13
Self ignition temperature	:	562 °C
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	0.6 cP @ 20ºC
Explosive properties	:	No data available
Oxidising properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Hazardous decomposition products. Carbon monoxide. Carbon dioxide. Thermal decomposition can lead to the escape of irritating gases and vapours.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Open flame. sparks. heat sources.

10.5. Incompatible materials

Oxidizing agents, strong.

10.6. Hazardous decomposition products

On combustion, forms. Carbon monoxide. carbon dioxide (CO_2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Benzene. (71-43-2)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 8260 mg/kg
LC50 inhalation rat (mg/l)	44.5 mg/l/4h

Skin corrosion/irritation	:	Causes skin irritation.
Serious eye damage/irritation	:	Causes serious eye irritation.
Respiratory or skin sensitisation	:	Not classified Not sensitizing
Germ cell mutagenicity	:	May cause genetic defects.
Carcinogenicity	:	May cause cancer.
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	Not classified
Specific target organ toxicity (repeated exposure)	:	Causes damage to organs through prolonged or repeated exposure.

Benzene. (71-43-2)	
LOAEL (oral,rat,90 days)	25 mg/kg bodyweight/day
NOAEL (oral,rat,90 days)	100 mg/kg bodyweight/day
NOAEL (inhalation,rat,gas,90 days)	30 ppmV/6h/day

Aspiration hazard	:	May be fatal if swallowed and enters airways.
Potential Adverse human health effects and symptoms	:	Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	Water pollutant. Aromatic components of this product are generally the most toxic. This product may kill aquatic organisms and may adversely affect water quality.
Ecology - air	:	Highly volatile.

Benzene. (71-43-2)	
LC50 fishes	5.3 mg/l 96 hours
EC50 Daphnia	10 mg/l 48 hours
NOEC (acute)	0.8 mg/l 32 days- fish
NOEC (chronic)	3 mg/l 7 days- daphnia
ErC50 (algae)	100 mg/l 72 hours- Algae

12.2. Persistence and degradability

Benzene. (71-43-2)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

Benzene. (71-43-2)	
Log Pow	2.13
Bioaccumulative potential	not bioaccumulative.

12.4. Mobility in soil

Benzene. (71-43-2)	
Ecology - soil	Do not allow to enter into soil/subsoil. If product enters soil, it will be mobile and may contaminate groundwater.

12.5. Results of PBT and vPvB assessment

Benzene. (71-43-2)
This substance/mixture does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6. Other adverse effects

Other information : Volatile.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Consult the local waste disposal expert about waste disposal. Dispose of this material and its container to hazardous or special waste collection point. Disposal must be done according to official regulations.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No. : 1114

14.2. UN proper shipping name

Proper shipping name : BENZENE

Transport document description : UN 1114 BENZENE, 3, II, (D/E)

14.3. Transport hazard class(es)

Class (UN) : 3

Hazard labels (UN) : 3

14.4. Packing group

Packing group (UN) : II

14.5. Environmental hazards

Other information : No supplementary information available.

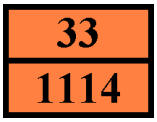
14.6. Special precautions for user

14.6.1. Overland transport

Hazard identification number (Kemler No.) : 33

Classification code : F1

Orange plates :



Tunnel restriction code	:	D/E
Limited quantities (ADR)	:	LQ04
Excepted quantities (ADR)	:	E2

14.6.2. Transport by sea

Class	:	3 - Flammable liquids

14.6.3. Air transport

Class	:	3 - Flammable liquids

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No ingredients included in the REACH Candidate list

Other regulations, restrictions and prohibition regulations	:	Compliance with following regulations: Regulation (EC) 1907/2006 as amended. Regulation (EC) 1272/2008 as amended. Directive 1999/45/EC as amended. Directive 67/548/EEC as amended.

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

Chemical safety assessment has been established in the attachment.

SECTION 16: Other information

Sources of Key data	:	PETROBRAS. MSDS.
Abbreviations and acronyms	:	GHS - Globally Harmonised System. EEC - European Economic Community. EC - European Community. CSR - Chemical Safety Report. CLP - Classification, Labelling and Packaging. ASTM - American Society for Testing and Materials . REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals. SDS - Safety Data Sheet.
Other information	:	This substance/product is registered with strictly controlled conditions as defined in Article 18(4) of Regulation (EC) No. 1907/2006 (REACH Regulation) and must therefore be handled as such.

Full text of R-, H- and EUH-phrases:

Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1A	Carcinogenicity Category 1A
Eye Irrit. 2	Serious Eye Damage/Irritation Category 2
Flam. Liq. 2	flammable liquids Category 2
Muta. 1B	flammable liquids Category 1 flammable liquids Category 3
Skin Irrit. 2	skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H225	Highly flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H340	May cause genetic defects
H350	May cause cancer
H372	Causes damage to organs through prolonged or repeated exposure
R11	Highly flammable.
R36/38	Irritating to eyes and skin.
R45	May cause cancer.
R46	May cause heritable genetic damage.
R48/23/24/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R65	Harmful: may cause lung damage if swallowed.

SDS PETROBRAS USES

The information presented in this Safety Data Sheet is based on current knowledge and is believed to be complete and accurate. It describes the product for the purposes of health, safety and environment requirements only and shall, therefore, be used only as a guide. The data refers to a specific product and may not be valid for combined uses with other products. It is the user´s obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. Petrobras shall not be responsible for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices.

Module 4.3: Management of the Safety & Health Program and Audits

Learning Objectives

Upon completion of this module, you will be able to:

1. Describe and explain the functions of Safety & Health Program management
2. Differentiate between line and staff functions
3. Differentiate between audits and inspections
4. Describe the characteristics of an audit
5. List the steps of an audit

Introduction

As in any management activity, **safety management consists of planning, organizing, controlling, directing and staffing**. This lesson explains, in general, how those elements are accomplished, as well as how they are interlinked.

Safety Management

Safety management consists of planning, organizing, controlling, directing, staffing, and communicating.

Planning is forecasting upcoming needs for the safety department by looking at the past and studying the future. Once forecasts are made, the safety practitioner must anticipate resources needed to meet those needs, and make requests accordingly.

List some of the planning duties you may have:

_____ _____

_____ _____

Organizing involves two positions:

- Line positions: positions that carry out the major functions of the organization (i.e. front line supervisors, plant managers, etc.)
- Staff positions: support the line positions (i.e. safety managers, safety professionals, etc.)

A safety manager's job is to monitor safety, compare what they find against existing standards, and advise line management as to any corrective actions that need to be taken from a safety standpoint.

List some of the organizing duties you may have:

_____ _____

_____ _____

Controlling involves looking at what is happening in the organization by monitoring the results of the observations to establish standards, and taking appropriate corrective actions (i.e., inspections, audits, record review, etc.).

List some of the controlling duties you may have:

_____ _____

_____ _____

Directing: the safety practitioner does not actively direct or lead the organization, unless he/she has a staff or allocated resources. This job belongs primarily to line management.

List some of the directing duties you may have:

_____ _____

_____ _____

Staffing, which is hiring productive, creative people.

List some of the staffing duties you may have:

_____ _____

_____ _____

Communicating is a process by which information is exchanged between individuals through a common system of spoken works, symbols, signs, or behavior.

List some of the communicating duties you may have:

_____ _____

_____ _____

Audits

The main tool used by safety professionals to assess the state of safety in any organization is the audit. Unfortunately, the term audit does not have the same meaning for everyone. Inspections are often confused with audits.

Definitions

An **audit** is a tool that assigns a quantitative value to some aspect of an organization's safety program. An audit is used to determine where a program is, relative to where it ought to be.

An **inspection** is a tool that assesses whether equipment is (or is not) in good condition, whether certain standards are being met, whether procedures are being followed and so on. No quantitative evaluations are made in an inspection.

Audits assess programs and whether they are effective. They are typically done on a corporate or divisional level. Inspections determine adherence to standards and are done on a departmental level.

Characteristics of audits:

- Assign a quantitative value to some aspect of the safety program
- Compare actual performance to standards
- May be comprehensive, depending on their scope
- Are continuous
- Are not done by insiders
- Are performed periodically

NOTES

Typical audit steps:

1. Determine the area to be audited.
2. A single department or process should be selected, with plans to audit all areas of your selection.
3. Develop or purchase an instrument with which to conduct the audit. Keep in mind that generic audit instruments can only guide you as to what things need to be audited. They will lack sufficient detail to accurately audit a specific organization.
4. Establish standards of performance. Make sure that the audit is in keeping with the mission and goals of the organization. The standards may include benchmarking against other departments or organizations, against best practices or against minimum standards.
5. Arrange a pre-audit conference with all collaborating personnel to discuss the scope of the audit. This includes representatives from the area being audited, the auditors and management.

   Make sure that everyone understands that an audit, much like an accident investigation, is a proactive tool used for improving the ways that your organization keeps employees from getting hurt. It is not for pointing fingers or placing blame for past accidents or current conditions.

   Everyone involved in the audit must understand what is to be accomplished by the audit, how long it will take, what it will cover, what implications the results will hold, how the results will be addressed and the importance of taking corrective actions.

6. Perform the audit.
7. Compare audit results to the previously established standards. Determine the variance between what is and what was expected and what corrective actions must be taken.
8. Report the audit results to management. Explain to management what the results of each element mean and what the implications are. Suggest corrective actions and propose a timetable for completion.
9. Follow up to be sure that the corrective actions have been addressed.

Note that the purpose of audits is to identify weaknesses and find ways to correct them. If corrective actions are not implemented in a timely manner, the time, effort and resources invested in the audit will have been wasted.

The following is an example of an audit:

Excerpt from *Program Evaluation Profile* (*PEP*):

- The text in each block provides a description of the program element or factor that corresponds to the level of program that the employer has implemented in the workplace.
- To avoid duplicative language, each level should be understood as containing all positive factors included in the level below it. Similarly, each element score should be understood as containing all positive factors of the element scores below it. That is, a 3 is at least as good as a 2; a 4 is at least as good as a 3, and so on.
- The descriptors are intended as brief illustrations of a workplace at a particular level. In exercising their professional judgment, compliance officers should proceed with the understanding that the descriptor that "best fits" will not necessarily match the workplace exactly or in literal detail.

NOTES

Management Leadership and Employee Participation	
Management Leadership	
Visible management leadership provides the motivating force for an effective safety and health program. [*1989 Voluntary Safety and Health Program Management Guidelines, (b)(1) and (c)(1)*]	
1	Management demonstrates no policy, goals, objectives, or interest in safety and health issues at this worksite.
2	Management sets and communicates safety and health policy and goals, but remains detached from all other safety and health efforts.
3	Management follows all safety and health rules, and gives visible support to the safety and health efforts of others.
4	Management participates in significant aspects of the site's safety and health program, such as site inspections, incident reviews, and program reviews. Incentive programs that discourage reporting of accidents, symptoms, injuries, or hazards are absent. Other incentive programs may be present.
5	Site safety and health issues are regularly included on agendas of management operations meetings. Management clearly demonstrates--by involvement, support, and example--the primary importance of safety and health for everyone on the worksite. Performance is consistent and sustained or has improved over time.

Source: https://www.osha.gov/dsg/topics/safetyhealth/pep.html

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Module 5.1: Elements of an Effective Safety & Health Program

Learning Objectives

Upon completion of this module, you will be able to:

1. List the elements of a safety and health program
2. State the functions of management/leadership and worker participation
3. Explain how to identify and assess hazards
4. Identify hazard prevention and control methods
5. Describe how safety and health training should be designed
6. Discuss program evaluation and improvement
7. Communicate safety and health program elements on multi-employer worksites

Introduction

According to OSHA, a strong connection has been noted between the use of sound management practices in the operation of safety and health programs and a low incidence of occupational injuries and illnesses. Where effective safety and health management is practiced, injury and illness rates are much lower than rates at comparable worksites where safety and health management is weak or missing.

As a result of this awareness, OSHA has increased its emphasis on management practices in the effort to reduce workplace injuries.

Effective Safety and Health Programs

Effectively managing worker safety and health programs reduces the extent and severity of work-related injuries and illnesses, improves employee morale and productivity, and reduces worker's compensation costs.

Exemplary workplaces use well thought-out methods to assign responsibility to managers, supervisors and employees. They regularly inspect for and control hazards, and they orient and train all employees to eliminate or avoid hazards.

General Guidelines

An effective program:

- Includes provisions for systematic identification, evaluation and prevention or control of hazards.
- Goes beyond specific legal requirements to address all hazards.
- Is a written program.
- Takes into account that, as the size and complexity of a worksite or process increases, so does the need for written guidance.

Major Elements

An effective occupational safety and health program will include the following seven elements:

1. Management/Leadership
2. Worker Participation
3. Hazard Identification and Assessment
4. Hazard prevention and control
5. Education and Training
6. Program Evaluation and Improvement
7. Coordination and Communication on Multiemployer Worksites

Note that these elements are also the major headings of the Safety and Health Program Assessment that you are about to complete.

Activity: Safety and Health Program Assessment

In this exercise, you will rate how your safety and health program measures up. Take a few minutes to complete the following survey. There are no right or wrong answers. This check-up will help identify areas in which improvements can be made.

In each numbered box, rate how well your company performs in the stated category, by judging which of the five statements best represents your organization. Use a scale of 1-5 (5 being the best rating and corresponding to the top statement). Write your score in each box, under the category heading. When you've completed the survey, add your scores in all 25 boxes. The best possible score is 125.

SAFETY AND HEALTH PROGRAM ASSESSMENT

I. Management Leadership and Employee Involvement

A. Clear Worksite Safety and Health Policy Rating: _____	1.	5	We have an S&H policy and all employees accept, can explain, and fully understand it.
		4	We have an S&H policy and the majority of employees can explain it.
		3	We have an S&H policy and some employees can explain it.
		2	We have a written (or oral, where appropriate) S&H policy.
		1	We have no S&H policy.

B. Clear Goals and Objectives Are Set and Communicated Rating: _____	2.	5	All employees are involved in developing S&H goals and can explain desired results and how results are measured.
		4	The majority of employees can explain S&H results and measures for achieving them.
		3	Some employees can explain S&H results and measures for achieving them.
		2	We have written (or oral, where appropriate) S&H goals and objectives.
		1	We have no S&H goals and objectives.

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_____

C-1. Management Leadership Rating: _____	3.	5	All employees can give examples of management's commitment to safety and health.
		4	The majority of employees can give examples of management's active commitment to safety and health.
		3	Some employees can give examples of management's commitment to safety and health.
		2	Some evidence exists that top management is committed to safety and health.
		1	Safety and health is not a top management value or concern.

C-2. Management Example Rating: _____	4.	5	All employees recognize that managers in this company always follow the rules and address the safety behavior of others.
		4	Managers follow the rules and usually address the safety behavior of others.
		3	Managers follow the rules and occasionally address the safety behavior of others.
		2	Managers generally follow basic safety and health rules.
		1	Managers do not follow basic safety and health rules.

D. Employee Involvement Rating: _____	5.	5	All employees have ownership of, and can explain their role in, safety and health.
		4	The majority of employees feel they have a positive impact on identifying and resolving safety and health issues.
		3	Some employees feel that they have a positive impact on safety and health.
		2	Employees generally feel that their input on safety and health will be considered by supervisors.
		1	Employee involvement in safety and health issues is neither encouraged nor rewarded.

E. Assigned Safety and Health Responsibilities Rating: _____	6.	5	All employees can explain what is expected of them, in terms of safety and health-related performance.
		4	The majority of employees can explain what is expected of them.
		3	Some employees can explain what is expected of them.
		2	Performance expectations are generally spelled out for all employees.
		1	Specific safety and health responsibilities and performance expectations are generally unknown or hard to find.

F. Authority and Resources for Safety and Health Rating: _____	7.	5	All employees believe they have the necessary authority and resources to meet their S&H responsibilities.
		4	The majority of employees believe they have the necessary authority and resources to meet their S&H responsibilities.
		3	S&H authority and resources are spelled out for everyone, but there is often a reluctance to use them.
		2	S&H authority and resources exist, but most are controlled by supervisors.
		1	All S&H authority and resources reside with supervisors and are not delegated.

G. Accountability Rating: _____	8.	5	Employees are held accountable for S&H and all performance is addressed, with rewards and reprimands handed out appropriately.
		4	Accountability systems are in place, but employees are only reprimanded for negative performance.
		3	Employees are generally held accountable for S&H, but reprimands and rewards do not always follow performance.
		2	There is some accountability, but it is generally hit or miss.
		1	There is no effort toward accountability.

H. Program Review (Quality Assurance) Rating: _____	9.	5	In addition to a comprehensive review, a process is used to drive continuous correction.
		4	A comprehensive review is conducted at least annually and drives appropriate program modifications.
		3	A program review is conducted, but it doesn't drive all necessary program changes.
		2	Changes in programs are driven by events such as accidents or near-misses.
		1	There is no program review process.

_____ **Subtotal**

II. Workplace Analysis

A-1. Hazard Identification (Expert survey) Rating: _____	10.	5	Comprehensive expert surveys are conducted regularly and result in corrective action and updated hazard inventories.
		4	Comprehensive expert surveys are conducted periodically and drive appropriate corrective action.
		3	Comprehensive expert surveys are conducted, but corrective action sometimes lags.
		2	Expert surveys are conducted in response to accidents, complaints, or compliance activity only.
		1	No comprehensive surveys have been conducted.

A-2. Hazard Identification (Change analysis) Rating: _____	11.	5	Every planned or new facility, process, material, or equipment is fully reviewed by a competent team, along with affected workers.
		4	Every planned or new facility, process, material, or equipment is fully reviewed by a competent team.
		3	A planned or new facility, process, material or equipment that poses a high hazard risk is reviewed.
		2	Hazard reviews of planned or new facilities, processes, materials, or equipment are problem driven only.
		1	No system for hazard review of planned or new facilities exists.

A-3. Hazard Identification (Job and process analysis)	12.	5	A current hazard analysis exists for all jobs, processes, and material; it is understood by all employees; and employees have had input into the analysis for their jobs.
		4	A current hazard analysis exists for all jobs, processes, and material and it is understood by all employees.
		3	A current hazard analysis exists for all jobs, processes, or phases and is understood by many employees.
Rating: _____		2	A hazard analysis program exists, but few are aware of it.
		1	There is no routine hazard analysis system in place.

A-4. Hazard Identification (Inspection)	13.	5	Employees and supervisors are trained, conduct routine joint inspections, and all items are corrected.
		4	Inspections are conducted and all items are corrected; repeat hazards are seldom found.
		3	Inspections are conducted and most items are corrected, but some hazards remain uncorrected.
		2	An inspection program exists, but corrective action is not complete; hazards remain uncorrected.
Rating: _____		1	There is no routine inspection program in place and many hazards can be found.

B. Hazard Reporting System	14.	5	A system exists for hazard reporting; employees feel comfortable using it and correcting hazards on their own initiative.
		4	A system exists for hazard reporting and employees feel comfortable using it.
		3	A system exists for hazard reporting and employees feel they can use it, but the system is slow to respond.
Rating: _____		2	A system exists for hazard reporting but employees find it unresponsive or are unclear on how to use it.
		1	There is no hazard reporting system and/or employees are not comfortable reporting hazards.

C. Accident/ Incident Investigation	15.	5	All loss-producing incidents and near-misses are investigated for root cause with effective prevention.
		4	All OSHA-reportable incidents are investigated and effective prevention is implemented
		3	OSHA-reportable incidents are generally investigated; accident cause and/or correction may be inadequate.
		2	Some investigation of incidents takes place, but root cause is seldom identified and correction is spotty.
Rating: _____		1	Injuries are either not investigated or investigation is limited to report writing required for compliance.

D. Injury/Illnesses Analysis	16.	5	Data trends are fully analyzed and displayed, common incident causes are communicated and management ensures prevention; employees are fully aware of trends, causes and means of prevention.
		4	Data trends are fully analyzed and displayed, common causes are communicated and management ensures prevention.
		3	Data are centrally collected and analyzed and common causes are communicated to supervisors.
		2	Data are centrally collected and analyzed but not widely communicated for prevention.
Rating: _____		1	Little or no effort is made to analyze data for trends, causes and prevention.

_____ **Subtotal**

III. Hazard Prevention and Control

A. Timely and Effective Hazard Control	17.	5	Hazard controls are fully in place, known to and supported by workforce, with concentration on engineering controls and safe work procedures
		4	Hazard controls are fully in place with priority given to engineering controls, safe work procedures, administrative controls, and personal protective equipment (in that order)
		3	Hazard controls are fully in place, but there is some reliance on personal protective equipment
Rating: _____		2	Hazard controls are generally in place, but there is heavy reliance on personal protective equipment
		1	Hazard control is not complete, effective or appropriate

B. Facility and Equipment Maintenance	18.	5	Operators are trained to recognize maintenance needs and perform and order maintenance on schedule
		4	An effective preventive maintenance schedule is in place and applicable to all equipment
		3	A preventive maintenance schedule is in place and is usually followed, except for higher priorities
		2	A preventive maintenance schedule is in place but is often allowed to slide
Rating: _____		1	There is little or no attention paid to preventive maintenance; breakdown maintenance is the rule

C-1. Emergency Planning and Preparation	19.	5	There is an effective emergency response plan and employees know how to respond immediately, as a result of effective planning, training and drills
		4	There is an effective emergency response plan and employees have a good understanding of responsibilities, as a result of plans, training and drills
		3	There is an effective emergency response plan and team, but other employees may be uncertain of their responsibilities
		2	There is an effective emergency response plan, but training and drills are weak and roles may be unclear
Rating: _____		1	Little effort is made to prepare for emergencies

C-2. Emergency Equipment	20.	5	Facility is fully equipped for emergencies; all systems and equipment are in place and regularly tested; all personnel know how to use equipment and communicate during emergencies
		4	Facility is well equipped for emergencies, with appropriate emergency phones and directions; majority of personnel know how to use equipment and communicate during emergencies
		2	Emergency phones, directions and equipment are in place, but only emergency teams know what to do
		1	Emergency phones, directions and equipment are in place, but employees show little awareness
Rating: _____		0	There is little or no effort made to provide emergency equipment and information

D-1. Medical Program (Health Providers)	21.	5	Occupational health providers are regularly onsite and fully involved in hazard assessment and training
		4	Occupational health providers are involved in hazard assessment and training
		3	Occupational health providers are consulted about significant health concerns in addition to accidents
Rating: _____		2	Occupational health providers are available, but normally concentrate on employees who get hurt
		1	Occupational health assistance is rarely requested or provided

D-2. Medical Program (Emergency Care)	22.	5	Personnel fully trained in emergency medicine are available onsite during all shifts
		4	Personnel with basic first aid skills are available onsite, during all shifts
		3	Either onsite or nearby community aid is always available on day shift
Rating: _____		2	Personnel with basic first aid skills are usually available, with community assistance nearby
		1	Neither onsite nor community aid can be ensured at all times

_____ **Subtotal**

NOTES

_____

_____

IV. Safety and Health Training

A. Employees Learn Hazards (How to Protect Themselves and Others)	23.	5	Facility is committed to high-quality employee hazard training, ensures all personnel participate, and provides regular updates; in addition, employees can demonstrate proficiency in, and support of, all areas covered by training
		4	Facility is committed to high-quality employee hazard training, ensures all personnel participate, and provides regular updates
		3	Facility provides legally required training and makes effort to include all employees
Rating: _____		2	Training is provided when the need is apparent; experienced employees are assumed to know the material
		1	Facility depends on experience and informal peer training to meet needs

B-1. Supervisors Learn Responsibilities and Underlying Reasons	24.	5	All supervisors assist in worksite hazard analysis, ensure physical protections, reinforce training, enforce discipline and can explain work procedures based on the training provided to them
		4	Most supervisors assist in worksite hazard analysis, ensure physical protections, reinforce training, enforce discipline and can explain work procedures based on the training provided to them
		3	Supervisors have received basic training, appear to understand and demonstrate importance of worksite hazard analysis, physical protections, training reinforcement, discipline and knowledge of work procedures
		2	Supervisors make responsible efforts to meet safety and health responsibilities, but have limited training
Rating: _____		1	There is no formal effort to train supervisors in safety and health responsibilities

B-2. Managers Learn Safety and Health Program Management	25.	5	All managers have received formal training in safety and health management responsibilities
		4	All managers follow, and can explain, their roles in safety and health program management
		3	Managers generally show a good understanding of their safety and health roles and usually model them
		2	Managers are generally able to describe their safety and health roles, but often have trouble modeling them
Rating: _____		1	Managers generally show little understanding of their safety and health management responsibilities

_____ **Subtotal**

_____ **Grand Total**

NOTES

Appendix A: Glossary

Accident: An unplanned event that results in an injury or injuries and/or damage to property.

Adequate Ventilation: Condition of falling within either of the following categories:

- Ventilation to reduce levels of air contaminants below that which causes personal injury or illness
- Ventilation sufficient to prevent accumulation of significant quantities of vapor/air mixtures in concentration over one-fourth of the lower flammable limit

Administrative Controls: The second-most desirable type of hazard control. It involves taking administrative measures to reduce employee exposure to a given hazard. An example would be changing a work schedule.

ANSI: The American National Standards Institute.

Appearance/Odor: SDS description of color, physical state at room temperature, size of particles, consistency, description of odor and at what levels.

Assessment: In safety, an evaluation to determine the gap between what exists with regard to hazards and what must be done to control them, in order to protect employee safety.

Attitudes: Enduring reactions toward people, places, or objects, based on beliefs and emotional feelings. Attitudes are not easy to change.

Audit: A tool that assigns a quantitative value to some aspect of a safety program. An audit is used to determine where a program is, relative to where it ought to be.

Behavior: Observable, objective, measurable, and manageable actions of people.

Behavior-Based Safety: The use of applied behavior analysis techniques to achieve continuous improvement in safety performance.

BLS: Bureau of Labor Statistics. This federal agency compiles data and generates reports on all sorts of workplace information.

Boiling Point: Temperature at which liquid changes to vapor state.

Carcinogen: A cancer causing substance.

CAS Number: Number assigned to chemicals or materials by the Chemical Abstracts Service.

Ceiling Limit (C): Concentration that may **NOT** be exceeded at any time; it is not a time-weighted average.

CFR: Code of Federal Regulations.

- **1910**: General Industry
- **1926**: Construction Industry

Chemical Family: Group of chemicals with related physical and chemical properties.

Chemical Hazards: A hazard represented by a chemical that is an acute toxin, a skin corrosive or irritator, causes serious eye damage or irritation, a respiratory toxin or skin sensitizer, a germ cell mutagen, a carcinogen, a reproductive toxin, a target organ toxin, an aspiration risk, or an aquatic hazard.

Coaching: A process of one-on-one observation and feedback that imparts both direction and motivation to an employee.

Combustible Liquid: A liquid having a flashpoint greater than or equal to 100° F.

Compressed Gas: Gas exerting greater than or equal to 41 PSI (68° F) in a package.

Contaminant: Any unwanted substance or factor that soils or pollutes its environment, either intentionally or accidentally. From an industrial hygiene perspective, contaminants include aerosols, dusts, fumes, gases, mists and vapors.

Control: A method that is devised and implemented to prevent an identified hazard from causing harm.

Controlling Employer: Under the Multi-Employer Doctrine, the employer that is responsible, by contract or through actual practice, for safety and health conditions on a worksite (i.e., the employer who has the authority for ensuring that any hazardous conditions are corrected).

Correcting Employer: Under the Multi-Employer Doctrine, the employer that is responsible for actually correcting a hazard on a worksite.

Corrosive: Substance that causes destruction of living tissue.

CPL: Compliance Letter.

Creating Employer: Under the Multi-Employer Doctrine, the employer that actually creates the hazard on a worksite.

CSHO: Compliance Safety and Health Officer.

Culture: The things people do and say, as well as the reasons why they do and say them. Organizational cultures develop over time and consist of traditions, beliefs, values, and the way in which things are done.

DART: **D**ays **A**way from work, **R**estricted or **T**ransferred. Cases that involve days away from work, or days of restricted work activity or job transfer, or both.

E-Mod: Experience Modification Rate. This rate indicates the "experience" (measured over a course of three years) that indicates the trend in a given company's accident rates. The E-Mod is used as a basis for calculating a business's insurance premium rates.

Employee: One who is employed by an employer that affects commerce.

Employer: A person or entity that is engaged in a business affecting commerce and that has employees. It does not include the United States or other government entity.

Engineering Controls: The most desirable type of hazard control. It involves engineering ways to prevent employees from being exposed to hazards. An example would be building a guard for rotating equipment.

Evaporation Rate: Usually expressed as a time ratio with ethyl ether = 1, unless otherwise specified.

Explosive: Capable of releasing extreme gas and heat.

Exposing Employer: Under the Multi-Employer Doctrine, the employer whose employees are exposed to hazards on a worksite.

Exposure: Susceptibility to a workplace condition or worker action that can cause illness, injury or other organizational losses.

Eye Protection: Wearing eye protection at all times when working with chemical products is a good general safety practice. Eye protection is required when working with products that are corrosive, irritant, or reactive.

Flammable: Having a flashpoint equal to or less than 100° F.

Flammable Limits: Lower explosive limit (LEL) and upper explosive limit (UEL) define the range of concentration of a gas or vapor in air at which burning can occur.

Flash Point: Lowest temperature at which a liquid gives off enough vapor to ignite when an ignition source is present. It is not actually the liquid of flammable liquids (such as gasoline) that burn. Flammable liquids evaporate vapors that mix with the air to form a flammable vapor mixture. If an ignition source (spark, flame, etc.) is introduced into this vapor mixtures, the vapor mixture will burn.

FMEA: Failure Mode and Effects Analysis. This is one tool that is used in worksite analysis.

Focused Inspection: A worksite inspection that focuses on four primary types of hazards: falls, struck by, caught in/between and electrical.

FOM: OSHA Field Operations Manual.

Formula: Chemical formula, as listed on the Safety Data Sheet.

FRC: Flame Resistant Clothing.

GFCI: Ground Fault Circuit Interrupter.

Hazard: Workplace condition or worker action that can cause illness, injury or other organizational losses.

Hazard Category: The degree of severity within each hazard class (such as the four levels of flammability).

Hazard Class: Indicates the nature of the hazard (such as flammability).

Hazard Decomposition Products: Chemical substances, including vapors or gases, that may result from chemical decomposition or burning.

Hazardous Polymerization: Rapid polymerization may produce enough heat to cause containers to explode. Conditions to avoid are listed in the *Stability and Reactivity Data* section of the SDS.

Hematopoietic Toxin: Toxin affecting organs and tissues involved with the production of blood; may deprive body tissues of oxygen.

Hepatotoxin: Liver toxin.

Highly Toxic Agents: Very likely to cause death or serious physical harm.

HMIS: Hazardous Material Identification System.

Horizontal Standard: Regulatory standards that apply to all industries.

IDLH: Immediately Dangerous to Life and Health.

Incident: An unplanned event that may or may not involve an injury or property damage.

Incompatible Materials: Materials that can react with the product or with components of the product and may:

- Destroy the structure or function of the product,
- Cause a fire, explosion, or violent reaction, or
- Cause the release of hazardous chemicals.

Industrial Hygiene: The art and science of **recognition, evaluation, and control** of physical, chemical, biological and ergonomic hazards or stressors arising in or from the workplace that may cause harm, discomfort or adverse health effects to workers or members of the community.

Ignition Source: Source of sufficient temperature or energy that can ignite a flammable or combustible material, given the right elements (i.e., flames, arcs, static charges, etc.).

Incompatibility: Certain chemicals, when mixed, may create hazardous conditions. Incompatible chemicals should not be stored together.

Inspection: A tool that assesses whether equipment is (or is not) in good condition, whether certain standards are being met, whether procedures are being followed and so on. No quantitative evaluations are made in an inspection.

Intervention: An action taken in an effort to correct or improve a practice or process. With regard to safety, intervention involves an attempt to reduce or eliminate a hazard or risk.

Irritant: Inflammation causing substance.

Job Satisfaction: The specific attitude and emotional feeling that individuals have about their jobs.

JSA: Job Safety Analysis.

Loss Control: A program designed to minimize incident-based financial losses.

Loss Prevention: A program designed to identify and correct potential accident problems before they result in financial loss or injury.

LD50: Lethal dose 50. The amount of toxin required to cause death in 50 percent of the population that is exposed.

LEP: Local Emphasis Program.

Melting Point: Temperature at which a solid begins to change to liquid.

Morale: The attitude of an individual, group, or organization with regard to the function or task at hand. A work group with high morale has a strong sense of shared direction and a commitment to peak performance.

Motivation: Inner drive, impulse, or need that creates a personal incentive toward a given behavior.

SDS: Safety Data Sheet.

Mutagen: Causing chromosomal damage.

NAICS: North American Industry Classification System. This system categorizes companies according to the type of work that they perform.

NEP: National Emphasis Program.

Nephrotoxin: Kidney toxin.

Neurotoxin: Central nervous system toxin.

NFPA: National Fire Protection Association

NIOSH: National Institute of Occupational Safety and Health.

Organic peroxide: Serious fire and explosion hazard, sensitive to friction, heat, and shock.

Oxidizer: A substance that supports combustion or will increase the rate of a combustible/flammable material.

OSHA: Occupational Safety and Health Administration.

OSHA Form 300: A log of work-related injuries and illnesses.

OSHA Form 300A: A summary of work-related injuries and illnesses.

OSHA Form 301: An injury and illness incident report.

Other Pertinent Physical Data: Information on an SDS such as freezing point, as appropriate.

Psychology: The study of human behavior.

PEL: Permissible Exposure Limit. OSHA standards are stated in terms of PEL. These standards are mandatory, that is, employers must ensure that employee exposures fall below these limits or risk being cited and/or fined. OSHA's PELs are published in the tables found in CFR 1910 Subpart Z.

Percent (%) Volatile By Volume: Percentage of a liquid or solid, by volume, that evaporates at a temperature of 70° F.

Performance Standard: Regulatory standards that specify a particular measure of performance.

PHA: Process Hazard Analysis.

Physical Hazard: A hazard that is explosive, flammable, oxidizing, self-reactive, pyrophoric, self-heating, organic peroxide, corrosive to metal, a gas under pressure, or a water-activated flammable gas.

PLHCP: Physician or Other Licensed Health Care Professional.

Probability: The likelihood of a loss event taking place. Categories of probability are:

- Frequent
- Probable
- Occasional
- Remote
- Improbable

Product Name: Commercial or marketing name of a chemical, as listed on the Safety Data Sheet.

PPE: Personal Protective Equipment. The least desirable type of hazard control. PPE can only protect a worker from an existing hazard, but does not lessen the hazard itself in any way.

PSM: Process Safety Management

Pure Loss Exposures: Exposures that have a potential for loss with no opportunity for gain. Examples of pure loss exposures include theft, fire and accident.

Pyrophoric: Capable of spontaneous combustion in air at a temperature of less than 130° F.

Reactivity: Tendency of a substance to undergo chemical reaction, either by itself or with other materials, and to release energy (fire, explosion).

Recordable Incident: An employee injury or illness that meets the criteria laid out in 29 CFR 1904 and must be recorded on an OSHA Form 300.

REL: Recommended Exposure Limit. Recommended by the National Institute for Occupational Safety and Health (NIOSH).

Reproductive Toxin: Substance affecting reproductive capabilities, potentially causing mutations and teratogenesis.

Respiratory Protection: If use of a product may result in airborne concentrations exceeding occupational exposure limits, the Respiratory Protection section of the SDS will identify appropriate respirators.

Risk: The measure of probability and severity of a loss event taking place.

Risk = Probability x Severity

The probability that an accident will happen is multiplied by the severity of the accident when it finally does occur to result in risk.

Routes of Exposure: The ways in which contaminants can enter the human body. These ways include inhalation, ingestion, absorption and injection.

Safety: An acceptable or low probability of risk associated with conditions or activities having the potential to cause harm to people, equipment or facilities.

Safety Practitioner: An employee whose role it is to monitor what is occurring in the organization relative to safety, compare findings to existing standards, and advise management on necessary changes.

SCBA: Self Contained Breathing Apparatus.

Sensitizer: Substance that causes allergic reaction.

Severity: With regard to accidents, the magnitude of a loss in a given period of time. The categories of severity as taught in the COSS program are:

- Catastrophic
- Critical
- Marginal
- Negligible

SHARP: Safety & Health Achievement Recognition Program.

SIC: Standard Industrial Classification. This classification system categorizes companies according to the type of work that they perform.

Skin Notation: Skin exposure is significant in contributing to a particular chemical's overall exposure.

Skin Protection: Protective garments and appropriate glove materials to protect skin from exposure.

Solubility in Water: Percentage of material that will dissolve in water, usually at ambient (room) temperature. Since much of the human body is made of water, water soluble substances—if allowed to enter the body—can easily be distributed throughout the body.

Specific Gravity of Liquids (Water = 1): Ratio of volume eight of material to equal volume weight of water. SG greater than 1 indicates the liquid is denser than water and will sink in water. SG of less than 1 (oils) indicates the liquid will float on water.

Speculative Loss Exposures: Exposures that offer the opportunity for gain as well as loss. Examples of speculative loss exposures include new marketing and new business ventures.

Spontaneous Combustion: The ignition of fire in an object by internal development of heat without the action of an external agent.

Stability: "Unstable" indicates that a chemical may decompose spontaneously or explode under normal temperatures, pressures, and mechanical shocks. Conditions to avoid are listed in this section of an SDS.

STEL: Short-Term Exposure Limit. The maximum concentration of a given toxin that a person can be exposed to for 15-minute intervals, with 60-minute rest periods, with no more than four exposures or shifts.

Synonym: Additional names a chemical may be called, as listed on the Safety Data Sheet.

System: A group of interconnected elements that are united to form a single entity.

Teratogen: Causing toxic effects to a fetus.

TLV: Threshold Limit Value. A TLV® reflects the level of exposure that the typical worker can experience without an unreasonable risk of disease or injury. Recommended by the American Conference of Governmental Industrial Hygienists (ACGIH).

TLV-C: Threshold Limit Value–Ceiling. The uppermost limit of concentration of a given toxin to which a worker should never be exposed.

Toxic: Likely to cause death or serious physical harm.

Toxicology: The science of poisons.

TRIR: Total Recordable Incident Rate. The number of recordable injuries and/or illnesses per 100 full-time workers.

TWA: Time Weighted Average. The concentration of a given toxin in an eight-hour day or 40-hour week that a person can be exposed to without adverse reactions.

Unstable Reactive: Self-reactive when exposed to shock pressure or temperature.

Values: Deep-seated beliefs that influence behavior. Core values are the commitments people hold without compromise.

Ventilation: Some manufacturers provide recommendations for air flow schemes (general, local) to limit hazardous substances in the atmosphere.

Water Reactive: Reacts with water to form flammable or toxic gas.

Vapor Density of Gases (Air = 1): Weight of a gas or vapor compared to weight of an equal volume of air. Density greater than 1 indicates it is heavier than air, less than 1 indicates it is lighter than air. Vapors heavier than air will collect at floor level or travel into a below-grade area or stairwell. Vapors lighter than air will travel along ceilings.

Vapor Pressure: Measure of how volatile a substance is and therefore an indicator of how quickly that substance will evaporate. The VP of water (at 20° C) is 17.5mm Hg, Vaseline (non-volatile) is close to 0 mm Hg, and diethyl ether (very volatile) is 440 mm Hg.

Vertical Standard: Regulatory standards that apply to specific industries.

Viscosity: Internal resistance to flow exhibited by a fluid.

VPP: Voluntary Protection Program.

Work-Related: Injuries and illnesses are events or exposures in the work environment that caused or contributed to the condition or significantly aggravated a preexisting condition.

Notes

Notes

Appendix B: Monday Morning Checklist

- ☐ Identify our SIC/NAICS Code.
- ☐ Identify our TRIR.
- ☐ Search company records to assess the greatest likelihood of an accident.
- ☐ Review the *Safety and Health Program Assessments* with management.
- ☐ What are the top-cited violations in our category?
- ☐ Review all inspection forms to make sure they cover all requirements.
- ☐ Make sure inspections are scheduled properly and that they are done according to schedule.
- ☐ Create or purchase a comprehensive safety auditing tool and implement a schedule.
- ☐ Make sure that deficiencies on audits and inspections are corrected timely.
- ☐ Identify required written programs.
- ☐ What written programs are in place?
- ☐ Identify required training.
- ☐ What training programs are in place?
- ☐ Is documentation of training complete?
- ☐ Have competent persons been identified?
- ☐ Have qualified persons been identified?
- ☐ Have authorized persons been identified?
- ☐ Perform risk analyses for key jobs/processes.
- ☐ Identify jobs for JSAs.
- ☐ Make a list of completed JSAs and a review schedule.
- ☐ Put an accident investigation toolkit in place.

CLASSROOM DOCUMENTS

Table of Contents

COSS COURSE SYLLABUS

COURSE NAME: CERTIFIED OCCUPATIONAL SAFETY SPECIALIST

MODULE VERSION: ASC-2.5

REQUIRED TEXTS: NOTE: The texts listed below are included in the cost of the course.

Friend, M. and Kohn, J. (2001). *Fundamentals of Occupational Health and Safety* (Most up to date edition). Rockville Md: Government Institutes.

(Most up to date edition) *OSHA Standards for the Construction Industry: 29 CFR1926 (with amendments)*. Davenport: Mancomm

(Most up to date edition). *OSHA Standards for General Industry: 29 CFR1910 (with amendments)*. Davenport: Mancomm

*COSS Student Workbook (*Most up to date version).Baton Rouge: Mele Printing.

LEARNING OUTCOMES:
Upon completing this course, students will be able to:

- Determine the true cost of an accident
- Calculate incident rates
- Use the OSHA and BLS websites to identify SIC/NAICS Codes, and search public records to assess industry trends
- Be proficient in the use of CFR's (both Construction and General Industry)
- Identify hazards, determine regulatory requirements, implement corrective actions
- Perform risk analyses for key jobs and processes
- Learn the basic steps and fundamentals of accident investigations
- Differentiate between safety audits and inspections
- Prepare and present effective safety training presentations
- Communicate safety initiatives and goals
- Develop and maintain company safety programs
- Identify competent person requirements

COURSE PREREQUISITES: Students must have a high school diploma or equivalent, and must be at least 18 years of age to enter the COSS class.

INSTRUCTOR: COSS instructors are experts in the field of safety, and work closely with each training provider presenting COSS classes in an effort to "*Keep you and your family safe*". COSS instructors are Authorized OSHA Outreach Training Providers in construction and general industry. For a list of COSS Instructors and their contact information, visit www.coss.net.

AVAILABILITY: Please contact COSS Management via phone or e-mail with any questions or concerns you may have. Your call or e-mail will be returned within 24 hours.

CONTACT INFORMATION:

Toll Free	(877)-610-COSS
Fax	(225) 766-1099 Attn: COSS
E-Mail	info@coss.net

CLASS SCHEDULE: Monday - Friday, 8:00 a.m. - 5:00 p.m.
*unless otherwise noted in class

COURSE OVERVIEW:
This course is designed to build core competencies in the field of safety & health for adult learners. It examines safety theory and the application of these principles to safety related knowledge, skills, and competencies.

- Homework is an integral and important part of the course. Readings and exercises are assigned after each class session.
- Daily quizzes that assess the understanding of reading assignments from the night before will be given each morning.
- Students will develop strategies for achieving safety related goals in business environments. They will also be introduced to key internet links and will learn how to access and utilize these resources.
- Students will perform analyses of hazardous conditions.
- Additionally, students will complete a 10 minute Safety Presentation that will be presented to the class on the final day of class.
- Expert speakers may give talks specific to their field.

*WEIGHTING OF ASSIGNMENTS:

ASSIGNMENT	**PERCENT**
Daily Quizzes	17.5%
Final Exam (70% minimum score)	75%
Ten Minute Safety Presentation (P/F)	7.5%
Final Compliance Moment (P/F)	
Total	100%

GRADING SCALE: The course is graded on a pass/fail basis

An overall course grade of at least 70%, and at least 70% on the final exam is required to pass.

TIME ALLOTMENT: Students will have the following time allotments to complete the graded assignments:
Daily Quizzes: 30 minutes (each day)
Final Compliance Moment: 1 hour
Safety Presentation: 10 minutes
Final Exam: 1.5 hours

*Student grades will be sent to students *upon email request only*. All email requests should be sent to COSS at info@coss.net.

COURSE STANDARDS: The COSS Adult Teaching/Learning Model specifies that students achieve certain specified learning outcomes. All performance assessment depends upon the accomplishment of these outcomes. *Students are graded on achievement of the objectives of the course, rather than on effort.* It is the responsibility of the student to come to class prepared for each workshop.
We require each student to maintain high standards of honesty and ethical behavior. All assignments submitted in fulfillment of course requirements must be the student's own work. It is assumed that students will perform professionally in preparing the work required for this class.

GRIEVANCES: If there is a grievance, there are procedures in place to address it. Please ask your instructor to provide a copy of the grievance procedure, or call the following number: 877-610-COSS.

ATTENDANCE:

- *8 hours of class attendance each day is expected and required* due to the concentrated nature of the work requirements for this course. There will be 5 days of class, at 8 hours each day, for a total of 40 hours of coursework. The COSS roster will be used to track and record attendance.
- There will be several class activities; therefore, student attendance on all five days is imperative. Class participation is required to successfully complete the class.
- Breaks will be provided for students to follow-up on messages, if necessary. Leaving class while learning is taking place is discouraged. If a student misses a lesson, he/she will be dropped from the course, and will be required to register for a different class.
- If a student has an issue that arises that will cause him/her to miss class, he/she should inform the instructor immediately of the issue. If a student misses more than one hour of class on any day, he or she will be dropped from the class,

without a refund. Tardiness and leaving early will only be excused in matters of emergencies.

- If a student must leave class early, or miss class days, the instructor must determine if each individual situation is considered an "emergency". Documentation of the emergency must be made available to the instructor, by the student, upon the instructor's request.
- If the instructor deems the situation a true emergency, the missed class time may be made up, at a later class date, by the student.
- The student must sign and date a "COSS Course Absence Form", which will be provided to him/her by the instructor. By signing this form, the student will indicate their understanding and acceptance of the Attendance Policy.
- The instructor will file the signed form with the students' paperwork, and notify the COSS Operations Supervisor of the student's intentions for class make up.
- Students who have been dropped from the course due to an absence due to an emergency situation should contact the COSS Management for upcoming class dates, and to reschedule the missed portion(s) of the course.
- **All class make ups must be completed within 90 calendar days of the absence in order for the student to receive his/her course completion certificate.** Any make-up not completed within this timeframe will result in the student not passing the class, and not receiving the certificate. At this point, the student will be required to retake the entire class over to obtain the certificate.

DISRUPTIVE BEHAVIOR:

COSS Instructors shall monitor each class for unacceptable behaviors by COSS students. Unacceptable behaviors include, but are not limited to:

- Sleeping in class during instruction
- Talking with other students while the instructor is talking
- Being disruptive to the instructor or to other students
- Not returning from breaks and/or lunch in a timely manner
- Inappropriate cell phone or laptop usage
- Disrespecting the instructor or other students

If disruptive behavior continues after 2 warnings have been issued, the following steps will be taken:

- The instructor will report the incident to the Educational Services Manager or equivalent position (see note below) at the next break using the Disciplinary Action Form (DAF), which will document the student's name, a brief written description of the problem that occurred, and what brought the instructor to the conclusion that the student(s) should be removed from class.
  (Note:) For offsite COSS classes, the instructor should send any students with discipline problems to a staff member who has the authority or wherewithal to issue reprimands or enforce student discipline. The chain of command should be followed if that person is not available.

- A decision will be made by the person in charge as to whether or not the student must be removed from the course.
- If the decision is made to remove the student from the course, the action shall be recorded on the DAF. The instructor will return to the classroom with the DAF and inform the student that he/she has been removed from class and should leave immediately. The student will receive a copy of the DAF.
- If a decision has been made to re-schedule the student, have the student return to the member services registration desk, customer service department, or an equivalent department for offsite COSS classes, to reschedule the course. Customer service should refer to the DAF for the appropriate action to be taken. If the decision has been made to re-schedule the student(s), Customer Service should offer to do so.
- If authorized on the DAF, use the funds from the present class to cover the cost of the next scheduled class.
- The Educational Services Manager, or equivalent position, must report the incident to COSS corporate headquarters immediately. The DAF shall be forwarded to COSS corporate headquarters so that the student's employer may be contacted, and a Corrective Action Report can be filed, and the incident can be investigated.

COSS FAILURE POLICY[1]:

If a student fails the COSS course (that is, scores lower than a 70% average on all course work and/or scored lower than 70% on the final exam), the following steps will be taken:

- The instructor will let the student know that he/she has failed the course, and for what reason. The student can remain after class to retake a different version of the final exam, if he/she so chooses. If he/she needs to make arrangements for transportation, he/she should do so now.
- If the student chooses to stay after class, after class dismissal, the instructor will briefly remediate the student(s) and allow a short period for studying.
    - In cases where more than one student has failed the course, all of the students will remediate together, as a group, but will re-test in seclusion, away from each other in the room.
- Students will be allowed to retake a <u>different version</u> of the Final Exam once for no fee. If the student chooses not to stay after class to retake the final exam, then he/she will be given a retake at no additional charge on a day that he/she so chooses.
- Final Exam Version C will be given as the first retake.
- Because the student benefits from the instructor's remediation after class, it is strongly advised that he/she stay after class to retake the final exam. Also, because the instructor or other authorized agent must be present for all re-takes, the student must make an appointment with the instructor or other authorized agent for another day if he/she chooses not to stay after class to retest.

[1] This policy differs slightly for international courses, where student must retake immediately after class, and only 1 retake is allowed.

- **All retakes must be completed within 90 calendar days of the failure in order for the student to receive his/her certificate.** Any retake not completed within this timeframe will result in the student not passing the class, and not receiving the certificate. The student will be required to retake the entire class over to obtain the certificate.
- After the student retakes the initial free re-test, if the overall average has not improved to 70% or greater, or the Final Exam grade is not above 70%, the instructor will inform the student that he or she has not passed the course, but will be able to retake the exam one additional time for a fee of $149.00 when he or she feels ready to do so. At this time, an appointment to re-test again must be made with the instructor.
- Final Exam Version D will be given as the last retake.
- There is no minimum time lapse required for re-taking the exam; however, the maximum allotted time frame to retake and pass the exam is 90 calendar days.
- There is a limit of two re-takes; the 2nd retake will cost $149.00.
- If the student does not pass after the 2nd retake, he/she will fail the course. He or she can retake the COSS course over again in its entirety, however the course retake fee collected (if any) will be left up to each Authorized Training Provider's (ATP) discretion.
- The ATP may tutor the student upon request for a negotiated fee, if so desired.

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CONFIDENTIALITY:

- COSS will safeguard confidentiality of all information provided by students, including the results of examinations. These arrangements shall be extended to include organizations or individuals acting on its behalf, and representatives of COSS.
- Except as required by law, information about a student's grades shall not be disclosed to a third party (i.e. student's employer) without the written consent of the student.

Location: _____ Instructor: _____ Date of Class: _____

Certified Occupational Safety Specialist Personal Information Sheet

Certified Occupational Safety Specialist

Please print your name *EXACTLY* as you want it printed on your COSS certificate in the boxes below:

First: _____ Middle: _____

Last: _____ Suffix: _____

Your Company: _____

Home Address: _____

City: _____

State/Province/Region: _____ Postal Code: _____

Country _____

Home Phone: ___ — ___ — ____

Work Phone: ___ — ___ — ____ Extension: _____

Cell Phone: ___ — ___ — ____

Primary Email: _____

Alternate Email: _____

Industry you work in: _____

# of Years you have in the Safety Field: _____

What safety designation(s), if any, do you currently possess? _____

Rev. 4
Eff. Date 9/14/07
Last revised 06/06/15

Name: _____ Date: _____ Location: _____

Personal Score Keeper

Keep track of how you are doing in class by recording your scores.

Quiz	Score
Day 2	
Day 3	
Day 4	
***Quiz Average**	

* To obtain your quiz average, add your scores for all three quizzes together and divide that number by 3.

Your average quiz grade will count as 17.5 percent of the overall grade for the class.

Homework Assignments

Day 1 Assignments

- Experience Modification and Recordkeeping: Text (Chapter 3 - pp. 52-62) (start at the Experience Modification section)
- Construction Safety and the Multiemployer Worksite Doctrine: Text (Chapter 16 – pp. 337-356)
- CFR Study Guide Day 1

Day 2 Assignments

- Psychology and Safety: The Human Element in Loss Prevention: Text (Chapter 11 - pp. 229-246)
- Accident Causation and Investigation: Theory and Application: Text (Chapter 5 – pp. 77-102)
- Improving Safety Performance with Behavior Based Safety: Text (Chapter 12 – pp. 247-272)
- CFR Study Guide Day 2
- Select topic for 10 Minute Safety Presentation

Day 3 Assignments

- Managing the Safety Function: Text (Chapter 10 – pp. 211-228)
- Introduction to Industrial Hygiene: Text (Chapter 6 – pp. 103-125)
- CFR Study Guide Day 3
- Finalize outline for 10 minute safety presentation for instructor to review

Day 4 Assignments

- Finalize 10 Minute Safety Presentation
- Study for Final Exam, including the completed CFR Study Guide

(Reading based on 6th edition of the textbook)

CFR Study Guide

Read and summarize these standards for homework on Day 1:

1910.09 (b) – _____

1910.22 (a) – _____

1926.1053(b)(1) – _____

1926.1051(a) - _____

1926.251(a)(1) – _____

1926.701(b) – _____

1926.350(a)(5) – _____

1926.601(b)(4) – _____

1926.35(a) and (e)(3) – _____

1926.95(b) – _____

1926.21(b)(2) – _____

1926.20(b)(2) - _____

1926.28(a) - _____

1903.17(a) – _____

1903.16(a) - _____

1903.8(b) – _____

1903.3 – _(you do not have to write this entire standard out, but you should familiarize yourself with the contents) _

1903.4 – _(you do not have to write this entire standard out, but you should familiarize yourself with the contents)__

1903.4(a) – _____

1903.6(c) – _____

Read and summarize these standards for homework on Day 2:

1904.39(a) – _____

1904.7(a) – _____

1904.32(b)(3) – _____

1904.7(b)(5)(ii) – _(you do not have to write this entire standard out, but you should familiarize yourself with the contents)___

1904.29(b)(3) – _____

1904.7(b)(5)(ii)(B) – _____

1904.1 – _____

1926.451(g)(1) – _____

1926.502 (d) (16) (iii) – _____

1926.651(c)(2) - _____

1926.404(b)(1)(iii)(A) – _____

1926.300(b)(4)(i) – _____

1926.404(b)(1)(ii) – _____

1926.501(b)(1) – _____

1926.501(b)(2)(i) - _____

1926.454(b) – _____

1926.404(b)(1)(i) – _____

1926 .651(k)(1) - _____

1926.502(d) (21) – _____

1926.652(a)(1)(ii) – _____

Read and summarize these standards for homework on Day 3:

1910.178(l)(4)(iii) – _____

1910.184(d) – _____

1910.134(b) (Oxygen Deficient Atmosphere) – _____

1910.1030(b) (Universal Precautions) - _____

1910.34(c) (Exit Route) - _____

1910.146(c)(2) – _____

1910.23(c)(1)- _____

1910.144(a)(1)(i,ii,&iii) – _____

1910.212(a)(1) – _____

1910.157(e)(2)- _____

1910.134(b) (Immediately Dangerous to Life & Health) - _____

1910.95(c) - _____

1910.95(b)(1) – _____

1910.132(d) – _____

Criteria for Grading Oral Assignments

NAME:	**Score/Comments**
TOPIC:	**10-9 Excellent 8-7 Good 6-5 Average 4-3 Fair 2-1 Unsatisfactory**
Verbal Communication ☐ Clear, distinct, varied tone of voice ☐ Good volume ☐ Concise language appropriate for audience ☐ Stimulating, enthusiastic ☐ Not too fast or slow	10 9 8 7 6 5 4 3 2 1
Presence ☐ Speaks to the audience, not at it ☐ Maintains eye contact ☐ Does not read from visuals / materials ☐ Moves away from podium and/or walks around room	10 9 8 7 6 5 4 3 2 1
Distractions and Idiosyncrasies ☐ "ah", "umm", "you know", "like", "so" ☐ Pacing, rocking, stiffness, hands in pockets, arms crossed. ☐ Playing with keys, or objects ☐ Back or side to audience	10 9 8 7 6 5 4 3 2 1
Delivery ☐ Stayed on topic ☐ Demonstrated preparation ☐ Succinct/not rambling ☐ Maintains flow of thought ☐ Visuals (PPTs, props, etc) well done and used effectively	10 9 8 7 6 5 4 3 2 1
Content ☐ Addresses assignment and follows outline ☐ Presentation is well organized ☐ Ideas and points are clear, obvious and understandable ☐ Proper citations for ideas and statistics ☐ Points support main topic	10 9 8 7 6 5 4 3 2 1
Opening / Closing ☐ The "Hook" - Opening captivated audience ☐ Good wrap-up / summary	10 9 8 7 6 5 4 3 2 1
Audience Involvement / Engagement / Interaction ☐ Direct and indirect questioning ☐ Interactive exercises or games ☐ Interacts with audience (gestures/ body language) ☐ Shared story / experience relevant to topic ☐ Maintained audience attention	10 9 8 7 6 5 4 3 2 1
Subject Knowledge ☐ Is very knowledgeable of the material. ☐ Information presented is accurate	10 9 8 7 6 5 4 3 2 1
Stays within allotted time frame (10 min. +/- 1min.) Over _____ On-time _____ Under_____	10 9 8 7 6 5 4 3 2 1
Instructor's Overall Impression	10 9 8 7 6 5 4 3 2 1
	TOTAL SCORE: _____ Out of 100

Effective Communication Outline Form

Date: _____ Presenter's Name: _____

1. Topic:

2. Objectives:

3. Presentation:

4. Closing:

Instructor Feedback:

_____

_____

_____

_____

Certified Occupational Safety Specialist Answer Form

Name: _____ Test Name: _____

Date: _____ Instructor: _____

Copy: ____ of ____

Fully shade in your answers below as shown here: (A) (B) (C) (D)

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D
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12.	A	B	C	D
13.	A	B	C	D
14.	A	B	C	D
15.	A	B	C	D
16.	A	B	C	D
17.	A	B	C	D
18.	A	B	C	D
19.	A	B	C	D
20.	A	B	C	D
21.	A	B	C	D
22.	A	B	C	D
23.	A	B	C	D
24.	A	B	C	D
25.	A	B	C	D

26.	A	B	C	D
27.	A	B	C	D
28.	A	B	C	D
29.	A	B	C	D
30.	A	B	C	D
31.	A	B	C	D
32.	A	B	C	D
33.	A	B	C	D
34.	A	B	C	D
35.	A	B	C	D
36.	A	B	C	D
37.	A	B	C	D
38.	A	B	C	D
39.	A	B	C	D
40.	A	B	C	D
41.	A	B	C	D
42.	A	B	C	D
43.	A	B	C	D
44.	A	B	C	D
45.	A	B	C	D
46.	A	B	C	D
47.	A	B	C	D
48.	A	B	C	D
49.	A	B	C	D
50.	A	B	C	D

Grade: _____

Certified Occupational Safety Specialist Answer Form

Name: _____ Test Name: _____

Date: _____ Instructor: _____

Copy: ____ of ____

Fully shade in your answers below as shown here: (A) (B) (C) (D)

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
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8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D
11.	A	B	C	D
12.	A	B	C	D
13.	A	B	C	D
14.	A	B	C	D
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16.	A	B	C	D
17.	A	B	C	D
18.	A	B	C	D
19.	A	B	C	D
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21.	A	B	C	D
22.	A	B	C	D
23.	A	B	C	D
24.	A	B	C	D
25.	A	B	C	D

26.	A	B	C	D
27.	A	B	C	D
28.	A	B	C	D
29.	A	B	C	D
30.	A	B	C	D
31.	A	B	C	D
32.	A	B	C	D
33.	A	B	C	D
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35.	A	B	C	D
36.	A	B	C	D
37.	A	B	C	D
38.	A	B	C	D
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41.	A	B	C	D
42.	A	B	C	D
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44.	A	B	C	D
45.	A	B	C	D
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Certified Occupational Safety Specialist Answer Form

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Date: _____ Instructor: _____

Copy: ____ of ____

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40.	A	B	C	D
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43.	A	B	C	D
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50.	A	B	C	D

Grade: _____

Certified Occupational Safety Specialist Answer Form

Name: _____ Test Name: _____

Date: _____ Instructor: _____

Copy: ____ of ____

Fully shade in your answers below as shown here: (A) (B) (C) (D)

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
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25.	A	B	C	D

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47.	A	B	C	D
48.	A	B	C	D
49.	A	B	C	D
50.	A	B	C	D

Grade: _____

Certified Occupational Safety Specialist Answer Form

Name: _____ Test Name: _____

Date: _____ Instructor: _____

Copy: ____ of ____

Fully shade in your answers below as shown here: A B C D

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
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25.	A	B	C	D

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28.	A	B	C	D
29.	A	B	C	D
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35.	A	B	C	D
36.	A	B	C	D
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49.	A	B	C	D
50.	A	B	C	D

Grade: _____

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Rev.: 1
Eff. Date: 8/23/10

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
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Student's Name: _____ **Date: _____**

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Rev.: 1
Eff. Date: 8/23/10

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Student's Name: _____ **Date: _____**

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Rev.: 1
Eff. Date: 8/23/10

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Rev.: 1
Eff. Date: 8/23/10

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Rev.: 1
Eff. Date: 8/23/10

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Student's Name: _____ **Date: _____**

Daily Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Student's Name: _____ **Date: _____**

Final Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Final Compliance Moment
Hazard Identification & Control Worksheet

Situation (Example: workers on roof with no fall protection)	**Hazard(s)** (Example: struck-by, contact with, electric shock, etc.)	**Method(s) of Control** (Example: Eng / Admin /PPE - i.e. inspections, guards, etc)	**Applicable Regulation(s)**	
			Subpart	**Section**

Class Date:
Location:
Instructor:

If you are completely satisfied with the COSS program, we would like your help in spreading the word as to its value. Any complimentary comments that you can provide will be used by the COSS for purposes of marketing the COSS program. In the space below, please write down remarks that you would allow us to use in our marketing.

_____

_____

_____

_____

_____

_____

_____

_____

Your signature authorizes the use of the above statement.

_____ _____
Print Name Signature

_____
Company

Please mark the industry that best describes your company:

___ Construction
___ Contractor
___ Food Processing
___ Fire Department/Fire Safety
___ Government
___ Heavy Equipment/Industrial
___ College Student
___ Oilfield
___ Petrochemical/Pipeline Distribution
___ Plants/Manufacturing
___ Power/Energy Company
___ Service Industry
___ Transportation/Distributor
___ Municipality
___ Other: _____

Join the COSS Network

Connect with COSS to stay up to date with new job opportunities in industry, training resources and pertinent safety topics. Use our network to contact COSS management/instructors and other training providers.

Social Networks

COSS Program
Connect with other safety professionals, view job openings and discover educational opportunities
www.facebook.com/cossprogram

COSS - Certified Occupational Safety Specialist
Network with over 2,000 safety professionals
www.linkedin.com/groups/1790437

Safety and Health Job Openings

Visit www.coss.net/jobs.aspx to browse recent job announcements.

After Class Resources and Online Tools

Visit www.coss.net/cossresources.aspx for online tools presented in class, information from OSHA and more.

COSS HIGH PERFORMANCE MEN'S POLO

Available in navy, electric blue, bright white and black, this high-performance polo is 100% poly with stay-cool wicking technology.

COSS HIGH PERFORMANCE WOMEN'S POLO

Available in navy, electric blue, bright white and black, this high-performance polo is 100% poly with stay-cool wicking technology.

COSS®

Certified Occupational Safety Specialist

COSS HARD HAT DECAL

Measuring 2"x1.5", this decal adheres perfectly to hard hats.

COSS CAMOUFLAGE HAT

This baseball style, adjustable closure hat is available in Break Up Infinity by Mossy Oak print.

SHOW OFF YOUR COSS PRIDE!

COSS MERCHANDISE ONLINE STORE

877.610.2677

Shop the entire COSS collection at **www.coss.net**

COSS Recertification

COSS RERCERTIFICAITON FORMS

For all COSS Recertification actions taken, there are official forms that must be completed and submitted online. These forms include:

- **COSS Recertification Worksheet or**
- **Extension of Time Request Form or**
- **Exemption Form**

These forms, and the entire COSS Recertification Guidelines may be downloaded at www.coss.net.

In order to maintain the COSS certificate, COSS graduates must:

- Recertify every three years
- Participate in professional development activities to earn 6.0 CEUs or 60 contact hours
- Submit a Recertification Worksheet that outlines CEUs or contact hours (worksheets are only accepted online during the year of your expiration).
- Only submit supporting documentation of CEUs or contact hours earned **when requested by COSS Management**
- Register (online credit card payments only) and submit the recertification payment of $135 every 3 years (late submission of documents will incur late fees)
- Use the proper recertification worksheet & registration form, which is located at www.coss.net
- Upload your completed worksheet and submit credit card payment online at www.coss.net/Recertification.aspx

For more information on COSS recertification, email info@coss.net, visit www.coss.net or call 877-610-COSS

Understanding CEUs & Contact Hours

The required CEUs or contact hours must come from any safety, health, leadership and/or management related course, which is taken at any:

- Safety Council
- Training Institution
- Post-secondary Institution
- Conference
- Seminar

For a list of pre-approved courses, visit www.coss.net. Courses that you have developed and/or taught do not meet the requirements.

Understanding Contact Hours

Some classes or seminars that you participate in may not offer CEUs. In these instances, you will need to accurately record the number of contact hours you spent in the training. For example: a seminar that you attend from 9:00 a.m. – 11:00 a.m. would count as 2 contact hours.

Acceptance of College Credits

Only safety & health-related college courses will be accepted, and will be counted as contact hours. For example, a safety & health class held for 3 hours a week for 15 weeks would equal 45 contact hours.

CEUs should be converted to contact hours by multiplying the number of CEUs by 10. For instance, if you take a class that offers 4.0 CEUs, you would multiply 4.0 CEUs by 10 to get a sum of 40 contact hours (4.0 CEUs X 10 = 40 contact hours).

COSS Recertification

Notification of Recertification Status

- COSS recertification requirements are met

If you meet the minimum of 6 CEUs or 60 contact hours, you will receive a recertification certificate with your new expiration date.

- COSS recertification requirements are NOT met

If you do not meet the minimum of 6 CEUs or 60 contact hours, you will be asked to provide additional information to justify CEUs or contact hours claimed. If you do not respond within 30 days before the expiration date, your certificate will expire.

Options for Reinstating an Expired Certificate

1. **90-day Grace Period with penalty:** You have until March 31 of the following year to fully comply with recertification requirements. In the event you submit your recertification within the 90 grace period, you must submit 6 CEUs or 60 contact hours on the recertification worksheet AND provide the supporting documentation of the CEUs/Contact Hours earned. You must also pay a nonrefundable recertification reinstatement fee of $50.00, in addition to the original recertification fee ($135), for a total of $185.00.
2. **Retake COSS class:** By retaking the COSS class, a student's expiration date will be adjusted according to his/her new graduation date.

Recertification Table

IF THE DATE YOUR COSS CERTIFICATE WAS RECEIVED IS BETWEEN THESE DATES:	THEN YOUR COSS CERTIFICATE EXPIRATION DATE IS:
January 1, 2016 – December 31, 2016	December 31, 2019
January 1, 2017 – December 31, 2017	December 31, 2020
January 1, 2018 – December 31, 2018	December 31, 2021
January 1, 2019 – December 31, 2019	December 31, 2022
January 1, 2020 – December 31, 2020	December 31, 2023

Certified Occupational Safety Specialist

For more information on COSS recertification, email info@coss.net, visit www.coss.net or call 877-610-COSS

YOUR CONTACT INFORMATION

To allow us to keep you informed of your recertification status, you must update your contact information at least once per year.

EXTENSION OF TIME

Under certain circumstances, the COSS recertification expiration date may be extended. In order to extend the date, COSS graduates must meet the requirements outlined in the Recertification Guidelines for one of the following requests:

- **Leave of Absence**
- **Extension of Time**
- **Full or Partial Exemption**

ADVANCED EXECUTIVE SAFETY TRAINING

COSM™

CERTIFICATE FOR OCCUPATIONAL SAFETY MANAGERS

Students who have seen the difference training can make firsthand through participation in the Certified Occupational Safety Specialist® (COSS) program can take the next logical step in their careers with the COSM designation. COSM is an advanced, executive-level safety program consisting of 40 hours of specialized training. After completing 40 hours of training and meeting the prerequisites outlined below, they will receive the COSM credential.

PREREQUISITES

In order to receive the final COSM certificate, you must meet the following criteria:

- Complete 40 hours of training
- Turn in all completed assignments
- Have a minimum of two years of safety, health or environmental work experience

OUTLINE OF SESSION TOPICS

Essentials of Safety Management

- Competencies of Safety
- Leadership in Safety
- Management Roles and Responsibilities

Strategic Planning & Evaluating for Safety Success

- Program Evaluation
- Strategic Planning for Safety

Managing Risk & Safety Finances

- Technical Aspects of Managing Risks
- Financial Aspects of Managing Risks

Communicating the Safety Message

- Defining the Safety Message
- Communication Methods
- Presenting to High-Level Executives

Injury Management, Incentives & Discipline

- Discipline, Recognition & Incentives
- Claims & Post-Accident Management

For information or registration, visit www.coss.net or call (877) 778-0607.